Course: Sports Officiating- 1502500

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4096

BASIC INFORMATION

Course Number:	1502500
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Fitness, Sports Officiating, SPRTS OFFICIATING, Sports, Officiating
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** General
Course Title:	Sports Officiating
Course Abbreviated Title:	SPRTS OFFICIATING
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (18)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.20:	Identify appropriate methods to resolve physical conflict.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress management.

PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.1:	Describe ways to act independently of peer pressure during physical activities.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.

PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Swimming 1- 1504460

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4097

BASIC INFORMATION

Course Number:	1504460
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Swimming 1, SWIMMING 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Swimming 1
Course Abbreviated Title:	SWIMMING 1
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (20)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.

PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.1:	Demonstrate critical elements of basic skills relating to aquatics. Remarks/Examples Some examples are use of swim strokes, use of mask and fins and use of emergency safety equipment.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.2:	Demonstrate proficiency in combination of motor skills related to aquatics. Remarks/Examples Some examples are rhythmic breathing, coordinated movements with arms and legs and body alignment while entering water.
PE.912.M.1.3:	Perform a basic water rescue, with or without equipment, without entering the water.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples

	Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Swimming 2- 1504470

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4099

BASIC INFORMATION

Course Number:	1504470
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Swimming 2, SWIMMING 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Swimming 2
Course Abbreviated Title:	SWIMMING 2
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (24)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.1:	Identify and describe the critical elements of a basic water rescue.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.7:	Evaluate the effectiveness of specific warm-up and cool-down activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme

	weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.1:	Demonstrate critical elements of basic skills relating to aquatics. Remarks/Examples Some examples are use of swim strokes, use of mask and fins and use of emergency safety equipment.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.2:	Demonstrate proficiency in combination of motor skills related to aquatics. Remarks/Examples Some examples are rhythmic breathing, coordinated movements with arms and legs and body alignment while entering water.
PE.912.M.1.3:	Perform a basic water rescue, with or without equipment, without entering the water.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.33:	Practice complex motor activities in order to improve

	performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.4:	Perform refinement of one or more swim strokes to enhance efficiency, power and cardiorespiratory endurance in a variety of aquatics settings. Remarks/Examples Some examples of aquatic settings are a pool, a lake and open water.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

Course: Team Sports 1- 1503350

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4100

BASIC INFORMATION

Course Number:	1503350
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Team, Team Sports 1, Team Sports, TEAM SPRTS 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Team
Course Title:	Team Sports 1
Course Abbreviated Title:	TEAM SPRTS 1
Number of Credits:	Half credit (.5)
Course length:	Semester (S)
Course Level:	2
Status:	Draft - Board Approval Pending
Version Description:	The purpose of this course is to develop the physical skills necessary to be competent in many forms of movement, knowledge of team sports concepts such as offensive and defensive strategies and tactics, and appropriate social behaviors within a team or group setting. The integration of fitness concepts throughout the content is critical to the success of this course.

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

STANDARDS (25)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.20:	Identify appropriate methods to resolve physical conflict.

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

PE.912.C.2.21:	Diagram, explain and justify the use of advanced offensive, defensive and transition strategies and tactics.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.23:	Demonstrate proficiency of critical elements when striking with objects, implements or body parts.
PE.912.M.1.31:	Demonstrate advanced offensive, defensive and transition strategies and tactics.

PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.2:	Develop strategies for including persons of diverse backgrounds and abilities while participating in a variety of physical activities.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.1:	Discuss opportunities for participation in a variety of physical activities outside of the school setting that contribute to personal enjoyment and the attainment or maintenance of a healthy lifestyle.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Team Sports 2- 1503360

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4102

BASIC INFORMATION

Course Number:	1503360
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Team Sports 2, Team, Team Sports, TEAM SPRTS 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Team
Course Title:	Team Sports 2
Course Abbreviated Title:	TEAM SPRTS 2
Number of Credits:	Half credit (.5)
Course length:	Semester (S)
Course Level:	2
Status:	Draft - Board Approval Pending
Version Description:	The purpose of this course is to develop the physical skills necessary to be competent in many forms of movement, knowledge of team sports concepts such as offensive and defensive strategies and tactics, and appropriate social behaviors within a team or group setting. The integration of fitness concepts throughout the content is critical to the success of this course.

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

STANDARDS (28)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.20:	Identify appropriate methods to resolve physical conflict.

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

PE.912.C.2.21:	Diagram, explain and justify the use of advanced offensive, defensive and transition strategies and tactics.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.27:	Compare and contrast how movement skills from one physical activity can be transferred and used in other physical activities. Remarks/Examples Some examples are volleyball and tennis serve, surfing and skate boarding.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.

PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.19:	Use correct body alignment, strength, flexibility and coordination in the performance of technical movements.
PE.912.M.1.23:	Demonstrate proficiency of critical elements when striking with objects, implements or body parts.
PE.912.M.1.31:	Demonstrate advanced offensive, defensive and transition strategies and tactics.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.2:	Develop strategies for including persons of diverse backgrounds and abilities while participating in a variety of physical activities.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.

Course: Tennis 1- 1504500

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4104

BASIC INFORMATION

Course Number:	1504500
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Tennis 1, TENNIS 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Tennis 1
Course Abbreviated Title:	TENNIS 1
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (23)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a

	variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.23:	Demonstrate proficiency of critical elements when striking with objects, implements or body parts.
PE.912.M.1.24:	Apply a combination of complex movement patterns in a game setting.
PE.912.M.1.25:	Apply appropriate speed and generation of force when distance running, sprinting, throwing, jumping, striking or kicking.
PE.912.M.1.31:	Demonstrate advanced offensive, defensive and transition strategies and tactics.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.

Course: Tennis 2- 1504510

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4109

BASIC INFORMATION

Course Number:	1504510
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Tennis 2, TENNIS 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Tennis 2
Course Abbreviated Title:	TENNIS 2
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (26)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

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	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples

	Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.22:	Demonstrate proficiency in advanced combinations of motor skills for a variety of individual and dual sports.
PE.912.M.1.23:	Demonstrate proficiency of critical elements when striking with objects, implements or body parts.
PE.912.M.1.24:	Apply a combination of complex movement patterns in a game setting.
PE.912.M.1.25:	Apply appropriate speed and generation of force when distance running, sprinting, throwing, jumping, striking or kicking.
PE.912.M.1.26:	Analyze and apply offensive, defensive and transition strategies and tactics to reflect a higher order of thinking. Remarks/Examples An example is placing a shot in an open area away from opponent.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.31:	Demonstrate advanced offensive, defensive and transition strategies and tactics.

PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

PE.912.R.6.1:	Discuss opportunities for participation in a variety of physical activities outside of the school setting that contribute to personal enjoyment and the attainment or maintenance of a healthy lifestyle.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Tennis 3- 1504520

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4112

BASIC INFORMATION

Course Number:	1504520
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Tennis 3, TENNIS 3
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Tennis 3
Course Abbreviated Title:	TENNIS 3
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (26)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

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	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.21:	Diagram, explain and justify the use of advanced offensive, defensive and transition strategies and tactics.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course

	activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.22:	Demonstrate proficiency in advanced combinations of motor skills for a variety of individual and dual sports.
PE.912.M.1.23:	Demonstrate proficiency of critical elements when striking with objects, implements or body parts.
PE.912.M.1.24:	Apply a combination of complex movement patterns in a game setting.
PE.912.M.1.26:	Analyze and apply offensive, defensive and transition strategies and tactics to reflect a higher order of thinking. Remarks/Examples An example is placing a shot in an open area away from opponent.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.

Course: Track and Field- 1503300

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4115

BASIC INFORMATION

Course Number:	1503300
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Track and Field, TRACK & FIELD, Track, Field
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Track and Field
Course Abbreviated Title:	TRACK & FIELD
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (28)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

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	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.22:	Explain the skill-related components of fitness and how they enhance performance levels. Remarks/Examples The skill-related components of fitness are speed, coordination, balance, power, agility and reaction time.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.24:	Analyze the mechanical principles as they apply to specific course activities.

	Remarks/Examples Some examples are balance, force and leverage.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.16:	Apply the principles of training and conditioning to accommodate individual needs and strengths. Remarks/Examples

	Some examples of training principles are overload, specificity and progression.
PE.912.M.1.19:	Use correct body alignment, strength, flexibility and coordination in the performance of technical movements.
PE.912.M.1.25:	Apply appropriate speed and generation of force when distance running, sprinting, throwing, jumping, striking or kicking.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.2:	Develop strategies for including persons of diverse backgrounds and abilities while participating in a variety of physical activities.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.

PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Volleyball 1- 1505500

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4117

BASIC INFORMATION

Course Number:	1505500
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Team, Volleyball 1, VOLLEYBALL 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Team
Course Title:	Volleyball 1
Course Abbreviated Title:	VOLLEYBALL 1
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (23)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

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	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress

	management.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.25:	Apply appropriate speed and generation of force when distance running, sprinting, throwing, jumping, striking or kicking.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.31:	Demonstrate advanced offensive, defensive and transition strategies and tactics.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations.

Course: Volleyball 2- 1505510

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4118

BASIC INFORMATION

Course Number:	1505510
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Team, Volleyball, VOLLEYBALL 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Team
Course Title:	Volleyball 2
Course Abbreviated Title:	VOLLEYBALL 2
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (25)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.21:	Diagram, explain and justify the use of advanced offensive, defensive and transition strategies and tactics.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course

Course: Volleyball 3- 1505520

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4120

BASIC INFORMATION

Course Number:	1505520
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Volleyball 3, Volleyball, VOLLEYBALL 3, Team
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Team
Course Title:	Volleyball 3
Course Abbreviated Title:	VOLLEYBALL 3
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (25)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.21:	Diagram, explain and justify the use of advanced offensive, defensive and transition strategies and tactics.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course

	activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress management.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.23:	Demonstrate proficiency of critical elements when striking with objects, implements or body parts.
PE.912.M.1.25:	Apply appropriate speed and generation of force when distance running, sprinting, throwing, jumping, striking or kicking.
PE.912.M.1.26:	Analyze and apply offensive, defensive and transition strategies and tactics to reflect a higher order of thinking. Remarks/Examples An example is placing a shot in an open area away from opponent.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve

	performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

	activities.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress management.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.M.1.10:	Apply sport specific skills in simulation and in real-life applications. Remarks/Examples An example of a simulation is a practice setting or lead up activity. An example of a real-life application is a game or performance setting.
PE.912.M.1.25:	Apply appropriate speed and generation of force when distance running, sprinting, throwing, jumping, striking or kicking.
PE.912.M.1.26:	Analyze and apply offensive, defensive and transition strategies and tactics to reflect a higher order of thinking. Remarks/Examples An example is placing a shot in an open area away from opponent.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.31:	Demonstrate advanced offensive, defensive and transition strategies and tactics.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.33:	Practice complex motor activities in order to improve

	performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

	Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Water Safety- 1504490

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4123

BASIC INFORMATION

Course Number:	1504490
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Water Safety, WATER SAFETY, Water, Safety
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Water Safety
Course Abbreviated Title:	WATER SAFETY
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (25)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.20:	Identify appropriate methods to resolve physical conflict.
PE.912.C.2.24:	Analyze the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and

	correcting mechanical errors.
PE.912.C.2.7:	Evaluate the effectiveness of specific warm-up and cool-down activities.
PE.912.C.2.8:	Differentiate between the three different types of heat illnesses associated with fluid loss. Remarks/Examples The three types of heat illnesses are heat cramps, heat exhaustion and heat stroke.
PE.912.C.2.9:	Explain the precautions to be taken when exercising in extreme weather and/or environmental conditions. Remarks/Examples Some examples of precautions are hydration and appropriate attire.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress management.
PE.912.L.3.4:	Identify the in-school opportunities for participation in a variety of physical activities.
PE.912.L.3.5:	Identify the community opportunities for participation in a variety of physical activities.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.M.1.1:	Demonstrate critical elements of basic skills relating to aquatics. Remarks/Examples Some examples are use of swim strokes, use of mask and fins and use of emergency safety equipment.
PE.912.M.1.17:	Demonstrate basic cardiopulmonary resuscitation (CPR) procedures.
PE.912.M.1.2:	Demonstrate proficiency in combination of motor skills related to aquatics. Remarks/Examples

Course: Weight Training 1- 1501340

Direct link to this page: http://www.cpalms.org/Public/PreviewCourse/Preview/4130

BASIC INFORMATION

Course Number:	1501340
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Fitness, Weight Training 1, WEIGHT TRAIN 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Fitness
Course Title:	Weight Training 1
Course Abbreviated Title:	WEIGHT TRAIN 1
Number of Credits:	Half credit (.5)
Course length:	Semester (S)
Course Level:	2
Status:	Draft - Board Approval Pending
Version Description:	The purpose of this course is to develop the physical skills necessary to be competent in many forms of movement as it relates to weight training. The integration of fitness concepts throughout the content is critical to the success of this course.

STANDARDS (26)

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
LAFS.910.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape

	of the distribution or the existence of extreme data points.
PE.912.C.2.16:	Explain the methods of monitoring levels of intensity during aerobic activity. Remarks/Examples Some examples are a talk test, rate of perceived exertion and checking one's heart rate/pulse.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.3:	Analyze the movement performance of self and others. Remarks/Examples Some examples are video analysis and checklist.
PE.912.C.2.6:	Compare and contrast the health-related benefits of various physical activities.
PE.912.L.3.2:	Participate in a variety of activities that promote the health-related components of fitness. Remarks/Examples The health-related components of fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress management.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.L.4.2:	Identify ways to self-assess and modify a personal fitness program.

Course: Weight Training 3- 1501360

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4135

BASIC INFORMATION

Course Number:	1501360
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Fitness, Weight Training 3, WEIGHT TRAIN 3
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Fitness
Course Title:	Weight Training 3
Course Abbreviated Title:	WEIGHT TRAIN 3
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (26)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.17:	Assess physiological effects of exercise during and after physical activity. Remarks/Examples Some examples are breathing, resting heart rate and blood pressure.
PE.912.C.2.22:	Explain the skill-related components of fitness and how they enhance performance levels. Remarks/Examples The skill-related components of fitness are speed, coordination,

	balance, power, agility and reaction time.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.24:	Analyze the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.7:	Evaluate the effectiveness of specific warm-up and cool-down activities.
PE.912.L.3.2:	Participate in a variety of activities that promote the health-related components of fitness. Remarks/Examples The health-related components of fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress management.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.L.4.2:	Identify ways to self-assess and modify a personal fitness program.
PE.912.L.4.4:	Use available technology to assess, design and evaluate a personal fitness program.
PE.912.L.4.5:	Apply the principles of training to personal fitness goals. Remarks/Examples Some examples of training principles are overload, specificity

	and progression.
PE.912.M.1.12:	Select and perform complex movements using a variety of equipment which lead to improved or maintained muscular strength and endurance. Remarks/Examples An example is performing plyometrics.
PE.912.M.1.16:	Apply the principles of training and conditioning to accommodate individual needs and strengths. Remarks/Examples Some examples of training principles are overload, specificity and progression.
PE.912.M.1.19:	Use correct body alignment, strength, flexibility and coordination in the performance of technical movements.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.2:	Analyze physical activities from which benefits can be derived. Remarks/Examples

	Some examples of potential benefits are physical, mental, emotional and social.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Weight Training 2- 1501350

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4133

BASIC INFORMATION

Course Number:	1501350
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Fitness, Weight Training 2, WEIGHT TRAIN 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Fitness
Course Title:	Weight Training 2
Course Abbreviated Title:	WEIGHT TRAIN 2
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (26)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.16:	Explain the methods of monitoring levels of intensity during aerobic activity. Remarks/Examples Some examples are a talk test, rate of perceived exertion and checking one's heart rate/pulse.
PE.912.C.2.17:	Assess physiological effects of exercise during and after physical activity. Remarks/Examples Some examples are breathing, resting heart rate and blood

	pressure.
PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.24:	Analyze the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.C.2.25:	Analyze and evaluate the risks, safety procedures, rules and equipment associated with specific course activities.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.7:	Evaluate the effectiveness of specific warm-up and cool-down activities.
PE.912.L.3.2:	Participate in a variety of activities that promote the health-related components of fitness. Remarks/Examples The health-related components of fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition.
PE.912.L.3.3:	Identify a variety of activities that promote effective stress management.
PE.912.L.3.6:	Identify risks and safety factors that may affect physical activity throughout life.
PE.912.L.4.2:	Identify ways to self-assess and modify a personal fitness program.
PE.912.L.4.4:	Use available technology to assess, design and evaluate a personal fitness program.
PE.912.L.4.5:	Apply the principles of training to personal fitness goals. Remarks/Examples Some examples of training principles are overload, specificity

	and progression.
PE.912.M.1.12:	Select and perform complex movements using a variety of equipment which lead to improved or maintained muscular strength and endurance. Remarks/Examples An example is performing plyometrics.
PE.912.M.1.16:	Apply the principles of training and conditioning to accommodate individual needs and strengths. Remarks/Examples Some examples of training principles are overload, specificity and progression.
PE.912.M.1.19:	Use correct body alignment, strength, flexibility and coordination in the performance of technical movements.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.2:	Analyze physical activities from which benefits can be derived. Remarks/Examples

	Some examples of potential benefits are physical, mental, emotional and social.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

PE.912.L.4.4:	Use available technology to assess, design and evaluate a personal fitness program.
PE.912.L.4.5:	Apply the principles of training to personal fitness goals. Remarks/Examples Some examples of training principles are overload, specificity and progression.
PE.912.M.1.12:	Select and perform complex movements using a variety of equipment which lead to improved or maintained muscular strength and endurance. Remarks/Examples An example is performing plyometrics.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.16:	Apply the principles of training and conditioning to accommodate individual needs and strengths. Remarks/Examples Some examples of training principles are overload, specificity and progression.
PE.912.M.1.19:	Use correct body alignment, strength, flexibility and coordination in the performance of technical movements.
PE.912.M.1.30:	Combine and apply movement patterns from simple to complex.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.

PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.2:	Analyze physical activities from which benefits can be derived. Remarks/Examples Some examples of potential benefits are physical, mental, emotional and social.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

	Some examples are rhythmic breathing, coordinated movements with arms and legs and body alignment while entering water.
PE.912.M.1.3:	Perform a basic water rescue, with or without equipment, without entering the water.
PE.912.M.1.33:	Practice complex motor activities in order to improve performance.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.4:	Perform refinement of one or more swim strokes to enhance efficiency, power and cardiorespiratory endurance in a variety of aquatics settings. Remarks/Examples Some examples of aquatic settings are a pool, a lake and open water.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.1:	Describe ways to act independently of peer pressure during physical activities.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of

	physical activities.

Course: Wrestling 1- 1505550

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4137

BASIC INFORMATION

Course Number:	1505550
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Wrestling 1, WRESTLING 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Wrestling 1
Course Abbreviated Title:	WRESTLING 1
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (16)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

	researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.24:	Analyze the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.L.3.2:	Participate in a variety of activities that promote the health-related components of fitness.

	Remarks/Examples The health-related components of fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition.
PE.912.M.1.15:	Select and apply sport/activity specific warm-up and cool-down techniques.
PE.912.M.1.19:	Use correct body alignment, strength, flexibility and coordination in the performance of technical movements.
PE.912.M.1.31:	Demonstrate advanced offensive, defensive and transition strategies and tactics.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.

PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Wrestling 2- 1505560

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4139

BASIC INFORMATION

Course Number:	1505560
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Physical Education, Individual and Dual, Wrestlilng 2, WRESTLING 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Physical Education **SubSubject:** Individual and Dual
Course Title:	Wrestling 2
Course Abbreviated Title:	WRESTLING 2
Course length:	Semester (S)
Status:	Draft - Board Approval Pending

STANDARDS (20)

LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that

	preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
MAFS.912.A-REI.4.10:	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). Remarks/Examples Algebra 1, Unit 2: For A.REI.10, focus on linear and exponential equations and be able to adapt and apply that learning to other types of equations in future courses.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
PE.912.C.2.21:	Diagram, explain and justify the use of advanced offensive, defensive and transition strategies and tactics.

PE.912.C.2.23:	Apply appropriate technology and analyze data to evaluate, monitor and/or improve performance.
PE.912.C.2.24:	Analyze the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.
PE.912.C.2.26:	Evaluate skill patterns of self and/or partner by detecting and correcting mechanical errors.
PE.912.C.2.28:	Interpret and apply the rules associated with specific course activities.
PE.912.L.3.2:	Participate in a variety of activities that promote the health-related components of fitness. Remarks/Examples The health-related components of fitness are cardiorespiratory endurance, muscular strength, muscular endurance, flexibility and body composition.
PE.912.M.1.13:	Perform a student-designed cardiorespiratory enhancing workout.
PE.912.M.1.19:	Use correct body alignment, strength, flexibility and coordination in the performance of technical movements.
PE.912.M.1.26:	Analyze and apply offensive, defensive and transition strategies and tactics to reflect a higher order of thinking. Remarks/Examples An example is placing a shot in an open area away from opponent.
PE.912.M.1.32:	Apply sport specific skills in a variety of game settings.
PE.912.M.1.34:	Demonstrate use of the mechanical principles as they apply to specific course activities. Remarks/Examples Some examples are balance, force and leverage.

Course: Research 1- 1700300

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/3850

BASIC INFORMATION

Course Number:	1700300
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, Research 1, RESEARCH
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Research 1
Course Abbreviated Title:	RESEARCH 1
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Level:	2
Status:	Draft - Board Approval Pending
Version Description:	The purpose of this course is to enable students to develop fundamental knowledge of the steps in the research process.
General Notes:	The purpose of this course is to enable students to develop fundamental knowledge of the steps in the research process.

	The content should include, but not be limited to, the following: • nature and purpose of research • research questions and hypotheses • research methods and procedures • review of literature and other resources • primary and secondary sources • directed investigations • organization of information • report formats, styles, and content • critical analysis of research • submission of a major independent research project

STANDARDS (22)

LAFS.910.L.1.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

LAFS.910.SL.1.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

LAFS.910.W.1.2: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

LAFS.910.RI.1.1:	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
LAFS.910.RI.3.8:	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.910.W.1.1b:	Develop claim(s) and counterclaims fairly, supplying evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level and concerns.
LAFS.910.W.1.1d:	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
LAFS.910.W.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LAFS.910.W.4.10:	Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
LAFS.910.WHST.1.1a:	Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.
LAFS.910.WHST.1.1e:	Provide a concluding statement or section that follows from or supports the argument presented.
LAFS.910.WHST.1.2a:	Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
LAFS.910.WHST.1.2b:	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
LAFS.910.WHST.1.2e:	Establish and maintain a formal style and objective tone while

	attending to the norms and conventions of the discipline in which they are writing.
LAFS.910.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LAFS.910.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
MAFS.K12.MP.1.1:	**Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.
MAFS.K12.MP.3.1:	**Construct viable arguments and critique the reasoning of**

	others. Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
MAFS.K12.MP.6.1:	**Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for

example: biology, chemistry, physics, and earth/space science, and do the following:

1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts).
2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines).
3. **Examine books and other sources of information to see what is already known,**
4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).
5. **Plan investigations,** (Design and evaluate a scientific investigation).
6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).
7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

Remarks/Examples

Florida Standards Connections for 6-12 Literacy in Science

For Students in Grades 9-10

	LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text. LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. <u>For Students in Grades 11-12</u> LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Florida Standards Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics.

	MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.4:	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. Remarks/Examples
	Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification. CCSS Connections: LAFS.910.RST.1.1 / LAFS.1112.RST.1.1.
SS.912.P.12.1:	Define cognitive processes involved in understanding information. Remarks/Examples
	Examples may include, but are not limited to, encoding, storage, and retrieval.

RELATED GLOSSARY TERM DEFINITIONS (10)

Conduction:	To transmit heat, sound, or electricity through a medium.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Inference :	The act of reasoning from factual knowledge or evidence.

Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Light:	Electromagnetic radiation that lies within the visible range.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Observation :	What one has observed using senses or instruments.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.

Course: Research 2- 1700310

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/3858

BASIC INFORMATION

Course Number:	1700310
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, RESEARCH, Research 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Research 2
Course Abbreviated Title:	RESEARCH 2
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	The purpose of this course is to enable students to develop basic knowledge and skills in the research process with emphasis on determining and refining research questions. The content should include, but not be limited to, the following:

	• research process • research topics • research questions and hypotheses • definition, analysis, and evaluation of research questions • review of literature and other resources • primary and secondary sources • formulation of hypotheses • organization of information • report formats, styles, and content • directed investigations -critical analysis of research

STANDARDS (26)

LAFS.910.L.1.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

LAFS.910.L.1.2: Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

LAFS.910.SL.1.1: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others ideas and expressing their own clearly and persuasively.

LAFS.910.W.1.1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

LAFS.910.W.1.2: Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

LAFS.910.W.1.3: Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details, and well-structured event sequences.

LAFS.910.W.3.9: Draw evidence from literary or informational texts to support analysis, reflection, and research.

The Common Core Mathematical Practices should be incorporated as appropriate.

LAFS.910.RI.1.1:	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
LAFS.910.RI.2.6:	Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.
LAFS.910.RI.3.7:	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
LAFS.910.RI.3.8:	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
LAFS.910.RST.3.7:	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.910.W.1.1c:	Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
LAFS.910.W.1.1d:	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

LAFS.910.W.1.2b:	Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
LAFS.910.W.1.2c:	Use appropriate and varied transitions to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.
LAFS.910.W.1.2d:	Use precise language and domain-specific vocabulary to manage the complexity of the topic.
LAFS.910.W.1.2e:	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
LAFS.910.W.1.2f:	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
LAFS.910.W.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LAFS.910.W.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 9–10 on page 54.) Remarks/Examples ***Note***: The referenced "page 54" in the standard descriptor is from the adopted standards document that can be found here.
LAFS.910.W.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
LAFS.910.W.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format

	for citation.
LAFS.910.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LAFS.910.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
LAFS.910.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models). 5. **Plan investigations,** (Design and evaluate a scientific investigation). 6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized

way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).

7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

Remarks/Examples

Florida Standards Connections for 6-12 Literacy in Science

For Students in Grades 9-10

LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.

LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research.

For Students in Grades 11-12

LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure

	when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Florida Standards Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.4:	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. Remarks/Examples
	Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification. CCSS Connections: LAFS.910.RST.1.1 / LAFS.1112.RST.1.1.
SC.912.N.1.5:	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome. Remarks/Examples

	Recognize that contributions to science can be made and have been made by people from all over the world.
SS.912.P.12.1:	Define cognitive processes involved in understanding information. Remarks/Examples
	Examples may include, but are not limited to, encoding, storage, and retrieval.

RELATED GLOSSARY TERM DEFINITIONS (10)

Conduction:	To transmit heat, sound, or electricity through a medium.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Inference :	The act of reasoning from factual knowledge or evidence.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Light:	Electromagnetic radiation that lies within the visible range.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Observation :	What one has observed using senses or instruments.

Course: Research 3- 1700320

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/3860

BASIC INFORMATION

Course Number:	1700320
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, Research 3, RESEARCH
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Research 3
Course Abbreviated Title:	RESEARCH 3
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	The purpose of this course is to enable students to develop proficient knowledge and skills in the research process with emphasis on appropriate research design. The content should include, but not be limited to, the following:

	• research process • experimental, descriptive, and historical research • research design and methodology • legal and ethical issues in research • research questions and hypotheses • review of literature and other resources • data collection, analysis, and statistics • report formats, styles, and content • investigations • critical analysis of research

STANDARDS (32)

LAFS.1112.L.1.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

LAFS.1112.L.1.2: Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

LAFS.1112.SL.1.1: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others ideas and expressing their own clearly and persuasively.

LAFS.1112.W.3.9: Draw evidence from literary or informational texts to support analysis, reflection, and research.

LAFS.1112.WHST.1.1: Write arguments focused on discipline-specific content.

LAFS.1112.WHST.1.2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

The Common Core Mathematical Practices should be incorporated as appropriate.

LAFS.1112.RH.3.7:	Integrate and evaluate multiple sources of information

	presented in diverse formats and media (e.g., visually, quantitatively, as well as in words) in order to address a question or solve a problem.
LAFS.1112.RI.1.1:	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text, including determining where the text leaves matters uncertain.
LAFS.1112.RI.1.2:	Determine two or more central ideas of a text and analyze their development over the course of the text, including how they interact and build on one another to provide a complex analysis; provide an objective summary of the text.
LAFS.1112.RI.2.6:	Determine an author's point of view or purpose in a text in which the rhetoric is particularly effective, analyzing how style and content contribute to the power, persuasiveness or beauty of the text.
LAFS.1112.RI.3.7:	Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.
LAFS.1112.RI.3.8:	Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses).
LAFS.1112.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
LAFS.1112.SL.1.2:	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
LAFS.1112.SL.2.4:	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and

	a range of formal and informal tasks.
LAFS.1112.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.1112.W.1.1b:	Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant evidence for each while pointing out the strengths and limitations of both in a manner that anticipates the audience's knowledge level, concerns, values, and possible biases.
LAFS.1112.W.1.1c:	Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
LAFS.1112.W.1.2a:	Introduce a topic; organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.
LAFS.1112.W.1.2b:	Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.
LAFS.1112.W.1.2e:	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
LAFS.1112.W.1.2f:	Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
LAFS.1112.W.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LAFS.1112.W.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate

	command of Language standards 1–3 up to and including grades 11–12 on page 54.) Remarks/Examples
	Note: The referenced "page 54" in the standard descriptor is from the adopted standards document that can be found here.
LAFS.1112.W.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
LAFS.1112.W.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
LAFS.1112.W.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
LAFS.1112.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
LAFS.1112.WHST1.1a:	Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.
LAFS.1112.WHST1.1c:	Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.
LAFS.1112.WHST1.1d:	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
LAFS.1112.WHST1.2d:	Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage

	the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.
LAFS.1112.WHST1.2e:	Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
SS.912.P.12.1:	Define cognitive processes involved in understanding information. Remarks/Examples
	Examples may include, but are not limited to, encoding, storage, and retrieval.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models). 5. **Plan investigations,** (Design and evaluate a scientific investigation). 6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).

7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

Remarks/Examples

Florida Standards Connections for 6-12 Literacy in Science

For Students in Grades 9-10

LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.

LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research.

For Students in Grades 11-12

LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.

LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of

	information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Florida Standards Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.7:	Recognize the role of creativity in constructing scientific questions, methods and explanations. Remarks/Examples
	Work through difficult problems using creativity, and critical and analytical thinking in problem solving (e.g. convergent versus divergent thinking and creativity in problem solving). CCSS Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and MAFS.K12.MP.2: Reason abstractly and quantitatively.
SC.912.N.2.2:	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. Remarks/Examples
	Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled

	variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification). CCSS Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.2.3:	Identify examples of pseudoscience (such as astrology, phrenology) in society. Remarks/Examples
	Determine if the phenomenon (event) can be observed, measured, and tested through scientific experimentation.

RELATED GLOSSARY TERM DEFINITIONS (10)

Conduction:	To transmit heat, sound, or electricity through a medium.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Inference :	The act of reasoning from factual knowledge or evidence.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Light:	Electromagnetic radiation that lies within the visible range.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.

Observation :	What one has observed using senses or instruments.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.

Course: Critical Thinking and Study Skills-1700370

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/3864

BASIC INFORMATION

Course Number:	1700370
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, Critical Thinking and Study Skills, CRIT THINK ST SKLS
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Critical Thinking and Study Skills
Course Abbreviated Title:	CRIT THINK ST SKLS
Number of Credits:	Half credit (.5)
Course length:	Semester (S)
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	This course is designed to develop skills related to critical thinking, learning and problem solving, enabling students to enhance their performance in both academic and non-academic

	areas. Strategies for acquiring, storing and retrieving information, time management and organizational skills, critical thinking operations and processes, strategies for oral and written communication, and problem solving skills including test taking skills are an integral part of this course.

STANDARDS (24)

LAFS.910.SL.1.1: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others ideas and expressing their own clearly and persuasively.

LAFS.910.W.1.1: Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

LAFS.910.W.1.2: Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

LAFS.910.RH.1.1:	Cite specific textual evidence to support analysis of primary and secondary sources, attending to such features as the date and origin of the information.
LAFS.910.RH.1.2:	Determine the central ideas or information of a primary or secondary source; provide an accurate summary of how key events or ideas develop over the course of the text.
LAFS.910.RH.2.5:	Analyze how a text uses structure to emphasize key points or advance an explanation or analysis.
LAFS.910.RH.3.8:	Assess the extent to which the reasoning and evidence in a text support the author's claims.
LAFS.910.RI.1.1:	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
LAFS.910.RI.2.4:	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on

	meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
LAFS.910.RI.2.6:	Determine an author's point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.
LAFS.910.RI.3.7:	Analyze various accounts of a subject told in different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account.
LAFS.910.RI.3.8:	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
LAFS.910.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
LAFS.910.RST.1.2:	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
LAFS.910.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.W.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LAFS.910.W.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command

	of Language standards 1–3 up to and including grades 9–10 on page 54.) Remarks/Examples
	Note: The referenced "page 54" in the standard descriptor is from the adopted standards document that can be found here.
LAFS.910.W.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
MAFS.K12.MP.1.1:	**Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.
MAFS.K12.MP.3.1:	**Construct viable arguments and critique the reasoning of others.**

	Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
MAFS.K12.MP.6.1:	**Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.
SS.912.P.11.12:	Discuss strategies for improving the retrieval of memories.
SS.912.P.11.3:	Discuss strategies for improving the encoding of memory.

SS.912.P.11.7:	Discuss strategies for improving the storage of memories.
SS.912.P.12.2:	Define processes involved in problem solving and decision making. Remarks/Examples
	Examples may include, but are not limited to, identification, analysis, solution generation, plan, implement, and evaluate.

Course: Career Research and Decision Making- 1700380

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/3865

BASIC INFORMATION

Course Number:	1700380
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, Career Research and Decision Making, CAR RESA&DECI MAK, Decision Making
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Career Research and Decision Making
Course Abbreviated Title:	CAR RESA&DECI MAK
Number of Credits:	Half credit (.5)
Status:	Draft - Board Approval Pending
General Notes:	The purpose of this course is to further develop the career planning competencies mandated by section 1003.4156, Florida Statutes. This course will enable students to make informed career choices and develop the skills needed to successfully plan and apply for college or a job.

The alphanumeric coding scheme has changed –
Language Arts Common Core (LACC) is now Language Arts Florida Standards (LAFS)
Mathematics Common Core (MACC) is now Mathematics Florida Standards (MAFS)

	The content should include, but not be limited to, the following: • goal-setting and decision-making processes • self-assessment • sources of career information • occupational fields and educational requirements - postsecondary education and training opportunities - writing, listening, viewing, and speaking skills for applications and interviews • financial planning and sources of educational financial assistance • career planning **After successfully completing this course, the student will:** 1. Identify and demonstrate use of the steps of systematic goal-setting and decision-making processes. 2. Demonstrate use of techniques for self-assessment (e.g., inventories, journals, surveys, interviews) to determine personal career interests and capabilities. 3. Demonstrate use of strategies for identifying personal strengths and weaknesses and making improvements. 4. Demonstrate use of career resources to identify preferred occupational fields, career opportunities within each field, employment prospects, and education or training requirements. 5. Demonstrate appropriate writing, listening, viewing, and speaking skills needed to successfully apply for postsecondary education or work (e.g., writing a letter of application, résumé, or essay; compiling a portfolio; filling out an application; participating in an interview). 6. Understand the importance of financial planning and demonstrate knowledge of varied types and sources of financial aid to obtain assistance for postsecondary education. 7. Develop a personal education and career plan.
Version Requirements:	These requirements include, but are not limited to, the benchmarks from the Next Generation Sunshine State Standards and Common Core State Standards that are most relevant to this

	course. Benchmarks correlated with a specific course requirement may also be addressed by other course requirements as appropriate. Some requirements in this course are not addressed in the Sunshine State Standards. Other subject areas and content may be used to fulfill course requirements.

STANDARDS (52)

LAFS.910.SL.1.1 Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others ideas and expressing their own clearly and persuasively.

LAFS.910.L.1.1 Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

LAFS.910.L.1.2 Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

LAFS.910.W.1.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

LAFS.910.W.1.2 Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

HE.912.B.4.3:	Demonstrate strategies to prevent, manage, or resolve interpersonal conflicts without harming self or others. Remarks/Examples
	Effective verbal and nonverbal communication, compromise, and conflict-resolution.
HE.912.B.5.4:	Assess whether individual or collaborative decision making is needed to make a healthy decision. Remarks/Examples
	Planning a post-high school career/education, purchasing the family's groceries for the week, planning the weekly menu,

	planning appropriate activities for siblings, community planning, Internet safety, and purchasing insurance.
HE.912.C.2.2:	Compare how peers influence healthy and unhealthy behaviors. Remarks/Examples
	Binge drinking and social groups, sexual coercion [pressure, force, or manipulation] by a dating partner, students' recommendations for school vending machines, healthy lifestyle, review trends in current and emerging diseases, and use of helmets and seatbelts.
HE.912.C.2.3:	Assess how the school and community can affect personal health practice and behaviors. Remarks/Examples
	Healthier foods, required health education, health screenings, and enforcement of “no tolerance” policies related to all forms of violence, and AED availability and training.
LAFS.910.RI.1.1:	Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.
LAFS.910.RI.2.4:	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
LAFS.910.RI.2.6:	Determine an author’s point of view or purpose in a text and analyze how an author uses rhetoric to advance that point of view or purpose.
LAFS.910.RI.3.7:	Analyze various accounts of a subject told in different mediums (e.g., a person’s life story in both print and multimedia), determining which details are emphasized in each account.
LAFS.910.RI.3.8:	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating

	the credibility and accuracy of each source.
LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.910.SL.2.6:	Adapt speech to a variety of contexts and tasks, demonstrating command of formal English when indicated or appropriate. (See grades 9–10 Language standards 1 and 3 on page 54 for specific expectations.) Remarks/Examples ***Note***: The referenced "page 54" in the standard descriptor is from the adopted standards document that can be found here.
LAFS.910.W.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. (Grade-specific expectations for writing types are defined in standards 1–3 above.)
LAFS.910.W.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. (Editing for conventions should demonstrate command of Language standards 1–3 up to and including grades 9–10 on page 54.) Remarks/Examples ***Note***: The referenced "page 54" in the standard descriptor is from the adopted standards document that can be found here.
LAFS.910.W.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
LAFS.910.W.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question;

	integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
MA.912.F.1.1:	Explain the difference between simple and compound interest. Remarks/Examples
	Example: Compare the similarities and differences for calculating the final amount of money in your savings account based on simple interest or compound interest.
MA.912.F.3.10:	Calculate the effects on the monthly payment in the change of interest rate based on an adjustable rate mortgage. Remarks/Examples
	Example: You would like to borrow $245,000 using a 30-year, 1-year ARM indexed to the 1-year Treasury security with a 2.75 percent margin and 2/6 caps (2 percent per year and 6 percent lifetime). The initial interest rate on this loan is 2.75 percent. The lender is charging you 1.50 points and $1,200 in miscellaneous fees to close the loan. a) What is the initial payment on this mortgage? b) If the 1- year Treasury security is yielding 2.25 percent at the first adjustment date, what is your payment on this loan during the second year? c) Suppose that the 1-year Treasury is yielding 2.75 percent at the second adjustment date. What is the new payment on this loan during the third year? d) Assuming that you pay of the loan at the end of the third year, what yield did the lender earn on this loan? Now resolve all four parts of the last problem assuming that the loan has a 20 percent payment cap instead of 2/6 interest rate caps. a) What is the initial payment on this mortgage? b) If the 1- year Treasury security is yielding 2.25 percent at the first adjustment date, what is your payment on this loan during the second year? c) Suppose that the 1-year Treasury is yielding 2.75 percent at the second adjustment date. What is the new payment on this loan during the third year?

	d) Assuming that you pay of the loan at the end of the third year, what yield did the lender earn on this loan?
MA.912.F.3.11:	Calculate the final pay out amount for a balloon mortgage. Remarks/Examples
	Example: If you have a 5-year balloon mortgage with a 15 year amortization schedule, a rate of 6.5%, and a $100,000 loan what would the remaining balance be after the end of the fifth year?
MA.912.F.3.12:	Compare the cost of paying a higher interest rate and lower points versus a lower interest rate and more points. Remarks/Examples
	Example: Assuming all of the following were originally 15 year mortgages, which fixed rate mortgage cost the mortgagor the least? a) 7.375% interest + 0 points paid off in 10 years b) 7.375% interest + 0 points paid off in 7 years c) 7 % interest + 3 points paid off in 10 years d) 7 % interest + 3 points paid off in 7 years
SS.912.E.1.14:	Compare credit, savings, and investment services available to the consumer from financial institutions.
MA.912.F.3.13:	Calculate the total amount paid for the life of a loan for a house including the down payment, points, fees, and interest. Remarks/Examples
	Example: Calculate the total amount paid for a $100,000 house with a 15 year fixed rate loan at 5.65% if the mortgagor pays a $25,000 down payment; 2 points; 1% origination fee; maximum brokerage fee on a net loan; and State Documentary Stamps on the deed at a tax rate of $.70 per $100, the mortgage note at a tax rate of $.35 per $100, a and Intangible Tax at a rate of .002.
MA.912.F.3.14:	Compare the total cost for a set purchase price using a fixed rate, adjustable rate, and a balloon mortgage. Remarks/Examples
	Example: Find the total cost for a $225,000 mortgage for the

	following options: a) 30 year fixed rate mortgage with a rate of 6.35 % b) 3/1 ARM with a rate of 6.75% with a maximum adjustment of 2 points per year with a cap of 6 points for 30 years c) 10 year balloon mortgage with a 30 year amortization schedule with a rate of 5.5% Next describe the benefits and detriments of each mortgage option.
MA.912.F.3.2:	Analyze credit scores and reports. Remarks/Examples
	Example: Explain how each of the following categories affects a credit score: 1) past payment history, 2) amount of debt, 3) public records information, 4) length of credit history, and 5) the number of recent credit inquiries.
MA.912.F.3.3:	Calculate the finance charges and total amount due on a credit card bill. Remarks/Examples
	Example: Calculate the finance charge each month and the total amount paid for 5 months if you charged $500 on your credit card but you can only afford to pay $100 each month. Your credit card has a monthly periodic finance rate of .688% and an annual finance rate of 8.9%.
MA.912.F.3.4:	Compare the advantages and disadvantages of deferred payments. Remarks/Examples
	Example: Compare paying on a college loan between a Stafford loan or a PLUS loan two years after graduation
MA.912.F.3.5:	Calculate deferred payments. Remarks/Examples
	Example: You want to buy a sofa that cost $899. Company A will let you pay $100 down and then pay the remaining amount over 3 years at 22% interest. Company B will not make you pay a down payment and they will defer payments for one year. However,

	you will accrue interest at a rate of 20 % interest during that first year. Starting the second year you will have to pay the new amount for 2 years at a rate of 26 % interest. Which deal is better and why? Calculate the total amount paid for both deals. Example: An electronics company advertises that you don't have to pay anything for 2 years. If you bought a big screen TV for $2999 on January 1st what would your balance be two years later if you haven't made any payments assuming an interest rate of 23.99%? What would your monthly payments be to pay the TV off in 2 years? What did the TV really cost you?
MA.912.F.3.6:	Calculate total cost of purchasing consumer durables over time given different down payments, financing options, and fees. Remarks/Examples
	Example: Find the actual cost of a car and interest charged with a showroom price of $15,999, down payment of $1,600, rate of interest of 12%, and 30 monthly payments.
MA.912.F.3.9:	Calculate the total amount to be paid over the life of a fixed rate loan. Remarks/Examples
	Example: Calculate the total amount to be paid for a $275,000 loan at 5.75% interest over 30 years
MA.912.F.4.1:	Develop personal budgets that fit within various income brackets. Remarks/Examples
	Example: Develop a budget worksheet that includes typical expenses such as housing, transportation, utilities, food, medical expenses, and miscellaneous expenses. Add categories for savings toward your own financial goals, and determine the monthly income needed, before taxes, to meet the requirements of your budget.
MA.912.F.4.2:	Explain cash management strategies including debit accounts, checking accounts, and savings accounts. Remarks/Examples
	Example: Explain the difference between a checking account and a savings account. Why might you want to have both types of accounts? Why might you want to have only one or the other

	type? Why is it rare to find someone who has a savings account but no checking account?
MA.912.F.4.3:	Calculate net worth. Remarks/Examples
	Example: Jose is trying to prepare a balance sheet for the end of the year. His balances and details for the year are given in the table below. Write a balance sheet of Jose's liabilities and assets, and compute his net worth.
MA.912.F.4.4:	Establish a plan to pay off debt. Remarks/Examples
	Example: Suppose you currently have a balance of $4500 on a credit card that charges 18% annual interest. What monthly payment would you have to make in order to pay off the card in 3 years, assuming you do not make any more charges to the card?
MA.912.F.4.5:	Develop and apply a variety of strategies to use tax tables, and to determine, calculate, and complete yearly federal income tax. Remarks/Examples
	Example: Suppose that Joe had income of $40,000 in 2005, and had various deductions totaling $6,240. If Joe filed as a single person, how much income tax did he have to pay that year?
MA.912.F.4.6:	Compare different insurance options and fees.
MA.912.F.4.7:	Compare and contrast the role of insurance as a device to mitigate risk and calculate expenses of various options. Remarks/Examples
	Example: Explain why a person might choose to buy life insurance. Are there any circumstances under which one might not want life insurance?
MA.912.F.4.8:	Collect, organize, and interpret data to determine an effective retirement savings plan to meet personal financial goals. Remarks/Examples
	Example: Investigate historical rates of return for stocks, bonds, savings accounts, mutual funds, as well as the relative risks for

	each type of investment. Organize your results in a table showing the relative returns and risks of each type of investment over short and long terms, and use these data to determine a combination of investments suitable for building a retirement account sufficient to meet anticipated financial needs.
MA.912.F.4.9:	Calculate, compare, and contrast different types of retirement plans, including IRAs, ROTH accounts, and annuities. Remarks/Examples
	Example: Suppose you put $5000 per year into an IRA for 40 years. If the account pays 6% per year interest, how much would you have at the end of the 40 years? If, at that time, you are in the 15% income tax bracket, how much would this be after taxes? Suppose that, instead, you paid the tax each year on the $5000 at your current rate of 28% and put the remaining funds in a ROTH account paying 6% interest. How much would you then have after 40 years? Which appears to be the better option? What are some of the risks of deferring tax payments until retirement? Example: Explain the difference between an Individual Retirement Account (IRA) and a ROTH account. Why might somebody choose to put retirement funds in a ROTH account rather than an IRA?
MAFS.K12.MP.1.1:	**Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing

	window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.
MAFS.K12.MP.3.1:	**Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
MAFS.K12.MP.5.1:	**Use appropriate tools strategically.** Mathematically proficient students consider the available tools

	when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.
MAFS.K12.MP.6.1:	**Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.
SS.912.E.1.13:	Explain the basic functions and characteristics of money, and describe the composition of the money supply in the United States.

SS.912.E.1.15:	Describe the risk and return profiles of various investment vehicles and the importance of diversification. Remarks/Examples
	Examples are savings accounts, certificates of deposit, stocks, bonds, mutual funds, Individual Retirement Accounts.
SS.912.E.1.16:	Construct a one-year budget plan for a specific career path including expenses and construction of a credit plan for purchasing a major item. Remarks/Examples
	Examples of a career path are university student, trade school student, food service employee, retail employee, laborer, armed forces enlisted personnel. Examples of a budget plan are housing expenses, furnishing, utilities, food costs, transportation, and personal expenses - medical, clothing, grooming, entertainment and recreation, and gifts and contributions. Examples of a credit plan are interest rates, credit scores, payment plan.
SS.912.E.1.5:	Compare different forms of business organizations. Remarks/Examples
	Examples are sole proprietorship, partnership, corporation, limited liability corporation.
SS.912.E.2.1:	Identify and explain broad economic goals. Remarks/Examples
	Examples are freedom, efficiency, equity, security, growth, price stability, full employment.
SS.912.E.2.8:	Differentiate between direct and indirect taxes, and describe the progressivity of taxes (progressive, proportional, regressive). Remarks/Examples
	Examples are income, sales, social security.
SS.912.P.12.2:	Define processes involved in problem solving and decision

	making. Remarks/Examples
	Examples may include, but are not limited to, identification, analysis, solution generation, plan, implement, and evaluate.
SS.912.P.12.4:	Describe obstacles to problem solving. Remarks/Examples
	Examples may include, but are not limited to, fixation and functional fixedness.
SS.912.P.12.5:	Describe obstacles to decision making. Remarks/Examples
	Examples may include, but are not limited to, confirmation bias, counterproductive heuristics, and overconfidence.

RELATED GLOSSARY TERM DEFINITIONS (10)

Compound Interest:	A method of computing interest in which interest is computed from the up-to-date balance. That is, interest is earned on the interest and not just on original balance.
Difference:	A number that is the result of subtraction
Length:	A one-dimensional measure that is the measurable property of line segments.
Net:	A two-dimensional diagram that can be folded or made into a three-dimensional figure.
Percent:	Per hundred; a special ratio in which the denominator is always 100. The language of percent may change depending on the context. The most common use is in part-whole contexts, for

	example, where a subset is 40 percent of another set. A second use is change contexts, for example, a set increases or decreases in size by 40 percent to become 140% or 60% of its original size. A third use involves comparing two sets, for example set A is 40% of the size of set B, in other words, set B is 250 percent of set A.
Point:	A specific location in space that has no discernable length or width.
Rate:	A ratio that compares two quantities of different units.
Set:	A set is a finite or infinite collection of distinct objects in which order has no significance.
Similarity:	A term describing figures that are the same shape but are not necessarily the same size or in the same position.
Table:	A data display that organizes information about a topic into categories using rows and columns.

Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.

PE.912.M.1.35:	Select proper equipment and apply all appropriate safety procedures necessary for participation.
PE.912.M.1.5:	Apply strategies for self improvement based on individual strengths and needs.
PE.912.R.5.3:	Demonstrate sportsmanship during game situations. Remarks/Examples Some examples are controlling emotions, resolving conflicts, respecting opponents and officials, and accepting both victory and defeat.
PE.912.R.5.4:	Maintain appropriate personal, social and ethical behavior while participating in a variety of physical activities. Remarks/Examples Some examples are respecting teammates, opponents and officials, and accepting both victory and defeat.
PE.912.R.5.5:	Demonstrate appropriate etiquette, care of equipment, respect for facilities and safe behaviors while participating in a variety of physical activities.
PE.912.R.6.3:	Analyze the roles of games, sports and/or physical activities in other cultures.

Course: Advancement Via Individual Determination 1- 1700390

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4929

BASIC INFORMATION

Course Number:	1700390
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, Advancement Via Individual Determination 1, AVID 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Advancement Via Individual Determination 1
Course Abbreviated Title:	AVID 1
Number of Credits:	One credit (1)
Status:	Draft - Board Approval Pending
Version Description:	AVID (Advancement Via Individual Determination) is offered as a rigorous academic elective course that prepares students for success in four-year colleges. The AVID course is scheduled during the regular school day as a year-long course. Each week students receive instruction utilizing a rigorous college preparatory curriculum provided by AVID Center, tutor-facilitated

study groups, motivational activities and academic survival skills. There is an emphasis on analytical writing, preparation for college entrance and placement exams, study skills and test taking, note-taking, and research. In AVID, students participate in activities that incorporate strategies focused on writing, inquiry, collaboration, and reading to support their academic growth.

For students new to AVID, or for those with previous experience from middle grades, the ninth grade AVID Elective course will serve as a review of the AVID philosophy and strategies. Students will work on academic and personal goals and communication, adjusting to the high school setting. Students will increase awareness of their personal contributions to their learning, as well as their involvement in their school and community. There is an emphasis on analytical writing, focusing on personal goals and thesis writing. Students will work in collaborative settings, learning how to participate in collegial discussions and use sources to support their ideas and opinions. Students will prepare for and participate in college entrance and placement exams, while refining study skills and test-taking, note-taking, and research techniques. They will take an active role in field trip and guest speaker preparations and presentations. Their college research will include financial topics and building their knowledge on colleges and careers of interest.

This course shall integrate the Goal 3 Student Performance Standards of the Florida System of School Improvement and Accountability as appropriate to the content and processes of the subject matter.

Course student performance standards must be adopted by the district, and they must reflect appropriate Florida Standards.

Related AVID Standards

Domain CD: Character Development
Cluster 1 Self-Awareness
The student will:
AV.9.CD.1.1 - be reminded about SLANT interactions and expectations in all classes
AV.9.CD.1.2 - understand the role of AVID students and display characteristics on a regular basis
AV.9.CD.1.3 - develop skills in offering appropriate criticism

	AV.9.CD.1.4 - develop understanding about personal learning styles AV.9.CD.1.5 - complete self-evaluations about conflict resolution, personal behavior and core values AV.9.CD.1.6 - apply conflict management skills, aligning with the expectations of an AVID student AV.9.CD.1.7 - develop awareness of personal strengths/skills and utilize them to better the school and community **Cluster 2 Goals** The student will: AV.9.CD.2.1 - calculate grade point average and set academic and personal goals for success, being sure to monitor goals at the end of each grading period AV.9.CD.2.2 - revisit academic six-year to understand college entrance requirements and learn about AP/IB/honors course options AV.9.CD.2.3 - examine academic strengths and weaknesses that will aid in course selection patterns AV.9.CD.2.4 - create focused goals around college and the steps necessary to gain entrance AV.9.CD.2.5 - create short-, mid-, and long-term goals that support academic and personal growth AV.9.CD.2.6 - review and revise personal and academic goals during key times throughout the year AV.9.CD.2.7 - write an essay describing goals for success in high school, including the steps needed to achieve those goals and potential barriers to meeting those goals AV.9.CD.2.8 - discuss goals in an oral presentation, using organized information that integrates appropriate media in the presentation **Cluster 3 Community and School Involvement** The student will: AV.9.CD.3.1 - be exposed to a variety of school activities/clubs and community service opportunities at the beginning of each year AV.9.CD.3.2 - become active in at least one school or community service project/activity AV.9.CD.3.3 - track community service hours and extracurricular activity participation in a multi-year student portfolio **Cluster 4 Ownership of Learning**

	The student will: AV.9.CD.4.1 - access grades online or from teachers on a regular basis AV.9.CD.4.2 - analyze grade reports to create a study/action plan for continued academic improvement AV.9.CD.4.3 - seek opportunities outside of the AVID classroom to ask questions, clarify thinking and identify points of confusion AV.9.CD.4.4 - create positive peer connections through independent study groups **Domain COMM: Communication** **Cluster 1 Speaking** The student will: AV.9.COMM.1.1 - effectively integrate speaking terminology into speeches AV.9.COMM.1.2 - role play varying word choice, tone and voice when speaking to an assigned audience AV.9.COMM.1.3 - practice purposeful movement during speeches AV.9.COMM.1.4 - draft, edit, revise and present an informal and a formal speech AV.9.COMM.1.5 - work with a collaborative group to make presentations to the class following various activities AV.9.COMM.1.6 - use factually reliable evidence to support topic AV.9.COMM.1.7 - present information, findings and supporting evidence concisely and logically **Cluster 2 Listening** The student will: AV.9.COMM.2.1 - give feedback on student presentations and delivery AV.9.COMM.2.2 - pose questions that ask for clarification AV.9.COMM.2.3 - record key information in Cornell notes **Domain WRI: Writing** **Cluster 1 The Writing Process** The student will: AV.9.WRI.1.1 - use organizational strategies and tools to aid in the development of essays AV.9.WRI.1.2 - understand and identify the audience, purpose and form for writing assignments AV.9.WRI.1.3 - revise drafts multiple times to improve and clarify AV.9.WRI.1.4 - edit students' essays, especially checking for transaction words and errors in grammar, punctuation and

	comma usage AV.9.WRI.1.5 - use common editing marks during the editing process AV.9.WRI.1.6 - utilize rubrics to self-evaluate and peer evaluate work, especially those similar to AP exam rubrics AV.9.WRI.1.7 - reflect on their own writing to encourage continual growth **Cluster 2 Writing Skills** The student will: AV.9.WRI.2.1 - understand strategies to write effective three-part essays AV.9.WRI.2.2 - develop a clear and concise thesis for expository writing AV.9.WRI.2.3 - write with a focus on grammar, punctuation and comma usage AV.9.WRI.2.4 - include descriptive sentences in pieces of writing AV.9.WRI.2.5 - use appropriate and varied transitions to link major sections of the text, in order to create cohesion and clarify the relationships among complex ideas and concepts **Cluster 3 Writing Applications** The student will: AV.9.WRI.3.1 - develop and strengthen writing through the creation of a college research essay AV.9.WRI.3.2 - develop and strengthen writing through the creation of a Mandala essay AV.9.WRI.3.3 - write informative texts to examine and explain complex ideas, such as a complex process AV.9.WRI.3.4 - develop and strengthen writing through the creation of a "life goals" essay **Cluster 4 Writing to Learn** The student will: AV.9.WRI.4.1 - write summaries of information in various contexts AV.9.WRI.4.2 - differentiate between a summary and a reflection AV.9.WRI.4.3 - use learning logs to reflect upon performance on assessments, where the learning broke down, and where confusion exists **Domain INQ: Inquiry** **Cluster 1 Costa's Levels of Thinking**

	The student will: AV.9.INQ.1.1 - use Costa's Levels of Thinking words in assignments, discussions and notes AV.9.INQ.1.2 - focus on drawing connections between ideas, using compare and contrast questions **Cluster 2 Tutorials** The student will: AV.9.INQ.2.1 - refine collaborative tutorial skills through tutor-led discussions following tutorial sessions AV.9.INQ.2.2 - as a presenter initiate discussions by explaining the question (what strategies have been previously attempted and where they became confused in answering the question) AV.9.INQ.2.3 - utilize resources (such as Cornell notes and textbook) to gather information **Cluster 3 Socratic Seminar and Philosophical Chairs** The student will: AV.9.INQ.3.1 - work with peers to set rules for collegial discussions and decision-making AV.9.INQ.3.2 - analyze a seminal U.S. document of historical and literary significance (e.g., the Gettysburg Address, Washington's Farewell Address) in a Socratic Seminar or Philosophical Chairs discussion AV.9.INQ.3.3 - utilize critical reading strategies to identify authors' claims and formulate questions to explore meaning as preparation for a Socratic Seminar AV.9.INQ.3.4 - during the Socratic Seminar, ask additional questions to continue to deeper exploration of the text and one another's thinking and expressions AV.9.INQ.3.5 - reflect on the Socratic Seminar discussion and identify areas for future improvement **Domain COLL: Collaboration** **Cluster 1 Collaborative Skills** The student will: AV.9.COLL.1.1 - develop positive peer interaction skills through establishing group norms before, and reflective discussions following, collaborative activities AV.9.COLL.1.2 - utilize technology to interact and collaborate with others AV.9.COLL.1.3 - respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and when

warranted, justify one's own views and understanding and make new connections in light of the evidence and reasoning presented
AV.9.COLL.1.4 - Participate in team building lessons to learn about valuing and effectively working with others

Domain ORG: Organization
Cluster 1 Organization and Time Management
The student will:
AV.9.ORG.1.1 - refine organization and neatness of binder through ongoing course support, peer discussion, and personal reflection and goal setting
AV.9.ORG.1.2 - utilize a planner/agenda to track class assignments and grades
AV.9.ORG.1.3 - utilize a planner/agenda to balance social and academic commitments and color code planner to identify different topics (academic, social, extracurricular, etc.)
AV.9.ORG.1.4 - assess time usage and create a time management plan, which will allow for academic, extracurricular and recreational activities
AV.9.ORG.1.5 - begin developing a high school portfolio of personal academic work, accomplishments, awards and extracurricular involvement to show evidence of growth and use for college and scholarship applications
AV.9.ORG.1.6 - publish final versions of writing for the academic portfolio

Cluster 2 Note-Taking
The student will:
AV.9.ORG.2.1 - take 10 to 18 pages of quality Cornell notes per week
AV.9.ORG.2.2 - understand how to use notes to study, including the fold-over method
AV.9.ORG.2.3 - utilize notes during the tutorial process to support questioning and gathering of key learning
AV.9.ORG.2.4 - edit and revise notes outside of class to improve usability
AV.9.ORG.2.5 - refine process of identifying important points, using abbreviations and using shortcuts in the right column of Cornell notes
AV.9.ORG.2.6 - begin writing higher-level questions in the left column that correspond to chunks of information in the notes section
AV.9.ORG.2.7 - reflect on all notes taken during a unit of study

	after the test is returned and consider gaps of study that led to missed questions **Cluster 3 Research and Technology** The student will: AV.9.ORG.3.1 - use technology in assignments and presentations, using standardized citation styles to cite sources AV.9.ORG.3.2 - utilize technology to complete final drafts of assignments and conduct research AV.9.ORG.3.3 - establish a professionally structured email address (e.g., first initial last name @emailprovider.com) **Cluster 4 Test Preparation and Test-Taking** The student will: AV.9.ORG.4.1 - identify and reflect on areas of academic weakness and determine study and test-taking strategies that will aid in test preparation AV.9.ORG.4.2 - prepare for upcoming assessments based upon the format of the tests and previous assessment results AV.9.ORG.4.3 - understand grading rubric and prioritize time allotment on test sections based on point values AV.9.ORG.4.4 - learn to effectively manage test anxiety AV.9.ORG.4.5 - check all answers/responses prior to submitting test and change responses when sure of necessity **Domain REA: Reading** **Cluster 1 Vocabulary** The student will: AV.9.REA.1.1 - understand how to use context clues in interpreting new vocabulary AV.9.REA.1.2 - incorporate new words garnered from reading into academic speech and writing AV.9.REA.1.3 - determine or clarify the meaning of unknown and multiple meaning words using context clues and reference materials **Cluster 2 Textual Analysis** The student will: AV.9.REA.2.1 - understand and use pre-reading strategies to build background knowledge of unfamiliar texts AV.9.REA.2.2 - identify genre of text AV.9.REA.2.3 - read and discuss various examples of text, including articles from fiction and non-fiction

	AV.9.REA.2.4 - use multiple reading strategies, including Marking the Text and annotating text to identify claims and connect ideas AV.9.REA.2.5 - use rereading strategies to recall critical concepts during discussions and essay writing AV.9.REA.2.6 - use any subtitles to guide reading AV.9.REA.2.7 - record summaries, connections and questions in the margins **Domain CR: College Readiness** **Cluster 1 Guest Speakers** The student will: AV.9.CR.1.1 - prepare for guest speaker presentations by creating questions for the speakers prior to their visit AV.9.CR.1.2 - greet and escort guest speakers to the classroom AV.9.CR.1.3 - use skills of listening and note-taking during presentations by guest speakers AV.9.CR.1.4 - gather insight from a variety of guest speakers who discuss various aspects of their careers AV.9.CR.1.5 - draft, peer edit, revise and create a final draft of a letter and/or project of appreciation to guest speakers **Cluster 2 Field Trips** The student will: AV.9.CR.2.1 - participate in field trips to include one or two college/university visits that are different from previous year AV.9.CR.2.2 - engage in at least one "e-trip" that has an interactive component that is outside of the state AV.9.CR.2.3 - use skills of listening and note-taking during field trip experiences AV.9.CR.2.4 - draft, edit, revise and create final draft of writing that reflects on learning from field trip experience(s) **Cluster 3 College and Career Knowledge** The student will: AV.9.CR.3.1 - research college admission requirements, with emphasis on cost of living, tuition, and financial aid for a college of choice AV.9.CR.3.2 - continue developing a basic understanding of college vocabulary AV.9.CR.3.3 - research a career of interest based upon career values AV.9.CR.3.4 - participate in career awareness tests and activities to help build awareness of personal strengths

Course: Advancement Via Individual Determination 2- 1700400

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4930

BASIC INFORMATION

Course Number:	1700400
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, Advancement Via Individual Determination 2, Advancement, AVID 2
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Advancement Via Individual Determination 2
Course Abbreviated Title:	AVID 2
Number of Credits:	One credit (1)
Status:	Draft - Board Approval Pending
Version Description:	AVID (Advancement Via Individual Determination) is offered as a rigorous academic elective course that prepares students for success in four-year colleges. The AVID course is scheduled during the regular school day as a year-long course. Each week students receive instruction utilizing a rigorous college preparatory curriculum provided by AVID Center, tutor-facilitated study

groups, motivational activities and academic survival skills. There is an emphasis on analytical writing, preparation for college entrance and placement exams, study skills and test taking, note-taking, and research. In AVID, students participate in activities that incorporate strategies focused on writing, inquiry, collaboration, and reading to support their academic growth.

Students in the tenth grade AVID Elective course will refine the AVID strategies to meet their independent needs and learning styles. Students will continue to refine and adjust their academic learning plans and goals, increasing awareness of their actions and behaviors. As students increase the rigorous course load and school/community involvement, they will refine their time management and study skills accordingly. Students will expand their writing portfolio to include: analyzing prompts, supporting arguments and claims, character analysis and detailed reflections. Students will also analyze various documents, in order to participate in collaborative discussions and develop leadership skills in those settings. Students will expand their vocabulary use, continuing to prepare for college entrance exams and preparation. Text analysis will focus on specific strategies to understand complex texts. Lastly, students will narrow down their college and careers of interest, based on personal interests and goals.

This course shall integrate the Goal 3 Student Performance Standards of the Florida System of School Improvement and Accountability as appropriate to the content and processes of the subject matter.

Course student performance standards must be adopted by the district, and they must reflect appropriate Florida Standards.

Related AVID Standards

Domain CD: Character Development
Cluster 1 Self-Awareness
The student will:
AV.10.CD.1.1 - Demonstrate scholarly attributes in working with adults and peers
AV.10.CD.1.2 - understand the role of AVID students and display characteristics on a regular basis
AV.10.CD.1.3 - align learning and study strategies to personal

	learning style AV.10.CD.1.4 - demonstrate the ability to successfully resolve conflicts and disputes with peers and teachers AV.10.CD.1.5 - reassess previous year's interests and pursuits, in order to realign current activities to further develop abilities AV.10.CD.1.6 - assess areas of weakness and develop plans to address those weaknesses **Cluster 2 Goals** The student will: AV.10.CD.2.1 - reassess academic six-year to evaluate progress toward meeting all college entrance requirements upon high school graduation and adapt plans if any courses need to be retaken due to low academic grades AV.10.CD.2.2 - examine academic strengths that will aid in course selection patterns, especially around honors and AP courses AV.10.CD.2.3 - reassess short-, mid-, and long-term goals that will continue to ensure academic and personal growth AV.10.CD.2.4 - review and revise personal and academic goals, specifically those dealing with college and career aspirations AV.10.CD.2.5 - set and monitor goals around community service, extracurricular activity involvement and academic testing **Cluster 3 Community and School Involvement** The student will: AV.10.CD.3.1 - continue in extracurricular clubs, programs, community service and athletics of interest to demonstrate commitment, in addition to seeking out positions of leadership, such as club officers or captains AV.10.CD.3.2 - determine a service learning project to participate in as a class AV.10.CD.3.3 - track community service hours and extracurricular activity participation in a multi-year student portfolio **Cluster 4 Ownership of Learning** The student will: AV.10.CD.4.1 - access grades online or from teachers on a regular basis AV.10.CD.4.2 - analyze grade reports to create a study/action plan for continued academic improvement AV.10.CD.4.3 - seek opportunities outside of the AVID classroom to ask questions, clarify thinking and identify points of confusion AV.10.CD.4.4 - create positive peer connections through

	independent study groups **Domain COMM: Communication** **Cluster 1 Speaking** The student will: AV.10.COMM.1.1 - role play varying word choice, tone and voice when speaking to an assigned audience AV.10.COMM.1.2 - practice purposeful gestures during speeches AV.10.COMM.1.3 - refine use of vocal projection in both formal speeches and Socratic Seminar settings AV.10.COMM.1.4 - incorporate technology and/or visual aids to increase effectiveness of the speech or presentation AV.10.COMM.1.5 - practice speaking skills through mock job interviews AV.10.COMM.1.6 - present information, findings and supporting evidence concisely and logically AV.10.COMM.1.7 - integrate multiple sources of information AV.10.COMM.1.8 - participate in group discussion, progressing the discussion into deeper levels of thinking **Cluster 2 Listening** The student will: AV.10.COMM.2.1 - record key learning points and provide feedback using Cornell notes AV.10.COMM.2.2 - effectively summarize ideas from a discussion **Domain WRI: Writing** **Cluster 1 The Writing Process** The student will: AV.10.WRI.1.1 - practice strategies for pre-writing in response to various prompts for both timed writing and process writing AV.10.WRI.1.2 - analyze a prompt for timed writing solutions AV.10.WRI.1.3 - edit students' essays, especially checking for the usage of varied sentence types AV.10.WRI.1.4 - utilize rubrics to self-evaluate and peer evaluate work, especially those similar to AP exam rubrics **Cluster 2 - Writing Skills** The student will: AV.10.WRI.2.1 - refine strategies to write effective paragraphs AV.10.WRI.2.2 - focus on expanding word choice in all aspects of writing AV.10.WRI.2.3 - write with a focus on using varied sentence types

	(simple, compound, complex) AV.10.WRI.2.4 - incorporate transitions to improve flow within a paragraph and logically tie together academic arguments AV.10.WRI.2.5 - support arguments and claims of evidence using textual sources **Cluster 3 Writing Applications** The student will: AV.10.WRI.3.1 - develop and strengthen writing through the creation of a career research essay AV.10.WRI.3.2 - develop and strengthen writing through the creation of an argumentative essay AV.10.WRI.3.3 - develop and strengthen writing through the creation of a character analysis AV.10.WRI.3.4 - use writing activities from content area classes to practice, develop and refine writing skills **Cluster 4 Writing to Learn** The student will: AV.10.WRI.4.1 - evaluate summaries using rubrics and checklists AV.10.WRI.4.2 - utilize reflective logs to evaluate note-taking habits and set subsequent goals to improve upon past learning AV.10.WRI.4.3 - write detailed reflections on experiences, presentations and speeches, focusing on how the knowledge is applied to decisions **Domain INQ: Inquiry** **Cluster 1 Costa's Levels of Thinking** The student will: AV.10.INQ.1.1 - use skilled questioning to elicit deeper thinking from self and others **Cluster 2 Tutorials** The student will: AV.10.INQ.2.1 - refine collaborative tutorial skills through tutor-led discussions following tutorial sessions with a focus on higher-level questioning AV.10.INQ.2.2 - complete a higher-level reflection about the learning process during tutorials **Cluster 3 Socratic Seminar and Philosophical Chairs** The student will: AV.10.INQ.3.1 - utilize critical reading strategies to determine

	main ideas/claims as a pre-activity to Socratic Seminar and Philosophical Chairs discussions AV.10.INQ.3.2 - come to Socratic Seminar/Philosophical Chairs discussions prepared, having read and researched material under study and explicitly draw on that preparation by referring to evidence from texts AV.10.INQ.3.3 - analyze a seminal U.S. document of historical and literary significance (e.g., Roosevelt's Four Freedoms speech, Letter from Birmingham Jail) in a Socratic Seminar or Philosophical Chairs discussion AV.10.INQ.3.4 - analyze various accounts of a subject told through different mediums (e.g., a person's life story in both print and multimedia), determining which details are emphasized in each account in both a Socratic Seminar or Philosophical Chairs discussion AV.10.INQ.3.5 - propel conversations by posing and responding to questions that relate the current discussions to broader themes or larger ideas AV.10.INQ.3.6 - focus on the development of leadership skills and self-refinement during Socratic Seminar discussions AV.10.INQ.3.7 - Summarize points of agreement and disagreement **Domain COLL: Collaboration** **Cluster 1 Collaborative Skills** The student will: AV.10.COLL.1.1 - develop positive peer interaction skills through creating group norms and reflective discussions following collaborative activities AV.10.COLL.1.2 - focus on academic language skills that will develop strong peer-instructor relationships AV.10.COLL.1.3 - practice using encouragement and positive affirmations with peers AV.10.COLL.1.4 - evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying and fallacious reasoning or exaggerated or distorted evidence AV.10.COLL.1.5 - utilize technology to interact and collaborate with others and foster trust building skills by working with partners to complete a specified task AV.10.COLL.1.6 - enhance understanding of collaboration by working in groups during team building and motivational activities or problem solving AV.10.COLL.1.7 - participate in group discussions and reflections

based on collaborative work
AV.10.COLL.1.8 - acknowledge new information expressed by others, and when warranted, modify one's own views
AV.10.COLL.1.9 - refine inquiry, listening and oral communication skills through a variety of activities, including tutorials, presentations, Socratic Seminars, and Philosophical Chairs

Domain ORG: Organization
Cluster 1 Organization and Time Management
The student will:
AV.10.ORG.1.1 - refine organization and neatness of binder through ongoing course support, peer discussion, and personal reflection and goal setting
AV.10.ORG.1.2 - utilize a planner/agenda to track class assignments and grades
AV.10.ORG.1.3 - utilize a planner/agenda to balance social and academic commitments and use backwards mapping for major projects or tests
AV.10.ORG.1.4 - analyze grades to adjust study habits and time allocations
AV.10.ORG.1.5 - continuously add to and reflect on multi-grade portfolio throughout the school year
AV.10.ORG.1.6 - present portfolio of personal academic work at the end of the year using peer feedback and suggestions for improvement
AV.10.ORG.1.7 - publish final versions of writing for the academic portfolio

Cluster 2 Note-Taking
The student will:
AV.10.ORG.2.1 - take 10 to 18 pages of quality Cornell notes per week
AV.10.ORG.2.2 - utilize notes after the tests to reexamine incorrect items on the tests and where potential gaps might exist
AV.10.ORG.2.3 - create visuals or symbols in the right column to represent and help recall information
AV.10.ORG.2.4 - change pen colors to indicate change in concept
AV.10.ORG.2.5 - refine the skill of composing an essential question based on the standard or objective covered by the lesson
AV.10.ORG.2.6 - write higher-level summaries for Cornell notes that link all of the learning together

Cluster 3 Research and Technology
The student will:
AV.10.ORG.3.1 - use technology in assignments and presentations, using proper MLA style to cite sources
AV.10.ORG.3.2 - utilize technology to complete final drafts of assignments and conduct research
AV.10.ORG.3.3 - use technology to share, store and collaborate on projects
AV.10.ORG.3.4 - research careers and postsecondary institutions via the Internet, gathering information about majors and the atmosphere of the colleges/universities

Cluster 4 Test Preparation and Test-Taking
The student will:
AV.10.ORG.4.1 - use graded assessments to identify and reflect on academic weakness and determine study and test-taking strategies that will aid in test preparation
AV.10.ORG.4.2 - utilize strategies for various types of tests, in preparation for midterm and final exams

Domain REA: Reading
Cluster 1 Vocabulary
The student will:
AV.10.REA.1.1 - expand vocabulary, especially those utilized on SAT/ACT testing and properly incorporate them into writings to vary word usage
AV.10.REA.1.2 - develop interpretation skills, using root word, prefix and suffix
AV.10.REA.1.3 - demonstrate independence in gathering vocabulary knowledge

Cluster 2 Textual Analysis
The student will:
AV.10.REA.2.1 - learn to determine purpose of reading, in order to correctly choose a proper method of reading
AV.10.REA.2.2 - read and discuss various examples of text, including articles from fiction and non-fiction
AV.10.REA.2.3 - mark texts to track understanding of the text and questions about reading
AV.10.REA.2.4 - utilize charting of the text to track various points of view and opposing claims
AV.10.REA.2.5 - determine author's tone and voice
AV.10.REA.2.6 - demonstrate a comprehensive understanding of

	significant ideas expressed in written works by identifying important ideas, recognizing inferences and drawing conclusions **Domain CR: College Readiness** **Cluster 1 Guest Speakers** The student will: AV.10.CR.1.1 - practice strong usage o/f academic language through thought-provoking questions that clarify or will lead to greater depth of knowledge AV.10.CR.1.2 - practice listening and note-taking skills with guest speakers from both the school and community and integrate information into student projects and presentations AV.10.CR.1.3 - write letters of appreciation to guest speakers, making sure to reflect on and express learning from the presentation **Cluster 2 Field Trips** The student will: AV.10.CR.2.1 - participate in field trips to including, but not limited to, the following: one or two college/university visits that are different from previous year, including time spent with admissions counselors, and a field trip that has a career focus AV.10.CR.2.2 - meet set minimum grade and behavior criteria (as determined by the school), in order to attend the field trips AV.10.CR.2.3 - use skills of listening and note-taking during field trip experiences AV.10.CR.2.4 - track thoughts and potential attendance of the college/university through Cornell notes, learning logs, and/or reflective essays **Cluster 3 College and Career Knowledge** The student will: AV.10.CR.3.1 - narrow down potential colleges/universities of interest, choosing campuses that fit personality, academic interests and goals AV.10.CR.3.2 - sign-up for ongoing information regarding admissions and potential scholarships from colleges/universities of interest AV.10.CR.3.3 - develop an understanding of the college application process and required information AV.10.CR.3.4 - begin developing an understanding of career paths and the associated college degree

	Cluster 4 College Entrance Testing The student will: AV.10.CR.4.1 - prepare for, take and analyze the results for the PSAT and/or PLAN tests AV.10.CR.4.2 - focus on strategies to help determine correct answers on high-stakes tests AV.10.CR.4.3 - continue developing vocabulary skills by reviewing roots, prefixes, suffixes, and ACT and SAT word lists AV.10.CR.4.4 - understand the differences between various college entrance tests **Cluster 5 College Admissions and Financial Aid** The student will: AV.10.CR.5.1 - identify key differences between costs for public and private universities AV.10.CR.5.2 - examine potential scholarships from colleges of interest and local scholarships and design plans to meet selection criteria
General Notes:	**Special Note:** Skills acquired in this course will be implemented by the student across the curriculum. Advancement Via Individual Determination II (AVID II) is a rigorous course offered by AVID Center, and content must be provided as specified by AVID Center. Students who are successful in this course will be on the appropriate pathway to success in AVID III and IV. Teachers must receive training from AVID Center to teach this course.
Version Requirements:	These requirements include, but are not limited to, the Florida Standards that are most relevant to this course. Standards correlated with a specific course requirement may also be addressed by other course requirements as appropriate. Some requirements in this course are not addressed in the Florida Standards. Other subject areas and content may be used to fulfill course requirements. This course includes an agreement related to minimum standards for behavior, attendance, and participation.

	Cluster 4 College Entrance Testing The student will: AV.9.CR.4.1 - take and analyze the results from a PLAN and/or PSAT test AV.9.CR.4.2 - develop vocabulary skills by reviewing roots, prefixes, suffixes, and ACT and SAT word lists AV.9.CR.4.3 - collaboratively problem solve PSAT/PLAN test preparatory items **Cluster 5 College Admissions and Financial Aid** The student will: AV.9.CR.5.1 - understand the importance of community service and grades as a requirement for scholarships AV.9.CR.5.2 - identify schools of interest and examine cost of attendance
General Notes:	**Special Note:** Skills acquired in this course will be implemented by the student across the curriculum. Advancement Via Individual Determination I (AVID I) is a rigorous course offered by AVID Center, and content must be provided as specified by AVID Center. Students who are successful in this course will be on the appropriate pathway to success in AVID II, III and IV. Teachers must receive training from AVID Center to teach this course.
Version Requirements:	These requirements include, but are not limited to, the Florida Standards that are most relevant to this course. Standards correlated with a specific course requirement may also be addressed by other course requirements as appropriate. Some requirements in this course are not addressed in the Florida Standards. Other subject areas and content may be used to fulfill course requirements. This course includes an agreement related to minimum standards for behavior, attendance, and participation.

Course: Advancement Via Individual Determination 3- 1700410

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4931

BASIC INFORMATION

Course Number:	1700410
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, AVID 3, Advancement Via Individual Determination 3, Advancement, Individual
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Advancement Via Individual Determination 3
Course Abbreviated Title:	AVID 3
Number of Credits:	One credit (1)
Status:	Draft - Board Approval Pending
Version Description:	AVID (Advancement Via Individual Determination) elective courses at all grade levels are designed to prepare students for success in four-year colleges and universities. The courses emphasize rhetorical reading, analytical writing, collaborative discussion strategies, tutorial inquiry study groups, preparation for college entrance and placement exams, college study skills

and test taking strategies, note taking and research.

The eleventh grade AVID Elective course is the first part in a junior/senior seminar course that focuses on writing and critical thinking expected of first- and second-year college students. This course is organized around the theme of "Leadership as a Catalyst for Change in Society." Students study, in depth, exceptional leaders in contemporary society and examine the effect these individuals have had on culture, politics, education, history, science and the arts. The course requires that students read essays, speeches, articles and letters by these leaders, as well as at least one full-length work by the leader or about the leader. Also, each student is required to conduct a research project that is presented in the senior year. In addition to the academic focus of the AVID seminar, there are college-bound activities, methodologies and tasks that should be undertaken during the junior year to support students as they apply to four-year universities and confirm their postsecondary plans.

This course shall integrate the Goal 3 Student Performance Standards of the Florida System of School Improvement and Accountability as appropriate to the content and processes of the subject matter.

Course student performance standards must be adopted by the district, and they must reflect appropriate Florida Standards.

Related AVID Standards

Domain CD: Character Development
Cluster 1 Self-Awareness
The student will:
AV.11.CD.1.1 - understand the role of AVID students and display characteristics on a regular basis, especially to younger AVID students
AV.11.CD.1.2 - serve a mentor and role model to younger AVID students
AV.11.CD.1.3 - develop skills in offering and receiving criticism
AV.11.CD.1.4 - identify potential academic challenges that may occur and seek proactive solutions with teachers
AV.11.CD.1.5 - examine potential career paths and college degrees that align with abilities, talents and interests
AV.11.CD.1.6 - align senior year course selection with identified

	interests and ability to aid in a smooth collegiate transition **Cluster 2 Goals** The student will: AV.11.CD.2.1 - check progress toward short- and mid-term goals, including grade point average AV.11.CD.2.2 - review academic six-year plan, checking to assure rigorous course load through graduation AV.11.CD.2.3 - develop action steps to achieve desired scores on the SAT and ACT AV.11.CD.2.4 - refine goals based on interests, talents and abilities AV.11.CD.2.5 - refine plans for ongoing personal and academic development AV.11.CD.2.6 - create living document with written goals, broken down into steps to use throughout the year AV.11.CD.2.7 - reflect upon previous year's goals and discuss successes and challenges of reaching those goals AV.11.CD.2.8 - reflect upon previous year's long term goal and revise as necessary, focusing on specific goals dedicated to planning for college and career **Cluster 3 Community and School Involvement** The student will: AV.11.CD.3.1 - continue with select school activities/clubs and community service opportunities throughout the year, especially clubs for upper-classmen (e.g., National Honor Society) AV.11.CD.3.2 - focus on leadership positions within school clubs AV.11.CD.3.3 - track community service hours and extracurricular activity participation in a multi-year student portfolio AV.11.CD.3.4 - consider putting on a class community service activity within collaborative groups AV.11.CD.3.5 - ask for letters of recommendation from club advisors with whom a strong relationship has been established AV.11.CD.3.6 -consider peer tutoring in after-school programs or at surrounding middle schools **Cluster 4 Ownership of Learning** The student will: AV.11.CD.4.1 - access grades online or from teachers on a regular basis AV.11.CD.4.2 - analyze grade reports to create a study/action plan for continued academic improvement

AV.11.CD.4.3 - communicate effectively with teachers, counselors and administrators to discuss areas of concern or a need for clarity
AV.11.CD.4.4 - increase awareness of how various content areas are connected
AV.11.CD.4.5 - integrate academic questions before, during and after class with teachers and peers

Domain COMM: Communication
Cluster 1 Speaking
The student will:
AV.11.COMM.1.1 - refine all aspects of public speaking and presenting
AV.11.COMM.1.2 - seamlessly incorporate visual aids of varying types into speeches and presentations
AV.11.COMM.1.3 -present research findings as a group on "A Leader as a Catalyst for Change" assignment
AV.11.COMM.1.4 - refine speaking skills through working with peers to promote civil, democratic discussions and decision-making
AV.11.COMM.1.5 - speak in a variety of public venues as an AVID representative or ambassador

Cluster 2 Listening
The student will:
AV.11.COMM.2.1 - listen and respond to others in formal and informal settings
AV.11.COMM.2.2 - effectively summarize ideas from a discussion, noting how their personal views on the topic have changed or been influenced
AV.11.COMM.2.3 - critically evaluate and analyze oral presentations

Domain WRI: Writing
Cluster 1 The Writing Process
The student will:
AV.11.WRI.1.1 - organize, monitor progress, and effectively manage time requirements surrounding complex writing assignments
AV.11.WRI.1.2 - analyze a prompt, distinguishing between writing under testing conditions and untimed situations
AV.11.WRI.1.3 - revise drafts as necessary until all ideas are expressed in the best possible manner

	AV.11.WRI.1.4 - edit students' essays, especially checking for integration of quotes and citations AV.11.WRI.1.5 - utilize rubrics to self-evaluate and peer evaluate work, especially those similar to AP exam rubrics AV.11.WRI.1.6 - reflect on one's own writing to set future goals and/or determine next steps or needs as a writer **Cluster 2 Writing Skills** The student will: AV.11.WRI.2.1 - develop well-constructed thesis statements, which properly capture the paper's topic AV.11.WRI.2.2 - effectively integrate quotes into writing AV.11.WRI.2.3 - utilize multiple structures commonly used at collegiate levels, such as MLA/APA citations, source integration and abstract writing AV.11.WRI.2.4 - focus on improving sentences through word choice and varying sentence structure **Cluster 3 Writing Applications** The student will: AV.11.WRI.3.1 - develop and strengthen writing through the creation of a biography on a historical leader AV.11.WRI.3.2 - develop and strengthen writing through the creation of a college admissions essay AV.11.WRI.3.3 - develop and strengthen writing through the creation of a "life goals" essay focused on college AV.11.WRI.3.4 - produce a friendly letter focusing on professional response, reflecting needs in college and professional careers AV.11.WRI.3.5 - draft and respond to Summer Institute Speaker contests **Cluster 4 Writing to Learn** The student will: AV.11.WRI.4.1 - refine skills of summarizing information in various contexts AV.11.WRI.4.2 - reflect upon research skills gained during the research project (Leaders as a Catalyst for Change) and how those skills will relate to postsecondary education **Domain INQ: Inquiry** **Cluster 1 Costa's Levels of Thinking** The student will: AV.11.INQ.1.1 - refine collaborative group study skills during

	academic tutorials so that students are able to form groups independently for each core class, especially around college level courses **Cluster 2 Tutorials** The student will: AV.11.INQ.2.1 - with other group members and presenter lead the discussion with minimal tutor input AV.11.INQ.2.2 - complete a higher-level reflection about the learning process during tutorials **Cluster 3 Socratic Seminar and Philosophical Chairs** The student will: AV.11.INQ.3.1 - provide the central statement for Philosophical Chairs AV.11.INQ.3.2 - formulate questions to make a personal connection with text(s) and/or other content/concepts AV.11.INQ.3.3 - evaluate ideas/points of view within the discussion and generate/construct appropriate responses AV.11.INQ.3.4 - appreciate multiple perspectives, in order to negotiate multiple meanings or ideas during the discussion AV.11.INQ.3.5 - prepare an academic argument on a controversial topic, integrating fully developed claims AV.11.INQ.3.6 - analyze a 17th, 18th, or 19th century foundational U.S. document of historical and literary significance (e.g., The Declaration of Independence or the Preamble to the Constitution) for their themes, purposes and rhetorical features in a Socratic Seminar or Philosophical Chairs discussion **Domain COLL: Collaboration** **Cluster 1 Collaborative Skills** The student will: AV.11.COLL.1.1 - independently create study groups for academically rigorous coursework, with discussion on creating group norms and expectations AV.11.COLL.1.2 - develop positive peer relationships, especially with those taking advanced coursework AV.11.COLL.1.3 - provide opportunity for peer tutoring in after-school programs or at surrounding middle schools **Domain ORG: Organization** **Cluster 1 Organization and Time Management** The student will:

	AV.11.ORG.1.1 - refine the use of organizational tools, such as assignment logs, calendars, agendas, and planners, consider color coding to distinguish types of tasks and develop an individualized style AV.11.ORG.1.2 - adjust commitments to ensure that sufficient time is available to meet academic goals, as well as extracurricular activities and a job, as necessary AV.11.ORG.1.3 - reflect at the end of eleventh grade about summer priorities, next year's time commitment, and potential to successfully navigate all courses, especially college level coursework, successfully AV.11.ORG.1.4 - reflect on academic performance and independently adjust study habits and time management skills as needed AV.11.ORG.1.5 - continuously add to and reflect on multi-grade portfolio throughout the school year AV.11.ORG.1.6 -publish final versions of writing for the academic portfolio **Cluster 2 Note-Taking** The student will: AV.11.ORG.2.1 - take 15 to 25 pages of quality Cornell notes per week AV.11.ORG.2.2 - utilize Cornell notes as an advanced study tool, which will be continually refined and studied independently AV.11.ORG.2.3 - adapt organization strategy of note-taking to meet required academic tasks, such as lectures, lab work, reading or collaborative work AV.11.ORG.2.4 - use the skills of underlining key terms, highlighting and going back to fill in gaps to sufficiently process notes that have been taken AV.11.ORG.2.5 - review, refine and use color-coding on notes focusing on unimportant information, key information and potential test questions AV.11.ORG.2.6 - refine content on notes as new understanding is gained through reading textbook(s), tutorial sessions, study groups and discussions with the teacher/peers AV.11.ORG.2.7 - refine writing of higher-level questions in the left column that corresponds to chunks of information in the notes section to ensure that they will generate higher-level thinking AV.11.ORG.2.8 - reflect on all notes taken during a unit of study after the test is returned and consider gaps of study that led to missed questions

Cluster 3 Research and Technology
The student will:
AV.11.ORG.3.1 - expand proficiency with technological learning tools, especially advanced features of MS Word, PowerPoint, and video editing software
AV.11.ORG.3.2 - complete an in-depth research project focused on a leader, where the student utilizes books, Internet, and primary source documents
AV.11.ORG.3.3 - work with the class to complete a research project
AV.11.ORG.3.4 - work with a small group to complete a research project
AV.11.ORG.3.5 - research and apply for college scholarships

Cluster 4 Test Preparation and Test-Taking
The student will:
AV.11.ORG.4.1 - discuss test-taking strategies with core content teachers, in order to support efforts in preparing for exams
AV.11.ORG.4.2 - analyze test results and bring missed questions to tutorials to discuss and solve with peer groups

Domain REA: Reading
Cluster 1 Vocabulary
The student will:
AV.11.REA.1.1 - relate new vocabulary to familiar words
AV.11.REA.1.2 - infer word meaning using knowledge of advanced prefixes, suffixes and root words
AV.11.REA.1.3 - chart new words during reading of increasingly complex texts
AV.11.REA.1.4 - utilize concept mapping to determine word usage and various meanings

Cluster 2 Textual Analysis
The student will:
AV.11.REA.2.1 - analyze multiple interpretations of a story, drama or poem, evaluating how each version interprets the source text
AV.11.REA.2.2 - analyze collegiate level writing prompts to determine purpose
AV.11.REA.2.3 - analyze the features and rhetorical devices used in different types of non-fiction: essays, speeches, editorials, scientific reports and historical documentaries
AV.11.REA.2.4 - effectively summarize sections of an argument,

	text or film AV.11.REA.2.5 - focus on a three-part source integration, including source, paraphrase/direct quote, and comment about its relevance to the argument AV.11.REA.2.6 - deliberately select rereading strategies that will assist in understanding of the text AV.11.REA.2.7 - determine how best to take notes or record information garnered from readings or films, especially those dealing with advanced content AV.11.REA.2.8 - analyze philosophical and political arguments AV.11.REA.2.9 - analyze an author's proof in order to isolate key evidence, identify types of evidence being presented, and analyze its value and impact on the arguement **Domain CR: College Readiness** **Cluster 1 Guest Speakers** The student will: AV.11.CR.1.1 - investigate possible guest speakers to support research and career projects AV.11.CR.1.2 - formulate and ask questions during guest speaker presentations, such as college admissions officers, financial aid advisors, current college students and/or AVID graduates, or professionals from various careers AV.11.CR.1.3 - utilize Cornell notes as a means to track main points from guest speakers, keeping them as an ongoing reflective tool as part of a multi-year portfolio AV.11.CR.1.4 - reflect upon guest speakers of the previous two years AV.11.CR.1.5 - reflect upon guest speakers and areas of interest, possibly seeking opportunities to job shadow or potential internships in areas of interest **Cluster 2 Field Trips** The student will: AV.11.CR.2.1 - attend as many college/university visits as possible, with opportunities to sit in on college classes or attend a cultural event on campus AV.11.CR.2.2 - determine and plan the spring college/university field trip, including contacting of the admissions counselors and student guides AV.11.CR.2.3 - visit schools of interest independently during weekends or summer to gain further exposure to postsecondary

	opportunities AV.11.CR.2.4 - reflect on course performance/GPA to determine which schools might best fit with areas of career interest **Cluster 3 College and Career Knowledge** The student will: AV.11.CR.3.1 - develop an understanding of the scholarship application process and required information AV.11.CR.3.2 - determine which colleges/universities will best meet academic pursuits AV.11.CR.3.3 - examine cost of colleges and determine how financial aid, grants, scholarship, work study programs and other funding sources can help meet those cost needs AV.11.CR.3.4 - examine FAFSA requirements and determine appropriate action steps to meet deadlines AV.11.CR.3.5 - begin a basic understanding of selecting and scheduling courses in college **Cluster 4 College Entrance Testing** The student will: AV.11.CR.4.1 - prepare for and take the PSAT in the fall of eleventh grade year AV.11.CR.4.2 - chart scores from PSAT/PLAN, monitoring areas of weakness and creating a study plan to meet testing needs AV.11.CR.4.3 - prepare for and take the SAT and/or ACT at least once during the spring semester AV.11.CR.4.4 - analyze test results and develop a study plan for the spring and summer to prepare for testing during the twelfth grade year AV.11.CR.4.5 - analyze the structure and formatting of college entrance exams and develop a test-taking plan that will lead to higher scores AV.11.CR.4.6 - practice college entrance sample questions and discuss how best to approach solutions AV.11.CR.4.7 - examine other college entrance exams, such as those that would exempt students from college remediation coursework AV.11.CR.4.8 - track all personal test results in a student portfolio and monitor scores in comparison to the requirements of colleges and universities of choice **Cluster 5 College Admissions and Financial Aid** The student will:

	AV.11.CR.5.1 - track requirements for various postsecondary opportunities including average GPAs, SAT/ACT scores and extracurricular activities AV.11.CR.5.2 - regularly update activity information and admissions materials in the student portfolio AV.11.CR.5.3 - begin writing personal statement essays and a personal resume for college applications
General Notes:	**Special Note:** Skills acquired in this course will be implemented by the student across the curriculum. Advancement Via Individual Determination III (AVID III) is a rigorous course offered by AVID Center, and content must be provided as specified by AVID Center. Students who are successful in this course will be on the appropriate pathway to success in AVID IV. Teachers must receive training from AVID Center to teach this course.
Version Requirements:	These requirements include, but are not limited to, the Florida Standards that are most relevant to this course. Standards correlated with a specific course requirement may also be addressed by other course requirements as appropriate. Some requirements in this course are not addressed in the Florida Standards. Other subject areas and content may be used to fulfill course requirements. This course includes an agreement related to minimum standards for behavior, attendance, and participation.

Course: Advancement Via Individual Determination 4- 1700420

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4933

BASIC INFORMATION

Course Number:	1700420
Grade Levels:	9,10,11,12
Keyword:	Grades PreK To 12 Education Courses, Grades 9 To 12 And Adult Education Courses, Grades 9-12, Research and Critical Thinking, research, thinking, critical, general, Advancement Via Individual Determination 4, AVID 4
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Research and Critical Thinking **SubSubject:** General
Course Title:	Advancement Via Individual Determination 4
Course Abbreviated Title:	AVID 4
Number of Credits:	One credit (1)
Status:	Draft - Board Approval Pending
Version Description:	AVID (Advancement Via Individual Determination) elective courses at all grade levels are designed to prepare students for success in four-year colleges and universities. The courses emphasize rhetorical reading, analytical writing, collaborative discussion strategies, tutorial inquiry study groups, preparation for college entrance and placement exams, college study skills

and test taking strategies, note taking and research. All AVID seniors are required to develop and present a portfolio representing their years of work in the AVID program as well as complete the requirements for the Seminar course.

The AVID Elective twelfth grade course is the second part in a junior/senior seminar course that focuses on writing and critical thinking expected of first- and second-year college students. This course continues around the theme of "Leadership as a Catalyst for Change in Society." Students will complete a final research essay project from research conducted in their junior year in AVID. In addition to the academic focus of the AVID senior seminar, there are college-bound activities, methodologies and tasks that should be achieved during the senior year that support students as they apply to four- year universities and confirm their postsecondary plans. All AVID seniors are required to develop and present a portfolio representing their years of work in the AVID program, as well as complete the requirements for the seminar course.

This course shall integrate the Goal 3 Student Performance Standards of the Florida System of School Improvement and Accountability as appropriate to the content and processes of the subject matter.
Course student performance standards must be adopted by the district, and they must reflect appropriate Florida Standards.

Related AVID Standards

Domain CD: Character Development
Cluster 1 Self-Awareness
The student will:
AV.12.CD.1.1 - understand the role of AVID students and display characteristics on a regular basis, especially to younger AVID students
AV.12.CD.1.2 - serve a mentor and role model to younger AVID students
AV.12.CD.1.3 - prepare to successfully resolve conflicts and disputes that may arise in college (e.g., roommates, professors)
AV.12.CD.1.4 - apply for scholarships that align with abilities, talents and interests

Cluster 2 Goals

	The student will: AV.12.CD.2.1 - monitor progress toward goals regarding the college application process AV.12.CD.2.2 - continue developing academic strengths with the incorporation of college level courses with a focus on academic stretch AV.12.CD.2.3 - break goals into achievable action steps and monitor progress regularly AV.12.CD.2.4 - assess areas of potential weakness and plan appropriately to break poor habits of mind AV.12.CD.2.5 - reflect upon previous three year's goals and determine successes and challenges of reaching those goals AV.12.CD.2.6 - design appropriate short- and mid-tem goals, which take into account many of the critical aspects of senior year, including college acceptance, GPA, college entrance testing, community service and college level coursework AV.12.CD.2.7 - determine a new/revised long-term goal (which will take three to five years to accomplish) **Cluster 3 Community and School Involvement** The student will: AV.12.CD.3.1 - continue with select school activities/clubs, seeking out positions of leadership AV.12.CD.3.2 - consider putting on community service/service learning activity within collaborative groups AV.12.CD.3.3 - track community service hours and extracurricular activity participation in a multi-year student portfolio AV.12.CD.3.4 - research and apply for potential scholarships associated with clubs, sports, and/or community involvement AV.12.CD.3.5 - plan an end of year celebration, focusing on college acceptance and scholarships **Cluster 4 Ownership of Learning** The student will: AV.12.CD.4.1 - access grades online or from teachers on a regular basis AV.12.CD.4.2 - analyze grade reports to create a study/action plan for continued academic improvement AV.12.CD.4.3 - communicate effectively with teachers, counselors and administrators to discuss areas of concern or a need for clarity AV.12.CD.4.4 - develop a sense of building community within the school, advocating for positive school change

AV.12.CD.4.5 - integrate academic questions before, during and after class with teachers and peers

Domain COMM: Communication
Cluster 1 Speaking
The student will:
AV.12.COMM.1.1 - refine articulation, inflection and vocabulary within speeches and presentations
AV.12.COMM.1.2 - prepare for, conduct and utilize interviews within research writing
AV.12.COMM.1.3 - present research findings on "A Leader as a Catalyst for Change" assignment, which is judged by a panel of teachers, administrators and parent volunteers
AV.12.COMM.1.4 - improve oral communication and leadership skills through a variety of means, including presentations, Socratic Seminars and Philosophical Chairs discussions
AV.12.COMM.1.5 - utilize opportunities to act as a cross-age tutor to lower grades, middle schools or after-school programs
AV.12.COMM.1.6 - speak in a variety of public venues, such as middle school recruitment and middle school shadowing days at school

Cluster 2 Listening
The student will:
AV.12.COMM.2.1 - critically listen and respond to others' ideas in formal and informal settings
AV.12.COMM.2.2 - evaluate own and others' speaking, using rubrics and scoring guides
AV.12.COMM.2.3 - clarify understanding of content through questioning

Domain WRI: Writing
Cluster 1 The Writing Process
The student will:
AV.12.WRI.1.1 - understand and identify the audience, purpose and form for writing assignments
AV.12.WRI.1.2 - analyze complex college level prompts and design arguments with fully developed claims and cited evidence
AV.12.WRI.1.3 - edit students' essays, checking for professionalism in all aspects of writing
AV.12.WRI.1.4 - use a variety of rubrics to grade essays, especially those used to grade essays for the SAT and other college admissions tests

Cluster 2 Writing Skills
The student will:
AV.12.WRI.2.1 - create academic introductions through the incorporation of valuable background information, a “hook”, and well constructed thesis
AV.12.WRI.2.2 - refine skills in research techniques and proper source integration into essays
AV.12.WRI.2.3 - utilize multiple structures commonly used at collegiate levels, such as MLA/APA citations, source integration and abstract writing
AV.12.WRI.2.4 - focus on improving sentences through word choice and varying sentence structure
AV.12.WRI.2.5 - create precision and interest by elaborating on ideas through supporting details

Cluster 3 Writing Applications
The student will:
AV.12.WRI.3.1 - develop and strengthen writing through the creation of a biography on a leader as a catalyst for change
AV.12.WRI.3.2 - write timed in-class essays modeled after those required for college-entrance courses
AV.12.WRI.3.3 - develop and strengthen writing through the creation of a personal statement essay
AV.12.WRI.3.4 - write letters of advice to younger AVID students offering tips and advice

Cluster 4 Writing to Learn
The student will:
AV.12.WRI.4.1 - reflect upon research skills gained during the research project (Leaders as a Catalyst for Change) and how those skills will relate to postsecondary education

Domain INQ: Inquiry
Cluster 1 - Costa's Levels of Thinking
The student will:
AV.12.INQ.1.1 - refine collaborative group study skills in academic tutorials to form groups independently for each core class, especially around college level courses

Cluster 2 Tutorials
The student will:
AV.12.INQ.2.1 - create a study group with a discussion of rules

	and expectations AV.12.INQ.2.2 - reflect upon the relationship between high school tutorials and their connection at the collegiate level AV.12.INQ.2.2 - reflect upon participation and knowledge gained from tutorials and other collaborative activities **Cluster 3 Socratic Seminar and Philosophical Chairs** The student will: AV.12.INQ.3.1 - select their own topics for Socratic Seminar/Philosophical Chairs discussions AV.12.INQ.3.2 - integrate a variety of source evidence to support position statements AV.12.INQ.3.3 - articulate a more thorough understanding of the topic, based on the discussion AV.12.INQ.3.4 - take an active leadership role that results in higher levels of thinking and comprehension AV.12.INQ.3.5 - analyze a 17th, 18th, or 19th century foundational U.S. document of historical and literary significance (e.g., The Bill of Rights or Lincoln's Second Inaugural Address) for themes, purposes and rhetorical features in a Socratic Seminar or Philosophical Chairs discussion AV.12.INQ.3.6 - integrate and evaluate multiple courses of information presented in different media or formats (e.g., visually, quantitatively), as well as in words, in order to address a question or solve a problem in a Socratic Seminar or Philosophical Chairs discussion **Domain COLL: Collaboration** **Cluster 1 Collaborative Skills** The student will: AV.12.COLL.1.1 - independently create study groups for academically rigorous coursework AV.12.COLL.1.2 - develop positive peer relationships, especially with those taking advanced coursework AV.12.COLL.1.3 - discuss informal study group norms and how to become a member of a study team in college **Domain ORG: Organization** **Cluster 1 Organization and Time Managemen**t The student will: AV.12.ORG.1.1 - begin developing a personal organizational system to prepare for success in college AV.12.ORG.1.2 - use the planner/agenda to track senior year

	tasks and responsibilities, including exams, college applications deadlines, letters of recommendation, FAFSA, scholarships, and final transcripts AV.12.ORG.1.3 - develop and discuss plans when the academic work load is especially difficult AV.12.ORG.1.4 - plan for future commitments in college and discuss with both the teacher and college tutor AV.12.ORG.1.5 - reflect on academic performance and independently adjust study habits and time management skills as needed AV.12.ORG.1.6 - continue to add to academic portfolio to demonstrate student growth AV.12.ORG.1.7 - present portfolio of personal academic work at the end of the year emphasizing personal growth and successes AV.12.ORG.1.8 - publish final versions of writing for the academic portfolio **Cluster 2 Note-Taking** The student will: AV.12.ORG.2.1 - take 15 to 25 pages of quality Cornell notes per week AV.12.ORG.2.2 - utilize Cornell notes as an advanced study tool, which will be continually refined and studied independently AV.12.ORG.2.3 - adapt organization strategy of note-taking to meet required academic tasks, such as lectures, lab work, reading or collaborative work AV.12.ORG.2.4 - create notes which track reading and research effectively AV.12.ORG.2.5 - personalize notations to call out key information while taking notes AV.12.ORG.2.6 - utilize notes during in-class and independently formed study groups AV.12.ORG.2.7 - refine the skill of editing and revise notes outside of class to improve their usability AV.12.ORG.2.8 - refine the skill of writing higher-level summaries for Cornell notes that link all of the learning together **Cluster 3 Research and Technology** The student will: AV.12.ORG.3.1 - integrate research and interviews into writing, using citation circles AV.12.ORG.3.2 - research a leader as a catalyst for change as a culminating research project, using books, Internet and other

primary sources
AV.12.ORG.3.3 - utilize peer support and resources to complete and individual research project
AV.12.ORG.3.4 - create research logs, tracking information for culminating research project
AV.12.ORG.3.5 - create a methodology section, which helps track and organize thoughts and processes for writings
AV.12.ORG.3.6 - research colleges/universities of interest with a focus on finalizing a decision about which colleges to apply to during fall and become aware of admissions deadlines

Cluster 4 Test Preparation and Test-Taking
The student will:
AV.12.ORG.4.1 - work in peer groups to prepare for mid-terms, finals, AP and end of course exams
AV.12.ORG.4.2 - seek clarification from instructors on exam format, timing and content, in order to fully prepare for successful completion of assessments
AV.12.ORG.4.3 - analyze test results to determine errors and points of confusion and utilize weekly tutorials for revisiting those materials to ensure a clear understanding

Domain REA: Reading
Cluster 1 Vocabulary
The student will:
AV.12.REA.1.1 - chart new vocabulary and meaning gathered from texts
AV.12.REA.1.2 - infer word meaning using knowledge of advanced prefixes, suffixes and root words, including words of Anglo-Saxon, Greek, and Latin origin

Cluster 2 Textual Analysis
The student will:
AV.12.REA.2.1 - analyze a case in which grasping point of view requires distinguishing what is directly stated in a text from what is actually meant (e.g., satire, sarcasm, irony or understatement)
AV.12.REA.2.2 - analyze authentic writing prompts and formulate the organization of a response
AV.12.REA.2.3 - pause to connect related parts of a text, drawing together various aspects of an argument
AV.12.REA.2.4 - utilize three-part source integration, including source, paraphrase/direct quote, and comment about its relevance to the argument

	AV.12.REA.2.5 - chart text, tracking key information and author's claims AV.12.REA.2.6 - choose one or more writing in the margin strategies while reading text AV.12.REA.2.7 - determine how best to take notes or record information garnered from readings or films, especially those dealing with advanced content AV.12.REA.2.8 - identify the persona of the authors, finding elements of argument and compare/contrast views of various authors **Domain CR: College Readiness** **Cluster 1 Guest Speakers** The student will: AV.12.CR.1.1 - attend college awareness nights, where multiple postsecondary institutions are present, gaining information about institutions of interest, and integrate information into student projects and presentations AV.12.CR.1.2 - utilize Cornell notes as a means to track main points from guest speakers, keeping them as an ongoing reflective tool as part of a multi-year portfolio AV.11.CR.1.3 - have at least one current college student as a guest speaker, with students pre-generating questions about campus life AV.12.CR.1.4 - seek information from an array of guest speakers who provide expertise in college admissions, financial aid and the FAFSA, college selection and scholarships **Cluster 2 Field Trips** The student will: AV.12.CR.2.1 - attend as many college/university visits early in the year, including listening to speakers from admissions who focus on tips for college applications AV.12.CR.2.2 - determine and plan college/university field trips, including contacting admissions counselors and student guides AV.12.CR.2.3 - attend a cultural event trip for the second half of the year (the theater, a play or a museum visit) and complete a written assignment AV.12.CR.2.4 - visit schools of interest independently during weekends or summer, to gain further exposure to postsecondary opportunities **Cluster 3 College and Career Knowledge**

	The student will: AV.12.CR.3.1 - apply for scholarships as a class and individually AV.12.CR.3.2 - check any specific college requirements or local graduation requirements for community service and log those in the student portfolio AV.12.CR.3.3 - examine cost of colleges to which they have been accepted and determine how financial aid, grants, scholarship, work study programs and other funding sources can help meet those cost needs AV.12.CR.3.4 - develop an understanding of selecting and scheduling courses in college, including fulfilling the requirements of a degree plan AV.12.CR.3.5 - ask for letters of recommendation from teachers and club advisors with whom a strong relationship has been established AV.12.CR.3.6 - select a college major based on a career choice of interest **Cluster 4 College Entrance Testing** The student will: AV.12.CR.4.1 - prepare for and take the SAT and/or ACT at least once during the fall semester AV.12.CR.4.2 - solve college entrance sample questions both independently and in groups and discuss how best to approach solutions AV.12.CR.4.3 - execute the study pal during the fall, in order to prepare for college entrance testing AV.12.CR.4.4 - independently utilize online college testing study websites to practice for exams AV.12.CR.4.5 - become familiar with the formatting of college entrance exams, such as the SAT and ACT, and college level credit exams, such as Advanced Placement tests AV.12.CR.4.6 - use SAT and ACT results from junior year to determine areas of weakness and independently address them with online resources AV.12.CR.4.7 - track all testing results for input into college admission applications **Cluster 5 College Admissions and Financial Aid** The student will: AV.12.CR.5.1 - select appropriate teachers/counselors for letters of recommendation AV.12.CR.5.2 - distinguish between universities based on personal

	and academic need AV.12.CR.5.3 - complete and submit college/university applications for schools of interest, including admission essays, letters of recommendation, SAT/ACT scores and official transcripts within the appropriate timeframe AV.12.CR.5.4 - research and prepare financial aid application, including the FAFSA AV.12.CR.5.5 - create a financial plan for the cost of applications and university expenses AV.12.CR.5.6 - create and design a resume that reflects personal and academic strengths AV.12.CR.5.7 - write an effective personal statement that illustrates academic and/or personal accomplishments where applicable AV.12.CR.5.8 - fulfill all course and grade requirements during senior year to remain eligible for college acceptance
General Notes:	**Special Note:** Skills acquired in this course will be implemented by the student across the curriculum. Advancement Via Individual Determination IV (AVID IV) is a rigorous course offered by AVID Center, and content must be provided as specified by AVID Center. Teachers must receive training from AVID Center to teach this course.
Version Requirements:	These requirements include, but are not limited to, the Florida Standards that are most relevant to this course. Standards correlated with a specific course requirement may also be addressed by other course requirements as appropriate. Some requirements in this course are not addressed in the Florida Standards. Other subject areas and content may be used to fulfill course requirements. This course includes an agreement related to minimum standards for behavior, attendance, and participation.

Course: Intensive Science- 2000300

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4256

BASIC INFORMATION

Course Number:	2000300
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Intensive Science, INTENS SCI, Intensive
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Intensive Science
Course Abbreviated Title:	INTENS SCI
Number of Credits:	Multiple Credit (more than 1 credit)
Course Type:	Elective
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field,

collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007). This course should be tailored to meet the needs of the individual student according to his/her deficiencies. Appropriate benchmarks from the NGSSS for Science, applicable Language Arts Florida Standards (LAFS), and applicable Mathematics Florida Standards (MAFS), including the Standards for Mathematical Practice, should be identified to develop an appropriate curriculum.

Special Notes:

Instructional Practices
Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis:

1. Ensuring wide reading from complex text that varies in length.
2. Making close reading and rereading of texts central to lessons.
3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence.
4. Emphasizing students supporting answers based upon evidence from the text.
5. Providing extensive research and writing opportunities (claims and evidence).

Integrate Standards for Mathematical Practice (MP) as applicable.

	• MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them. • MAFS.K12.MP.2.1 Reason abstractly and quantitatively. • MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others. • MAFS.K12.MP.4.1 Model with mathematics. • MAFS.K12.MP.5.1 Use appropriate tools strategically. • MAFS.K12.MP.6.1 Attend to precision. • MAFS.K12.MP.7.1 Look for and make use of structure. • MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

Course: Biology 1- 2000310

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4258

BASIC INFORMATION

Course Number:	2000310
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Biology 1, Biology, BIO 1
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Biology 1
Course Abbreviated Title:	BIO 1
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Type:	Core
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. The National

Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007).

Special Notes:

Instructional Practices
Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis:

1. Ensuring wide reading from complex text that varies in length.
2. Making close reading and rereading of texts central to lessons.
3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence.
4. Emphasizing students supporting answers based upon evidence from the text.
5. Providing extensive research and writing opportunities (claims and evidence).

Science and Engineering Practices (NRC *Framework for K-12 Science Education, 2010*)

- Asking questions (for science) and defining problems (for engineering).
- Developing and using models.

	• Planning and carrying out investigations. • Analyzing and interpreting data. • Using mathematics, information and computer technology, and computational thinking. • Constructing explanations (for science) and designing solutions (for engineering). • Engaging in argument from evidence. • Obtaining, evaluating, and communicating information.

STANDARDS (83)

Integrate Standards for Mathematical Practice (MP) as applicable.

- MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MAFS.K12.MP.2.1 Reason abstractly and quantitatively.
- MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MAFS.K12.MP.4.1 Model with mathematics.
- MAFS.K12.MP.5.1 Use appropriate tools strategically.
- MAFS.K12.MP.6.1 Attend to precision.
- MAFS.K12.MP.7.1 Look for and make use of structure.
- MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

HE.912.C.1.3:	Evaluate how environment and personal health are interrelated. Remarks/Examples
	Food options within a community; prenatal-care services; availability of recreational facilities; air quality; weather-safety awareness; and weather, air, and water conditions.
HE.912.C.1.5:	Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases. Remarks/Examples
	Health prevention, detection, and treatment of: breast and testicular cancer, suicide, obesity, and industrial-related chronic disease.

HE.912.C.1.7:	Analyze how heredity and family history can impact personal health. Remarks/Examples
	Drug use, family obesity, heart disease, mental health, and non-communicable illness or disease.
LAFS.910.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
LAFS.910.RST.1.2:	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
LAFS.910.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
LAFS.910.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
LAFS.910.RST.2.5:	Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
LAFS.910.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
LAFS.910.RST.3.7:	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
LAFS.910.RST.3.8:	Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
LAFS.910.RST.3.9:	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or

	accounts.
LAFS.910.RST.4.10:	By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.
SC.912.L.18.7:	Identify the reactants, products, and basic functions of photosynthesis.
SC.912.L.18.8:	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.
LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
LAFS.910.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.

LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.910.WHST.1.1:	Write arguments focused on *discipline-specific content.* a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.
LAFS.910.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and

	sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
LAFS.910.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LAFS.910.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LAFS.910.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
LAFS.910.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
LAFS.910.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a

	standard format for citation.
LAFS.910.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
LAFS.910.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
MAFS.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
SC.912.E.7.1:	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon. Remarks/Examples
	Describe that the Earth system contains fixed amounts of each stable chemical element and that each element moves among reservoirs in the solid earth, oceans, atmosphere and living organisms as part of biogeochemical cycles (i.e., nitrogen, water, carbon, oxygen and phosphorus), which are driven by energy from within the Earth and from the Sun.
SC.912.L.14.1:	Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science. Remarks/Examples

	Describe how continuous investigations and/or new scientific information influenced the development of the cell theory. Recognize the contributions of scientists in the development of the cell theory.
SC.912.L.14.2:	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).
SC.912.L.14.26:	Identify the major parts of the brain on diagrams or models. Remarks/Examples
	Annually Assessed on Biology EOC. CCSS Connections: MAFS.K12.MP.4: Model with mathematics.
SC.912.L.14.3:	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.14.2.
SC.912.L.14.36:	Describe the factors affecting blood flow through the cardiovascular system.
SC.912.L.14.4:	Compare and contrast structure and function of various types of microscopes.
SC.912.L.14.52:	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.14.6; HE.912.C.1.7; and HE.912.C.1.5.
SC.912.L.14.6:	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.
SC.912.L.14.7:	Relate the structure of each of the major plant organs and tissues to physiological processes. Remarks/Examples
	Annually Assessed on Biology EOC.

SC.912.L.15.1:	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.10; SC.912.N.1.3; SC.912.N.1.4; SC.912.N.1.6; SC.912.N.2.1; SC.912.N.3.1; and SC.912.N.3.4.
SC.912.L.15.10:	Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools.
SC.912.L.15.13:	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.15.14, SC.912.L.15.15, and SC.912.N.1.3.
SC.912.L.15.14:	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow.
SC.912.L.15.15:	Describe how mutation and genetic recombination increase genetic variation.
SC.912.L.15.4:	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.
SC.912.L.15.5:	Explain the reasons for changes in how organisms are classified.
SC.912.L.15.6:	Discuss distinguishing characteristics of the domains and kingdoms of living organisms. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.4; SC.912.L.15.5; SC.912.N.1.3; and SC.912.N.1.6.
SC.912.L.15.8:	Describe the scientific explanations of the origin of life on Earth. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.N.1.3,

	SC.912.N.1.4, and SC.912.N.2.1.
SC.912.L.16.1:	Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.16.2.
SC.912.L.16.10:	Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues. Remarks/Examples
	Annually assessed on Biology EOC.
SC.912.L.16.13:	Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy. Remarks/Examples
	Annually assessed on Biology EOC.
SC.912.L.16.14:	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction.
SC.912.L.16.16:	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.
SC.912.L.16.17:	Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.16.8; SC.912.L.16.14; SC.912.L.16.16.
SC.912.L.16.2:	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.

SC.912.L.16.3:	Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information. Remarks/Examples
	Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health. Annually assessed on Biology EOC. Also assesses SC.912.L.16.4; SC.912.L.16.5; SC.912.L.16.9.
SC.912.L.16.4:	Explain how mutations in the DNA sequence may or may not result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring.
SC.912.L.16.5:	Explain the basic processes of transcription and translation, and how they result in the expression of genes.
SC.912.L.16.8:	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer. Remarks/Examples
	Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health.
SC.912.L.16.9:	Explain how and why the genetic code is universal and is common to almost all organisms.
SC.912.L.17.11:	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.
SC.912.L.17.13:	Discuss the need for adequate monitoring of environmental parameters when making policy decisions.
SC.912.L.17.2:	Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.
SC.912.L.17.20:	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.17.11, SC.912.L.17.13, SC.912.N.1.3.
SC.912.L.17.4:	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.

SC.912.L.17.5:	Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.17.2; SC.912.L.17.4; SC.912.L.17.8; SC.912.N.1.4.
SC.912.L.17.8:	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
SC.912.L.17.9:	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.E.7.1.
SC.912.L.18.1:	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.18.11.
SC.912.L.18.10:	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell.
SC.912.L.18.11:	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
SC.912.L.18.12:	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. Remarks/Examples
	Annually assessed on Biology EOC.
SC.912.L.18.9:	Explain the interrelated nature of photosynthesis and cellular respiration. Remarks/Examples

	Annually assessed on Biology EOC. Also assesses SC.912.L.18.7; SC.912.L.18.8; SC.912.L.18.10.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models). 5. **Plan investigations,** (Design and evaluate a scientific investigation). 6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage). 7. **Pose answers, explanations, or descriptions of events,** 8. **Generate explanations that explicate or describe natural phenomena (inferences),** 9. **Use appropriate evidence and reasoning to justify these explanations to others,** 10. **Communicate results of scientific investigations, and** 11. **Evaluate the merits of the explanations produced by others.**

SC.912.N.1.3:	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. Remarks/Examples
	Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions.
SC.912.N.1.4:	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. Remarks/Examples
	Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification.
SC.912.N.1.6:	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. Remarks/Examples
	Collect data/evidence and use tables/graphs to draw conclusions and make inferences based on patterns or trends in the data.
SC.912.N.2.1:	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science). Remarks/Examples
	Science is the systematic and organized inquiry that is derived from observations and experimentation that can be verified or tested by further investigation to explain natural phenomena (e.g. Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations.)
SC.912.N.2.2:	Identify which questions can be answered through science and which questions are outside the boundaries of scientific

	investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. Remarks/Examples
	Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification).
SC.912.N.3.1:	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer. Remarks/Examples
	Explain that a scientific theory is a well-tested hypothesis supported by a preponderance of empirical evidence.
SC.912.N.3.4:	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions. Remarks/Examples
	Recognize that theories do not become laws, theories explain laws. Recognize that not all scientific laws have accompanying explanatory theories.

RELATED GLOSSARY TERM DEFINITIONS (68)

Abiotic:	An environmental factor not associated with or derived from living organisms.
Activation energy:	The least amount of energy required to start a particular chemical reaction.
Adenosine triphosphate (ATP):	An organic compound that is composed of adenosine and three phosphate groups. It serves as a source of energy for many metabolic processes. ATP releases energy when it is broken down into ADP and phosphate by hydrolysis during cell metabolism.
Aerobic:	Occurring in the presence of oxygen or requiring oxygen to live. In aerobic respiration, which is the process used by the cells of most organisms, the production of energy from glucose metabolism requires the presence of oxygen.
Anaerobic :	Occurring in the absence of oxygen or not requiring oxygen to live. Anaerobic bacteria produce energy from food molecules without the presence of oxygen.
Anatomy:	The scientific study of the shape and structure of organisms and their parts.
Aquatic:	In or on the water
Asexual reproduction:	A form of reproduction in which new individuals are formed without the involvement of gametes.
Atmosphere:	The layers of gas that surround Earth, other planets, or stars.
Biotechnology:	The manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals).
Biotic:	Factors in an environment relating to, caused by, or produced by living organisms.
Cardiovascular system:	The bodily system consisting of the heart, blood vessels, and blood that circulates blood throughout the body, delivers nutrients and other essential materials to cells, and removes waste products.
Catalyst:	A substance that speeds up or slows down the rate of a reaction without being consumed or altered.

Cell:	The smallest structural unit of an organism that is capable of independent functioning, consisting of cytoplasm and various organelles, all surrounded by a semipermeable cell membrane, which in some cells, is surrounded by a cell wall
Chromosome:	A structure in living cells that consists of a single molecule of DNA bonded to various proteins and that carries the genes determining heredity.
Codominant:	Relating to two alleles of a gene pair in a heterozygote that are both fully expressed.
Conduction:	To transmit heat, sound, or electricity through a medium.
Consumer:	An organism that feeds on other organisms for food.
Current :	The amount of electric charge flowing past a specified circuit point per unit time.
Decomposer :	Any organism that feeds or obtains nutrients by breaking down organic matter from dead organisms.
DNA:	Deoxyribonucleic acid; a nucleic acid that is genetic material; present in all organisms.
Dominance:	Tendency of certain (dominant) alleles to mask the expression of their corresponding (recessive) alleles.
Embryology:	The branch of biology that deals with the formation, early growth, and development of living organisms.
Energy:	The capacity to do work.
Environment:	The sum of conditions affecting an organism, including all living and nonliving things in an area, such as plants, animals, water, soil, weather, landforms, and air.
Enzyme:	Any of numerous proteins produced in living cells that accelerate or catalyze chemical reactions.
Evolution :	A theory that the various types of species arise from pre-existing species and that distinguishable characteristics are due to modifications through successive generations.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Fertilization:	The process by which the female reproductive cell (egg) is united

	with the male reproductive cell (sperm).
Fossil:	A whole or part of an organism that has been preserved in sedimentary rock.
Freeze:	To pass from the liquid to the solid state by loss of heat from the substance/system.
Gamete:	A reproductive cell having the haploid number of chromosomes, especially a mature sperm or egg capable of fusing with a gamete of the opposite sex to produce the fertilized egg.
Genetic:	Affecting or determined by genes.
Haploid:	Having a single set of each chromosome in a cell or cell nucleus. In most animals, only the gametes (reproductive cells) are haploid.
Heredity:	The passage of biological traits or characteristics from parents to offspring through the inheritance of genes.
Hominid:	A group of primates of the family Hominidae, which includes modern humans.
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Immune system:	The body system that protects the organism by distinguishing foreign tissue and neutralizing potentially pathogenic organisms or substances. The immune system includes organs such as the skin and mucous membranes, which provide an external barrier to infection, cells involved in the immune response, such as lymphocytes, and cell products such as lymphokines.
Inference :	The act of reasoning from factual knowledge or evidence.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Law :	A statement that describes invariable relationships among phenomena under a specified set of conditions.
Light:	Electromagnetic radiation that lies within the visible range.
Matter:	Substance that possesses inertia and occupies space, of which all objects are constituted.
Meiosis:	The process of nuclear division in cells during which the number of chromosomes is reduced by half.

Membrane:	A thin layer of tissue that surrounds or lines a cell, a group of cells, or a cavity; any barrier separating two fluids.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Mitosis:	A process of nuclear division in eukaryotic cells during which the nucleus of a cell divides into two nuclei, each with the same number of chromosomes.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Mutation:	A change in genetic sequence.
Natural selection:	The theory stating every organism displays slight variations from related organisms, and these variations make an organism more or less suited for survival and reproduction in specific habitats.
Nonrenewable resource:	A resource that can only be replenished over millions of years.
Observation :	What one has observed using senses or instruments.
Offspring:	The progeny or descendants of an animal or plant considered as a group.
Organ:	A structure containing different tissues that are organized to carry out a specific function of the body (e.g., heart, lungs, brain, etc.)
Organism:	An individual form of life of one or more cells that maintains various vital processes necessary for life.
Photosynthesis:	A chemical process by which plants use light energy to convert carbon dioxide and water into carbohydrates (sugars).
Physiology:	The scientific study of an organism's vital functions, including growth, development, reproduction, the absorption and processing of nutrients, the synthesis and distribution of proteins and other organic molecules, and the functioning of different tissues, organs, and other anatomic structures.

Polygenic:	Any of a group of nonallelic genes that collectively control the inheritance of a quantitative character or modify the expression of a qualitative character.
Producer :	An organism, usually a plant or bacterium, that produces organic compounds from simple inorganic molecules and energy (typically light energy) from the environment.
Recessive:	An allele for a trait that will be masked unless the organism is homozygous for this trait.
Replication:	In scientific research, conducting an experiment to confirm findings or to ensure accuracy. In molecular biology, the process by which genetic material is copied in cells.
Reproductive system:	The system of organs involved with animal reproduction, especially sexual reproduction.
Scientist:	A person with expert knowledge of one or more sciences, that engages in processes to acquire and communicate knowledge.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Theory :	A set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena.
Tissue:	Similar cells acting to perform a specific function.
Vaccine:	A preparation of a weakened or killed pathogen, such as a bacterium or virus, or of a portion of the pathogen's structure, that stimulates immune cells to recognize and attack it, especially through antibody production.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.

Course: Biology 1 for Credit Recovery-2000315

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4261

BASIC INFORMATION

Course Number:	2000315
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Biology 1 for Credit Recovery, Biology, Bio, Credit Recovery, BIO 1 CR
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Biology 1 for Credit Recovery
Course Abbreviated Title:	BIO 1 CR
Number of Credits:	One credit (1)
Course length:	Credit Recovery (R)
Course Type:	Core
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	Biology 1 for Credit Recovery

Special Notes: Credit Recovery courses are credit bearing courses with specific content requirements defined by Florida's Standards. Students enrolled in a Credit Recovery course must have previously attempted the corresponding course (and/or End-of-Course assessment) since the course requirements for the Credit Recovery courses are exactly the same as the previously attempted corresponding course. For example, Geometry (1206310) and Geometry for Credit Recovery (1206315) have identical content requirements. It is important to note that Credit Recovery courses are not bound by Section 1003.436(1)(a), Florida Statutes, requiring a minimum of 135 hours of bona fide instruction (120 hours in a school/district implementing block scheduling) in a designed course of study that contains student performance standards, since the students have previously attempted successful completion of the corresponding course. Additionally, Credit Recovery courses should ONLY be used for credit recovery, grade forgiveness, or remediation for students needing to prepare for an End-of-Course assessment retake.

Instructional Practices
Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis:

1. Ensuring wide reading from complex text that varies in length.
2. Making close reading and rereading of texts central to lessons.
3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence.
4. Emphasizing students supporting answers based upon evidence from the text.
5. Providing extensive research and writing opportunities (claims and evidence).

STANDARDS (84)

Integrate Standards for Mathematical Practice (MP) as applicable.

- MACC.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MACC.K12.MP.2.1 Reason abstractly and quantitatively.
- MACC.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MACC.K12.MP.4.1 Model with mathematics.
- MACC.K12.MP.5.1 Use appropriate tools strategically.
- MACC.K12.MP.6.1 Attend to precision.
- MACC.K12.MP.7.1 Look for and make use of structure.
- MACC.K12.MP.8.1 Look for and express regularity in repeated reasoning.

HE.912.C.1.3:	Evaluate how environment and personal health are interrelated. Remarks/Examples
	Food options within a community; prenatal-care services; availability of recreational facilities; air quality; weather-safety awareness; and weather, air, and water conditions.
HE.912.C.1.5:	Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases. Remarks/Examples
	Health prevention, detection, and treatment of: breast and testicular cancer, suicide, obesity, and industrial-related chronic disease.
HE.912.C.1.7:	Analyze how heredity and family history can impact personal health. Remarks/Examples
	Drug use, family obesity, heart disease, mental health, and non-communicable illness or disease.
LAFS.910.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
LAFS.910.RST.1.2:	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.

LAFS.910.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
LAFS.910.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
LAFS.910.RST.2.5:	Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
LAFS.910.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
LAFS.910.RST.3.7:	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
LAFS.910.RST.3.8:	Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
LAFS.910.RST.3.9:	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
LAFS.910.RST.4.10:	By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.
SC.912.L.18.7:	Identify the reactants, products, and basic functions of photosynthesis.
SC.912.L.18.8:	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.
LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively.

	a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
LAFS.910.SL.1.1c:	Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
LAFS.910.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

LAFS.910.WHST.1.1:	Write arguments focused on *discipline-specific content.* a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.
LAFS.910.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the

	expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
LAFS.910.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LAFS.910.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LAFS.910.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
LAFS.910.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
LAFS.910.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
LAFS.910.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
LAFS.910.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

MACC.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MACC.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
SC.912.E.7.1:	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon. Remarks/Examples
	Describe that the Earth system contains fixed amounts of each stable chemical element and that each element moves among reservoirs in the solid earth, oceans, atmosphere and living organisms as part of biogeochemical cycles (i.e., nitrogen, water, carbon, oxygen and phosphorus), which are driven by energy from within the Earth and from the Sun.
SC.912.L.14.1:	Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science. Remarks/Examples
	Describe how continuous investigations and/or new scientific information influenced the development of the cell theory. Recognize the contributions of scientists in the development of the cell theory.
SC.912.L.14.2:	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).
SC.912.L.14.26:	Identify the major parts of the brain on diagrams or models.

	Remarks/Examples
	Annually Assessed on Biology EOC. Connections: MACC.K12.MP.4: Model with mathematics.
SC.912.L.14.3:	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.14.2.
SC.912.L.14.36:	Describe the factors affecting blood flow through the cardiovascular system.
SC.912.L.14.4:	Compare and contrast structure and function of various types of microscopes.
SC.912.L.14.52:	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.14.6; HE.912.C.1.7; and HE.912.C.1.5.
SC.912.L.14.6:	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.
SC.912.L.14.7:	Relate the structure of each of the major plant organs and tissues to physiological processes. Remarks/Examples
	Annually Assessed on Biology EOC.
SC.912.L.15.1:	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.10; SC.912.N.1.3; SC.912.N.1.4; SC.912.N.1.6; SC.912.N.2.1;

	SC.912.N.3.1; and SC.912.N.3.4.
SC.912.L.15.10:	Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools.
SC.912.L.15.13:	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.15.14, SC.912.L.15.15, and SC.912.N.1.3.
SC.912.L.15.14:	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow.
SC.912.L.15.15:	Describe how mutation and genetic recombination increase genetic variation.
SC.912.L.15.4:	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.
SC.912.L.15.5:	Explain the reasons for changes in how organisms are classified.
SC.912.L.15.6:	Discuss distinguishing characteristics of the domains and kingdoms of living organisms. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.4; SC.912.L.15.5; SC.912.N.1.3; and SC.912.N.1.6.
SC.912.L.15.8:	Describe the scientific explanations of the origin of life on Earth. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.N.1.3, SC.912.N.1.4, and SC.912.N.2.1.
SC.912.L.16.1:	Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.16.2.

SC.912.L.16.10:	Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues. Remarks/Examples
	Annually assessed on Biology EOC.
SC.912.L.16.13:	Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy. Remarks/Examples
	Annually assessed on Biology EOC.
SC.912.L.16.14:	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction.
SC.912.L.16.16:	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.
SC.912.L.16.17:	Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.16.8; SC.912.L.16.14; SC.912.L.16.16.
SC.912.L.16.2:	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.
SC.912.L.16.3:	Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information. Remarks/Examples
	Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health. Annually assessed on Biology EOC. Also assesses SC.912.L.16.4; SC.912.L.16.5; SC.912.L.16.9.
SC.912.L.16.4:	Explain how mutations in the DNA sequence may or may not

	result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring.
SC.912.L.16.5:	Explain the basic processes of transcription and translation, and how they result in the expression of genes.
SC.912.L.16.8:	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer. Remarks/Examples Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health.
SC.912.L.16.9:	Explain how and why the genetic code is universal and is common to almost all organisms.
SC.912.L.17.11:	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.
SC.912.L.17.13:	Discuss the need for adequate monitoring of environmental parameters when making policy decisions.
SC.912.L.17.2:	Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.
SC.912.L.17.20:	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.17.11, SC.912.L.17.13, SC.912.N.1.3.
SC.912.L.17.4:	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.
SC.912.L.17.5:	Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.17.2; SC.912.L.17.4; SC.912.L.17.8; SC.912.N.1.4.
SC.912.L.17.8:	Recognize the consequences of the losses of biodiversity due to

	catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
SC.912.L.17.9:	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.E.7.1.
SC.912.L.18.1:	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.18.11.
SC.912.L.18.10:	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell.
SC.912.L.18.11:	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
SC.912.L.18.12:	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. Remarks/Examples Annually assessed on Biology EOC.
SC.912.L.18.9:	Explain the interrelated nature of photosynthesis and cellular respiration. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.18.7; SC.912.L.18.8; SC.912.L.18.10.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the

purpose of the investigation and identify the relevant scientific concepts).

2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines).
3. **Examine books and other sources of information to see what is already known,**
4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).
5. **Plan investigations,** (Design and evaluate a scientific investigation).
6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).
7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

Remarks/Examples

Connections for 6-12 Literacy in Science

<u>For Students in Grades 9-10</u>

LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

LAFS.910.RST.1.3 Follow precisely a complex multistep procedure

	when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text. LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. <u>For Students in Grades 11-12</u> LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Connections for Mathematical Practices MACC.K12.MP.1: Make sense of problems and persevere in solving them. MACC.K12.MP.2: Reason abstractly and quantitatively. MACC.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MACC.K12.MP.4: Model with mathematics. MACC.K12.MP.5: Use appropriate tools strategically. MACC.K12.MP.6: Attend to precision. MACC.K12.MP.7: Look for and make use of structure. MACC.K12.MP.8: Look for and express regularity in repeated reasoning.

SC.912.N.1.3:	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. Remarks/Examples
	Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions. Connections: MACC.K12.MP.2: Reason abstractly and quantitatively; MACC.K12.MP.3: Construct viable arguments and critique the reasoning of others
SC.912.N.1.4:	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. Remarks/Examples
	Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification. Connections: LAFS.910.RST.1.1 / LAFS.1112.RST.1.1.
SC.912.N.1.6:	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. Remarks/Examples
	Collect data/evidence and use tables/graphs to draw conclusions and make inferences based on patterns or trends in the data. Connections: MACC.K12.MP.1: Make sense of problems and persevere in solving them.
SC.912.N.2.1:	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science). Remarks/Examples

	Science is the systematic and organized inquiry that is derived from observations and experimentation that can be verified or tested by further investigation to explain natural phenomena (e.g. Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations.)
SC.912.N.2.2:	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. Remarks/Examples
	Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification). Connections: MACC.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.3.1:	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer. Remarks/Examples Explain that a scientific theory is a well-tested hypothesis supported by a preponderance of empirical evidence. Connections: MACC.K12.MP.1: Make sense of problems and persevere in solving them; and, MACC.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.3.4:	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions. Remarks/Examples
	Recognize that theories do not become laws, theories explain laws. Recognize that not all scientific laws have accompanying

	explanatory theories.

RELATED GLOSSARY TERM DEFINITIONS (68)

Abiotic:	An environmental factor not associated with or derived from living organisms.
Activation energy:	The least amount of energy required to start a particular chemical reaction.
Adenosine triphosphate (ATP):	An organic compound that is composed of adenosine and three phosphate groups. It serves as a source of energy for many metabolic processes. ATP releases energy when it is broken down into ADP and phosphate by hydrolysis during cell metabolism.
Aerobic:	Occurring in the presence of oxygen or requiring oxygen to live. In aerobic respiration, which is the process used by the cells of most organisms, the production of energy from glucose metabolism requires the presence of oxygen.
Anaerobic :	Occurring in the absence of oxygen or not requiring oxygen to live. Anaerobic bacteria produce energy from food molecules without the presence of oxygen.
Anatomy:	The scientific study of the shape and structure of organisms and their parts.
Aquatic:	In or on the water
Asexual reproduction:	A form of reproduction in which new individuals are formed without the involvement of gametes.
Atmosphere:	The layers of gas that surround Earth, other planets, or stars.
Biotechnology:	The manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals).
Biotic:	Factors in an environment relating to, caused by, or produced by living organisms.
Cardiovascular system:	The bodily system consisting of the heart, blood vessels, and blood that circulates blood throughout the body, delivers nutrients and other essential materials to cells, and removes waste products.

Catalyst:	A substance that speeds up or slows down the rate of a reaction without being consumed or altered.
Cell:	The smallest structural unit of an organism that is capable of independent functioning, consisting of cytoplasm and various organelles, all surrounded by a semipermeable cell membrane, which in some cells, is surrounded by a cell wall
Chromosome:	A structure in living cells that consists of a single molecule of DNA bonded to various proteins and that carries the genes determining heredity.
Codominant:	Relating to two alleles of a gene pair in a heterozygote that are both fully expressed.
Conduction:	To transmit heat, sound, or electricity through a medium.
Consumer:	An organism that feeds on other organisms for food.
Current :	The amount of electric charge flowing past a specified circuit point per unit time.
Decomposer :	Any organism that feeds or obtains nutrients by breaking down organic matter from dead organisms.
DNA:	Deoxyribonucleic acid; a nucleic acid that is genetic material; present in all organisms.
Dominance:	Tendency of certain (dominant) alleles to mask the expression of their corresponding (recessive) alleles.
Embryology:	The branch of biology that deals with the formation, early growth, and development of living organisms.
Energy:	The capacity to do work.
Environment:	The sum of conditions affecting an organism, including all living and nonliving things in an area, such as plants, animals, water, soil, weather, landforms, and air.
Enzyme:	Any of numerous proteins produced in living cells that accelerate or catalyze chemical reactions.
Evolution :	A theory that the various types of species arise from pre-existing species and that distinguishable characteristics are due to modifications through successive generations.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a

	hypothesis.
Fertilization:	The process by which the female reproductive cell (egg) is united with the male reproductive cell (sperm).
Fossil:	A whole or part of an organism that has been preserved in sedimentary rock.
Freeze:	To pass from the liquid to the solid state by loss of heat from the substance/system.
Gamete:	A reproductive cell having the haploid number of chromosomes, especially a mature sperm or egg capable of fusing with a gamete of the opposite sex to produce the fertilized egg.
Genetic:	Affecting or determined by genes.
Haploid:	Having a single set of each chromosome in a cell or cell nucleus. In most animals, only the gametes (reproductive cells) are haploid.
Heredity:	The passage of biological traits or characteristics from parents to offspring through the inheritance of genes.
Hominid:	A group of primates of the family Hominidae, which includes modern humans.
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Immune system:	The body system that protects the organism by distinguishing foreign tissue and neutralizing potentially pathogenic organisms or substances. The immune system includes organs such as the skin and mucous membranes, which provide an external barrier to infection, cells involved in the immune response, such as lymphocytes, and cell products such as lymphokines.
Inference :	The act of reasoning from factual knowledge or evidence.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Law :	A statement that describes invariable relationships among phenomena under a specified set of conditions.
Light:	Electromagnetic radiation that lies within the visible range.
Matter:	Substance that possesses inertia and occupies space, of which all objects are constituted.

Meiosis:	The process of nuclear division in cells during which the number of chromosomes is reduced by half.
Membrane:	A thin layer of tissue that surrounds or lines a cell, a group of cells, or a cavity; any barrier separating two fluids.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Mitosis:	A process of nuclear division in eukaryotic cells during which the nucleus of a cell divides into two nuclei, each with the same number of chromosomes.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Mutation:	A change in genetic sequence.
Natural selection:	The theory stating every organism displays slight variations from related organisms, and these variations make an organism more or less suited for survival and reproduction in specific habitats.
Nonrenewable resource:	A resource that can only be replenished over millions of years.
Observation :	What one has observed using senses or instruments.
Offspring:	The progeny or descendants of an animal or plant considered as a group.
Organ:	A structure containing different tissues that are organized to carry out a specific function of the body (e.g., heart, lungs, brain, etc.)
Organism:	An individual form of life of one or more cells that maintains various vital processes necessary for life.
Photosynthesis:	A chemical process by which plants use light energy to convert carbon dioxide and water into carbohydrates (sugars).
Physiology:	The scientific study of an organism's vital functions, including growth, development, reproduction, the absorption and processing of nutrients, the synthesis and distribution of proteins and other organic molecules, and the functioning of different tissues, organs, and other anatomic structures.

Polygenic:	Any of a group of nonallelic genes that collectively control the inheritance of a quantitative character or modify the expression of a qualitative character.
Producer :	An organism, usually a plant or bacterium, that produces organic compounds from simple inorganic molecules and energy (typically light energy) from the environment.
Recessive:	An allele for a trait that will be masked unless the organism is homozygous for this trait.
Replication:	In scientific research, conducting an experiment to confirm findings or to ensure accuracy. In molecular biology, the process by which genetic material is copied in cells.
Reproductive system:	The system of organs involved with animal reproduction, especially sexual reproduction.
Scientist:	A person with expert knowledge of one or more sciences, that engages in processes to acquire and communicate knowledge.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Theory :	A set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena.
Tissue:	Similar cells acting to perform a specific function.
Vaccine:	A preparation of a weakened or killed pathogen, such as a bacterium or virus, or of a portion of the pathogen's structure, that stimulates immune cells to recognize and attack it, especially through antibody production.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.

Course: Biology 1 Honors- 2000320

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4263

BASIC INFORMATION

Course Number:	2000320
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Biology 1 Honors, Biology, Honors, BIO 1 HON
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Biology 1 Honors
Course Abbreviated Title:	BIO 1 HON
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Type:	Core
Course Level:	3
Status:	Draft - Board Approval Pending
Honors?	Yes
General Notes:	While the content focus of this course is consistent with the Biology I course, students will explore these concepts in greater depth. In general, the academic pace and rigor will be greatly

	increased for honors level course work. Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007). **Special Notes:** **Instructional Practices** Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis: 1. Ensuring wide reading from complex text that varies in length. 2. Making close reading and rereading of texts central to lessons. 3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence. 4. Emphasizing students supporting answers based upon evidence from the text. 5. Providing extensive research and writing opportunities (claims and evidence). **Science and Engineering Practices** (NRC *Framework for K-12*

	Science Education, 2010) • Asking questions (for science) and defining problems (for engineering). • Developing and using models. • Planning and carrying out investigations. • Analyzing and interpreting data. • Using mathematics, information and computer technology, and computational thinking. • Constructing explanations (for science) and designing solutions (for engineering). • Engaging in argument from evidence. • Obtaining, evaluating, and communicating information.

STANDARDS (105)

Integrate Standards for Mathematical Practice (MP) as applicable.

- MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MAFS.K12.MP.2.1 Reason abstractly and quantitatively.
- MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MAFS.K12.MP.4.1 Model with mathematics.
- MAFS.K12.MP.5.1 Use appropriate tools strategically.
- MAFS.K12.MP.6.1 Attend to precision.
- MAFS.K12.MP.7.1 Look for and make use of structure.
- MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

HE.912.C.1.3:	Evaluate how environment and personal health are interrelated. Remarks/Examples
	Food options within a community; prenatal-care services; availability of recreational facilities; air quality; weather-safety awareness; and weather, air, and water conditions.
HE.912.C.1.5:	Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases.

	Remarks/Examples
	Health prevention, detection, and treatment of: breast and testicular cancer, suicide, obesity, and industrial-related chronic disease.
HE.912.C.1.7:	Analyze how heredity and family history can impact personal health. Remarks/Examples
	Drug use, family obesity, heart disease, mental health, and non-communicable illness or disease.
HE.912.C.1.8:	Assess the degree of susceptibility to injury, illness, or death if engaging in unhealthy/risky behaviors. Remarks/Examples
	Risks associated with alcohol abuse, including poison, date rape, and death; cancer and chronic lung disease related to tobacco use; overdose from drug use; child abuse or neglect; and dating violence.
LAFS.910.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
LAFS.910.RST.1.2:	Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.
LAFS.910.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
LAFS.910.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
LAFS.910.RST.2.5:	Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

LAFS.910.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address.
LAFS.910.RST.3.7:	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
LAFS.910.RST.3.8:	Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.
LAFS.910.RST.3.9:	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
LAFS.910.RST.4.10:	By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.
LAFS.910.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the

	evidence and reasoning presented.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
LAFS.910.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.910.WHST.1.1:	Write arguments focused on *discipline-specific content.* a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.

LAFS.910.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
LAFS.910.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LAFS.910.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LAFS.910.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
LAFS.910.WHST.3.7:	Conduct short as well as more sustained research projects to

	answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
LAFS.910.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation.
LAFS.910.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
LAFS.910.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
MAFS.912.F-IF.2.4:	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* Remarks/Examples
	Algebra 1, Unit 2: For F.IF.4 and 5, focus on linear and exponential functions. **Algebra 1 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Tasks are limited to linear functions, quadratic functions, square root functions, cube root functions, piecewise-defined functions (including step functions and absolute value functions), and exponential functions with domains in the integers. Compare note (ii) with standard F-IF.7. The function types listed here are the same as those listed in the Algebra I column for standards F-IF.6 and F-IF.9.

	Algebra 2 Assessment Limits and Clarifications i) Tasks have a real-world context ii) Tasks may involve polynomial, exponential, logarithmic, and trigonometric functions. Compare note (ii) with standard F-IF.7. The function types listed here are the same as those listed in the Algebra II column for standards F-IF.6 and F-IF.9.
MAFS.912.F-IF.3.7:	MACC.912.F-IF.3.7 (2013-2014): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. **MAFS.912.F-IF.3.7 (2014-2015): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.** **a. Graph linear and quadratic functions and show intercepts, maxima, and minima.** **b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.** **c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.**

	d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift. Remarks/Examples
	Algebra 1, Unit 2: For F.IF.7a, 7e, and 9 focus on linear and exponentials functions. Include comparisons of two functions presented algebraically. For example, compare the growth of two linear functions, or two exponential functions such as $y=3^n$ and $y=100^2$
MAFS.912.G-MG.1.2:	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).
MAFS.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.S-IC.2.6:	Evaluate reports based on data.
MAFS.912.S-ID.1.1:	Represent data with plots on the real number line (dot plots, histograms, and box plots).

	Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.3:	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.4:	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
MAFS.912.S-ID.2.5:	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
SC.912.E.7.1:	Analyze the movement of matter and energy through the different biogeochemical cycles, including water and carbon. Remarks/Examples
	Describe that the Earth system contains fixed amounts of each

	stable chemical element and that each element moves among reservoirs in the solid earth, oceans, atmosphere and living organisms as part of biogeochemical cycles (i.e., nitrogen, water, carbon, oxygen and phosphorus), which are driven by energy from within the Earth and from the Sun.
SC.912.L.14.1:	Describe the scientific theory of cells (cell theory) and relate the history of its discovery to the process of science. Remarks/Examples
	Describe how continuous investigations and/or new scientific information influenced the development of the cell theory. Recognize the contributions of scientists in the development of the cell theory.
SC.912.L.14.2:	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).
SC.912.L.14.26:	Identify the major parts of the brain on diagrams or models. Remarks/Examples
	Annually Assessed on Biology EOC. Connections: MAFS.K12.MP.4: Model with mathematics.
SC.912.L.14.27:	Identify the functions of the major parts of the brain, including the meninges, medulla, pons, midbrain, hypothalamus, thalamus, cerebellum and cerebrum.
SC.912.L.14.3:	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.14.2.
SC.912.L.14.36:	Describe the factors affecting blood flow through the cardiovascular system.
SC.912.L.14.4:	Compare and contrast structure and function of various types of microscopes.
SC.912.L.14.5:	Explain the evidence supporting the scientific theory of the origin of eukaryotic cells (endosymbiosis).

SC.912.L.14.52:	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.14.6; HE.912.C.1.7; and HE.912.C.1.5.
SC.912.L.14.6:	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.
SC.912.L.14.7:	Relate the structure of each of the major plant organs and tissues to physiological processes. Remarks/Examples
	Annually Assessed on Biology EOC.
SC.912.L.15.1:	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.10; SC.912.N.1.3; SC.912.N.1.4; SC.912.N.1.6; SC.912.N.2.1; SC.912.N.3.1; and SC.912.N.3.4.
SC.912.L.15.10:	Identify basic trends in hominid evolution from early ancestors six million years ago to modern humans, including brain size, jaw size, language, and manufacture of tools.
SC.912.L.15.13:	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.15.14, SC.912.L.15.15, and SC.912.N.1.3.
SC.912.L.15.14:	Discuss mechanisms of evolutionary change other than natural selection such as genetic drift and gene flow.

SC.912.L.15.15:	Describe how mutation and genetic recombination increase genetic variation.
SC.912.L.15.2:	Discuss the use of molecular clocks to estimate how long ago various groups of organisms diverged evolutionarily from one another.
SC.912.L.15.3:	Describe how biological diversity is increased by the origin of new species and how it is decreased by the natural process of extinction.
SC.912.L.15.4:	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.
SC.912.L.15.5:	Explain the reasons for changes in how organisms are classified.
SC.912.L.15.6:	Discuss distinguishing characteristics of the domains and kingdoms of living organisms. Remarks/Examples Annually Assessed on Biology EOC. Also assesses SC.912.L.15.4; SC.912.L.15.5; SC.912.N.1.3; and SC.912.N.1.6.
SC.912.L.15.8:	Describe the scientific explanations of the origin of life on Earth. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.N.1.3, SC.912.N.1.4, and SC.912.N.2.1.
SC.912.L.16.1:	Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.16.2.
SC.912.L.16.10:	Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues. Remarks/Examples Annually assessed on Biology EOC.
SC.912.L.16.12:	Describe how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, polymerase chain reaction, ligation, and transformation) is used to construct recombinant

	DNA molecules (DNA cloning).
SC.912.L.16.13:	Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy. Remarks/Examples Annually assessed on Biology EOC.
SC.912.L.16.14:	Describe the cell cycle, including the process of mitosis. Explain the role of mitosis in the formation of new cells and its importance in maintaining chromosome number during asexual reproduction.
SC.912.L.16.15:	Compare and contrast binary fission and mitotic cell division.
SC.912.L.16.16:	Describe the process of meiosis, including independent assortment and crossing over. Explain how reduction division results in the formation of haploid gametes or spores.
SC.912.L.16.17:	Compare and contrast mitosis and meiosis and relate to the processes of sexual and asexual reproduction and their consequences for genetic variation. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.16.8; SC.912.L.16.14; SC.912.L.16.16.
SC.912.L.16.2:	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.
SC.912.L.16.3:	Describe the basic process of DNA replication and how it relates to the transmission and conservation of the genetic information. Remarks/Examples Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health. Annually assessed on Biology EOC. Also assesses SC.912.L.16.4; SC.912.L.16.5; SC.912.L.16.9.
SC.912.L.16.4:	Explain how mutations in the DNA sequence may or may not result in phenotypic change. Explain how mutations in gametes may result in phenotypic changes in offspring.
SC.912.L.16.5:	Explain the basic processes of transcription and translation, and

	how they result in the expression of genes.
SC.912.L.16.8:	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer. Remarks/Examples
	Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health.
SC.912.L.16.9:	Explain how and why the genetic code is universal and is common to almost all organisms.
SC.912.L.17.11:	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.
SC.912.L.17.16:	Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution. Remarks/Examples
	Integrate HE.912.C.1.3. Evaluate how environment and personal health are interrelated; and, HE.912.C.1.5. Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases.
SC.912.L.17.2:	Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.
SC.912.L.17.20:	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.17.11, SC.912.L.17.13, SC.912.N.1.3.
SC.912.L.17.4:	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.
SC.912.L.17.5:	Analyze how population size is determined by births, deaths, immigration, emigration, and limiting factors (biotic and abiotic) that determine carrying capacity. Remarks/Examples

	Annually assessed on Biology EOC. Also assesses SC.912.L.17.2; SC.912.L.17.4; SC.912.L.17.8; SC.912.N.1.4.
SC.912.L.17.8:	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
SC.912.L.17.9:	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.E.7.1.
SC.912.L.18.1:	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.18.11.
SC.912.L.18.10:	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell.
SC.912.L.18.11:	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
SC.912.L.18.12:	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. Remarks/Examples Annually assessed on Biology EOC.
SC.912.L.18.2:	Describe the important structural characteristics of monosaccharides, disaccharides, and polysaccharides and explain the functions of carbohydrates in living things.

SC.912.L.18.3:	Describe the structures of fatty acids, triglycerides, phospholipids, and steroids. Explain the functions of lipids in living organisms. Identify some reactions that fatty acids undergo. Relate the structure and function of cell membranes.
SC.912.L.18.4:	Describe the structures of proteins and amino acids. Explain the functions of proteins in living organisms. Identify some reactions that amino acids undergo. Relate the structure and function of enzymes.
SC.912.L.18.7:	Identify the reactants, products, and basic functions of photosynthesis.
SC.912.L.18.8:	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.
SC.912.L.18.9:	Explain the interrelated nature of photosynthesis and cellular respiration. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.18.7; SC.912.L.18.8; SC.912.L.18.10.
SC.912.N.1.6:	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied. Remarks/Examples Collect data/evidence and use tables/graphs to draw conclusions and make inferences based on patterns or trends in the data. Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them.
SC.912.N.2.1:	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science). Remarks/Examples Science is the systematic and organized inquiry that is derived from observations and experimentation that can be verified or tested by further investigation to explain natural phenomena (e.g. Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations.)

SC.912.N.2.2:	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. Remarks/Examples
	Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification). Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models). 5. **Plan investigations,** (Design and evaluate a scientific investigation). 6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes,

computers) including set-up, calibration, technique, maintenance, and storage).

7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

Remarks/Examples

Connections for 6-12 Literacy in Science

<u>For Students in Grades 9-10</u>

LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.

LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research.

<u>For Students in Grades 11-12</u>

LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in

	the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.3:	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented. Remarks/Examples
	Assess the reliability of data and identify reasons for inconsistent results, such as sources of error or uncontrolled conditions. Connections: MAFS.K12.MP.2: Reason abstractly and quantitatively; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others
SC.912.N.1.4:	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. Remarks/Examples
	Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict

	standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification. Connections: LAFS.910.RST.1.1 / LAFS.1112.RST.1.1.
SC.912.N.2.4:	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability. Remarks/Examples
	Recognize that ideas with the most durable explanatory power become established theories, but scientific explanations are continually subjected to change in the face of new evidence. Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.3.1:	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer. Remarks/Examples
	Explain that a scientific theory is a well-tested hypothesis supported by a preponderance of empirical evidence. Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.3.4:	Recognize that theories do not become laws, nor do laws become theories; theories are well supported explanations and laws are well supported descriptions. Remarks/Examples
	Recognize that theories do not become laws, theories explain laws. Recognize that not all scientific laws have accompanying

	explanatory theories.
SC.912.P.10.1:	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. Remarks/Examples
	Differentiate between kinetic and potential energy. Recognize that energy cannot be created or destroyed, only transformed. Identify examples of transformation of energy: Heat to light in incandescent electric light bulbs; Light to heat in laser drills; Electrical to sound in radios; Sound to electrical in microphones; Electrical to chemical in battery rechargers; Chemical to electrical in dry cells; Mechanical to electrical in generators [power plants]; Nuclear to heat in nuclear reactors; Gravitational potential energy of a falling object is converted to kinetic energy then to heat and sound energy when the object hits the ground.
SC.912.P.8.7:	Interpret formula representations of molecules and compounds in terms of composition and structure. Remarks/Examples
	Write chemical formulas for simple covalent (HCl, SO2, CO2, and CH4), ionic (Na+ + Cl− → NaCl) and molecular (O2, H2O) compounds. Predict the formulas of ionic compounds based on the number of valence electrons and the charges on the ions.

RELATED GLOSSARY TERM DEFINITIONS (98)

Abiotic:	An environmental factor not associated with or derived from living organisms.
Activation energy:	The least amount of energy required to start a particular chemical reaction.
Adenosine triphosphate (ATP):	An organic compound that is composed of adenosine and three phosphate groups. It serves as a source of energy for many metabolic processes. ATP releases energy when it is broken down into ADP and phosphate by hydrolysis during cell metabolism.
Aerobic:	Occurring in the presence of oxygen or requiring oxygen to live. In aerobic respiration, which is the process used by the cells of most organisms, the production of energy from glucose metabolism requires the presence of oxygen.

Amino acid:	An organic molecule containing an amino group (-NH2), a carboxyl (-COOH) group, and a variable side chain (R group) that distinguishes the amino acid. Proteins are synthesized from amino acids.
Anaerobic :	Occurring in the absence of oxygen or not requiring oxygen to live. Anaerobic bacteria produce energy from food molecules without the presence of oxygen.
Anatomy:	The scientific study of the shape and structure of organisms and their parts.
Aquatic:	In or on the water
Asexual reproduction:	A form of reproduction in which new individuals are formed without the involvement of gametes.
Atmosphere:	The layers of gas that surround Earth, other planets, or stars.
Biotechnology:	The manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals).
Biotic:	Factors in an environment relating to, caused by, or produced by living organisms.
Carbohydrate:	Any of a group of organic compounds that includes sugars, starches, celluloses, and gums and serves as a major energy source in the diet of animals. These compounds are produced by photosynthetic plants and contain only carbon, hydrogen, and oxygen, usually in the ratio 1:2:1.
Cardiovascular system:	The bodily system consisting of the heart, blood vessels, and blood that circulates blood throughout the body, delivers nutrients and other essential materials to cells, and removes waste products.
Catalyst:	A substance that speeds up or slows down the rate of a reaction without being consumed or altered.
Cell:	The smallest structural unit of an organism that is capable of independent functioning, consisting of cytoplasm and various organelles, all surrounded by a semipermeable cell membrane, which in some cells, is surrounded by a cell wall
Cerebellum :	The part of the vertebrate brain that is located below the cerebrum at the rear of the skull and that coordinates balance

	and muscle activity. In mammals, the cerebellum is made up of two connecting hemispheres that consist of a core of white matter surrounded by gray matter.
Cerebrum :	The largest part of the vertebrate brain, filling most of the skull and consisting of two cerebral hemispheres divided by a deep groove and joined by the corpus callosum, a transverse band of nerve fibers. The cerebrum processes complex sensory information and controls voluntary muscle activity. In humans it is the center of thought, learning, memory, language, and emotion.
Chromosome:	A structure in living cells that consists of a single molecule of DNA bonded to various proteins and that carries the genes determining heredity.
Clone:	To produce genetic material or produce or grow a cell, group of cells, or organism from a single original cell.
Codominant:	Relating to two alleles of a gene pair in a heterozygote that are both fully expressed.
Compound:	A substance made up of at least two different elements held together by chemical bonds that can only be broken down into elements by chemical processes.
Conduction:	To transmit heat, sound, or electricity through a medium.
Consumer:	An organism that feeds on other organisms for food.
Current :	The amount of electric charge flowing past a specified circuit point per unit time.
Decomposer :	Any organism that feeds or obtains nutrients by breaking down organic matter from dead organisms.
Disaccharide:	Any of a class of sugars, including lactose and sucrose, that are composed of two monosaccharides.
Diversity:	The different species in a given area or specific period of time.
DNA:	Deoxyribonucleic acid; a nucleic acid that is genetic material; present in all organisms.
Dominance:	Tendency of certain (dominant) alleles to mask the expression of their corresponding (recessive) alleles.
Electron:	A stable elementary particle in the lepton family having a mass at rest of 9.107 × 10^-28 grams and an electric charge of

	approximately -1.602 × 10^-19 coulombs. Electrons orbit about the positively charged nuclei of atoms in distinct orbitals of different energy levels, called shells.
Electrophoresis:	The migration of electrically charged molecules through a fluid or gel under the influence of an electric field. Electrophoresis is used especially to separate combinations of compounds, such as fragments of DNA, for the purpose of studying their components.
Embryology:	The branch of biology that deals with the formation, early growth, and development of living organisms.
Endosymbiosis:	Symbiosis in which a symbiont dwells within the body of its symbiotic partner.
Energy:	The capacity to do work.
Environment:	The sum of conditions affecting an organism, including all living and nonliving things in an area, such as plants, animals, water, soil, weather, landforms, and air.
Enzyme:	Any of numerous proteins produced in living cells that accelerate or catalyze chemical reactions.
Evolution :	A theory that the various types of species arise from pre-existing species and that distinguishable characteristics are due to modifications through successive generations.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Fatty acid:	Any of a large group of organic acids, especially those found in animal and vegetable fats and oils. Fatty acids are mainly composed of long chains of hydrocarbons ending in a carboxyl group. A fatty acid is saturated when the bonds between carbon atoms are all single bonds. It is unsaturated when any of these bonds is a double bond.
Fertilization:	The process by which the female reproductive cell (egg) is united with the male reproductive cell (sperm).
Fission :	The process by which an atomic nucleus splits into two or more large fragments of comparable mass, simultaneously producing additional neutrons and vast amounts of energy; or, a process by which single-cell organisms reproduce asexually.
Fossil:	A whole or part of an organism that has been preserved in

	sedimentary rock.
Freeze:	To pass from the liquid to the solid state by loss of heat from the substance/system.
Gamete:	A reproductive cell having the haploid number of chromosomes, especially a mature sperm or egg capable of fusing with a gamete of the opposite sex to produce the fertilized egg.
Gas:	One of the fundamental states of matter in which the molecules do not have a fixed volume or shape.
Genetic:	Affecting or determined by genes.
Haploid:	Having a single set of each chromosome in a cell or cell nucleus. In most animals, only the gametes (reproductive cells) are haploid.
Heat:	Energy that transfers between substances because of a temperature difference between the substances; the transfer of energy is always from the warmer substance to the cooler substance
Heredity:	The passage of biological traits or characteristics from parents to offspring through the inheritance of genes.
Hominid:	A group of primates of the family Hominidae, which includes modern humans.
Hypothalamus:	The part of the brain that lies below the thalamus, forming the major portion of the ventral region of the diencephalon and functioning to regulate bodily temperature, certain metabolic processes, and other autonomic activities.
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Immune system:	The body system that protects the organism by distinguishing foreign tissue and neutralizing potentially pathogenic organisms or substances. The immune system includes organs such as the skin and mucous membranes, which provide an external barrier to infection, cells involved in the immune response, such as lymphocytes, and cell products such as lymphokines.
Inference :	The act of reasoning from factual knowledge or evidence.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.

Kinetic energy:	The energy possessed by a body because of its motion.
Law :	A statement that describes invariable relationships among phenomena under a specified set of conditions.
Ligation:	Binding. In genetics, refers to binding fragments of DNA together.
Light:	Electromagnetic radiation that lies within the visible range.
Matter:	Substance that possesses inertia and occupies space, of which all objects are constituted.
Medulla:	The central portion of an anatomical structure, such as the adrenal gland or the kidney.
Meiosis:	The process of nuclear division in cells during which the number of chromosomes is reduced by half.
Membrane:	A thin layer of tissue that surrounds or lines a cell, a group of cells, or a cavity; any barrier separating two fluids.
Meninx :	A membrane, especially one of the three membranes enclosing the brain and spinal cord in vertebrates.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Midbrain:	The middle part of the vertebrate brain. In most animals except mammals, the midbrain processes sensory information. In mammals, it serves primarily to connect the forebrain with the hindbrain.
Mitosis:	A process of nuclear division in eukaryotic cells during which the nucleus of a cell divides into two nuclei, each with the same number of chromosomes.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Molecule:	The smallest unit of matter of a substance that retains all the physical and chemical properties of that substance; consists of a single atom or a group of atoms bonded together.
Monosaccharide:	Any of a class of carbohydrates that cannot be broken down to simpler sugars by hydrolysis and that constitute the building blocks of oligosaccharides and polysaccharides.

Mutation:	A change in genetic sequence.
Natural selection:	The theory stating every organism displays slight variations from related organisms, and these variations make an organism more or less suited for survival and reproduction in specific habitats.
Nonrenewable resource:	A resource that can only be replenished over millions of years.
Observation :	What one has observed using senses or instruments.
Offspring:	The progeny or descendants of an animal or plant considered as a group.
Organ:	A structure containing different tissues that are organized to carry out a specific function of the body (e.g., heart, lungs, brain, etc.)
Organism:	An individual form of life of one or more cells that maintains various vital processes necessary for life.
Phospholipid:	Any of various phosphorus-containing lipids, such as lecithin, that are composed mainly of fatty acids, a phosphate group, and a simple organic molecule such as glycerol.
Photosynthesis:	A chemical process by which plants use light energy to convert carbon dioxide and water into carbohydrates (sugars).
Physiology:	The scientific study of an organism's vital functions, including growth, development, reproduction, the absorption and processing of nutrients, the synthesis and distribution of proteins and other organic molecules, and the functioning of different tissues, organs, and other anatomic structures.
Pollution:	Any alteration of the natural environment producing a condition harmful to living organisms; may occur naturally or as a result of human activities.
Polygenic:	Any of a group of nonallelic genes that collectively control the inheritance of a quantitative character or modify the expression of a qualitative character.
Polysaccharide:	Any of a class of carbohydrates, such as starch and cellulose, consisting of a number of monosaccharides joined by glycosidic bonds.
Pons:	A thick band of nerve fibers in the brainstem of humans and other mammals that links the brainstem to the cerebellum and

	upper portions of the brain. It is important in the reflex control of involuntary processes, including respiration and circulation. All neural information transmitted between the spinal cord and the brain passes through the pons.
Producer :	An organism, usually a plant or bacterium, that produces organic compounds from simple inorganic molecules and energy (typically light energy) from the environment.
Recessive:	An allele for a trait that will be masked unless the organism is homozygous for this trait.
Replication:	In scientific research, conducting an experiment to confirm findings or to ensure accuracy. In molecular biology, the process by which genetic material is copied in cells.
Reproductive system:	The system of organs involved with animal reproduction, especially sexual reproduction.
Scientist:	A person with expert knowledge of one or more sciences, that engages in processes to acquire and communicate knowledge.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Steroid:	Any of numerous naturally occurring or synthetic fat-soluble organic compounds having, as a basis, 17 carbon atoms arranged in four rings and including the sterols and bile acids, adrenal and sex hormones, certain natural drugs such as digitalis compounds, and the precursors of certain vitamins.
Thalamus:	The part of the vertebrate brain that lies at the rear of the forebrain. It relays sensory information to the cerebral cortex and regulates the perception of touch, pain, and temperature.
Theory :	A set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena.
Tissue:	Similar cells acting to perform a specific function.
Triglyceride:	A naturally occurring ester of three fatty acids and glycerol that is the chief constituent of fats and oils.
Vaccine:	A preparation of a weakened or killed pathogen, such as a bacterium or virus, or of a portion of the pathogen's structure, that stimulates immune cells to recognize and attack it, especially

	through antibody production.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.

Course: Biology 2- 2000330

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4271

BASIC INFORMATION

Course Number:	2000330
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Biology 2, BIO 2, Biology
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Biology 2
Course Abbreviated Title:	BIO 2
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Type:	Core
Course Level:	3
Status:	Draft - Board Approval Pending
Honors?	Yes
General Notes:	Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety

	procedures are an integral part of this course. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007). **Special Notes:** **Instructional Practices** Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis: 1. Ensuring wide reading from complex text that varies in length. 2. Making close reading and rereading of texts central to lessons. 3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence. 4. Emphasizing students supporting answers based upon evidence from the text. 5. Providing extensive research and writing opportunities (claims and evidence).

STANDARDS (94)

Integrate Standards for Mathematical Practice (MP) as applicable.

- MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MAFS.K12.MP.2.1 Reason abstractly and quantitatively.
- MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MAFS.K12.MP.4.1 Model with mathematics.
- MAFS.K12.MP.5.1 Use appropriate tools strategically.
- MAFS.K12.MP.6.1 Attend to precision.
- MAFS.K12.MP.7.1 Look for and make use of structure.
- MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

Science and Engineering Practices (NRC *Framework for K-12 Science Education, 2010*)

- Asking questions (for science) and defining problems (for engineering).
- Developing and using models.
- Planning and carrying out investigations.
- Analyzing and interpreting data.
- Using mathematics, information and computer technology, and computational thinking.
- Constructing explanations (for science) and designing solutions (for engineering).
- Engaging in argument from evidence.
- Obtaining, evaluating, and communicating information.

HE.912.C.1.3:	Evaluate how environment and personal health are interrelated. Remarks/Examples
	Food options within a community; prenatal-care services; availability of recreational facilities; air quality; weather-safety awareness; and weather, air, and water conditions.
HE.912.C.1.5:	Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases. Remarks/Examples
	Health prevention, detection, and treatment of: breast and testicular cancer, suicide, obesity, and industrial-related chronic disease.
HE.912.C.1.7:	Analyze how heredity and family history can impact personal health. Remarks/Examples

	Drug use, family obesity, heart disease, mental health, and non-communicable illness or disease.
LAFS.1112.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
LAFS.1112.RST.1.2:	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LAFS.1112.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LAFS.1112.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
LAFS.1112.RST.2.5:	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LAFS.1112.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
LAFS.1112.RST.3.7:	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
LAFS.1112.RST.3.8:	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LAFS.1112.RST.3.9:	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LAFS.1112.RST.4.10:	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently

	and proficiently.
LAFS.1112.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
LAFS.1112.SL.1.2:	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
LAFS.1112.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
LAFS.1112.SL.2.4:	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose,

	audience, and a range of formal and informal tasks.
LAFS.1112.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.1112.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
LAFS.1112.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
LAFS.1112.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
LAFS.1112.WHST.1.1:	Write arguments focused on *discipline-specific content.* a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.

	e. Provide a concluding statement or section that follows from or supports the argument presented.
LAFS.1112.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
LAFS.1112.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LAFS.1112.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and

	audience.
LAFS.1112.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
LAFS.1112.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
MAFS.912.F-IF.2.4:	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* Remarks/Examples
	Algebra 1, Unit 2: For F.IF.4 and 5, focus on linear and exponential functions. **Algebra 1 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Tasks are limited to linear functions, quadratic functions, square root functions, cube root functions, piecewise-defined functions (including step functions and absolute value functions), and exponential functions with domains in the integers. Compare note (ii) with standard F-IF.7. The function types listed here are the same as those listed in the Algebra I column for standards F-IF.6 and F-IF.9. **Algebra 2 Assessment Limits and Clarifications** i) Tasks have a real-world context ii) Tasks may involve polynomial, exponential, logarithmic, and trigonometric functions. Compare note (ii) with standard F-IF.7. The function types listed

	here are the same as those listed in the Algebra II column for standards F-IF.6 and F-IF.9.
MAFS.912.F-IF.3.7:	MACC.912.F-IF.3.7 (2013-2014): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. **MAFS.912.F-IF.3.7 (2014-2015): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.** **a. Graph linear and quadratic functions and show intercepts, maxima, and minima.** **b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.** **c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.** **d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.** **e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and**

	using phase shift. Remarks/Examples
	Algebra 1, Unit 2: For F.IF.7a, 7e, and 9 focus on linear and exponentials functions. Include comparisons of two functions presented algebraically. For example, compare the growth of two linear functions, or two exponential functions such as $y=3^n$ and $y=100^2$
MAFS.912.G-MG.1.2:	Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).
MAFS.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.S-IC.2.6:	Evaluate reports based on data.
MAFS.912.S-ID.1.1:	Represent data with plots on the real number line (dot plots, histograms, and box plots). Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape

	of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.3:	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.4:	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
MAFS.912.S-ID.2.5:	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
MAFS.912.S-ID.2.6:	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear, and exponential models.* b. Informally assess the fit of a function by plotting and analyzing residuals.

	c. Fit a linear function for a scatter plot that suggests a linear association. Remarks/Examples
	Students take a more sophisticated look at using a linear function to model the relationship between two numerical variables. In addition to fitting a line to data, students assess how well the model fits by analyzing residuals. S.ID.6b should be focused on linear models, but may be used to preview quadratic functions in Unit 5 of this course. **Algebra 1 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Exponential functions are limited to those with domains in the integers. **Algebra 2 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Tasks are limited to exponential functions with domains not in the integers and trigonometric functions.
SC.912.L.14.50:	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems.
SC.912.L.14.53:	Discuss basic classification and characteristics of plants. Identify bryophytes, pteridophytes, gymnosperms, and angiosperms.
SC.912.L.14.6:	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.
SC.912.L.14.8:	Explain alternation of generations in plants.
SC.912.L.14.9:	Relate the major structure of fungi to their functions.
SC.912.L.15.1:	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change.

	Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.10; SC.912.N.1.3; SC.912.N.1.4; SC.912.N.1.6; SC.912.N.2.1; SC.912.N.3.1; and SC.912.N.3.4.
SC.912.L.15.11:	Discuss specific fossil hominids and what they show about human evolution.
SC.912.L.15.4:	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.
SC.912.L.15.5:	Explain the reasons for changes in how organisms are classified.
SC.912.L.15.7:	Discuss distinguishing characteristics of vertebrate and representative invertebrate phyla, and chordate classes using typical examples.
SC.912.L.15.8:	Describe the scientific explanations of the origin of life on Earth. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.N.1.3, SC.912.N.1.4, and SC.912.N.2.1.
SC.912.L.15.9:	Explain the role of reproductive isolation in the process of speciation.
SC.912.L.16.11:	Discuss the technologies associated with forensic medicine and DNA identification, including restriction fragment length polymorphism (RFLP) analysis.
SC.912.L.16.12:	Describe how basic DNA technology (restriction digestion by endonucleases, gel electrophoresis, polymerase chain reaction, ligation, and transformation) is used to construct recombinant DNA molecules (DNA cloning).
SC.912.L.16.15:	Compare and contrast binary fission and mitotic cell division.
SC.912.L.16.6:	Discuss the mechanisms for regulation of gene expression in prokaryotes and eukaryotes at transcription and translation level.
SC.912.L.16.7:	Describe how viruses and bacteria transfer genetic material between cells and the role of this process in biotechnology.
SC.912.L.17.1:	Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.

	Remarks/Examples Connections: MAFS.K12.MP.7: Look for and make use of structure.
SC.912.L.17.10:	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.
SC.912.L.17.11:	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.
SC.912.L.17.12:	Discuss the political, social, and environmental consequences of sustainable use of land. Remarks/Examples Integrate HE.912.C.1.3. Evaluate how environment and personal health are interrelated.
SC.912.L.17.13:	Discuss the need for adequate monitoring of environmental parameters when making policy decisions.
SC.912.L.17.14:	Assess the need for adequate waste management strategies.
SC.912.L.17.15:	Discuss the effects of technology on environmental quality.
SC.912.L.17.16:	Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution. Remarks/Examples Integrate HE.912.C.1.3. Evaluate how environment and personal health are interrelated; and, HE.912.C.1.5. Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases.
SC.912.L.17.17:	Assess the effectiveness of innovative methods of protecting the environment.
SC.912.L.17.18:	Describe how human population size and resource use relate to environmental quality.
SC.912.L.17.19:	Describe how different natural resources are produced and how their rates of use and renewal limit availability.
SC.912.L.17.20:	Predict the impact of individuals on environmental systems and examine how human lifestyles affect sustainability.

	Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.17.11, SC.912.L.17.13, SC.912.N.1.3.
SC.912.L.17.3:	Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.
SC.912.L.17.6:	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.
SC.912.L.17.7:	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.
SC.912.L.17.8:	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
SC.912.L.17.9:	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.E.7.1.
SC.912.L.18.1:	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.18.11.
SC.912.L.18.10:	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell.
SC.912.L.18.11:	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
SC.912.L.18.12:	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and

	versatility as a solvent. Remarks/Examples
	Annually assessed on Biology EOC.
SC.912.L.18.5:	Discuss the use of chemiosmotic gradients for ATP production in chloroplasts and mitochondria.
SC.912.L.18.7:	Identify the reactants, products, and basic functions of photosynthesis.
SC.912.L.18.8:	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.
SC.912.L.18.9:	Explain the interrelated nature of photosynthesis and cellular respiration. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.18.7; SC.912.L.18.8; SC.912.L.18.10.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models). 5. **Plan investigations,** (Design and evaluate a scientific investigation). 6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables**

	and graphs), (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage). 7. **Pose answers, explanations, or descriptions of events,** 8. **Generate explanations that explicate or describe natural phenomena (inferences),** 9. **Use appropriate evidence and reasoning to justify these explanations to others,** 10. **Communicate results of scientific investigations, and** 11. **Evaluate the merits of the explanations produced by others.** Remarks/Examples
	Connections for 6-12 Literacy in Science <u>For Students in Grades 9-10</u> LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text. LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. <u>For Students in Grades 11-12</u> LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure

	when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.4:	Identify sources of information and assess their reliability according to the strict standards of scientific investigation. Remarks/Examples
	Read, interpret, and examine the credibility and validity of scientific claims in different sources of information, such as scientific articles, advertisements, or media stories. Strict standards of science include controlled variables, sufficient sample size, replication of results, empirical and measurable evidence, and the concept of falsification. Connections: LAFS.910.RST.1.1 / LAFS.1112.RST.1.1.
SC.912.N.1.5:	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome. Remarks/Examples

	Recognize that contributions to science can be made and have been made by people from all over the world.
SC.912.N.1.7:	Recognize the role of creativity in constructing scientific questions, methods and explanations. Remarks/Examples
	Work through difficult problems using creativity, and critical and analytical thinking in problem solving (e.g. convergent versus divergent thinking and creativity in problem solving). Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and MAFS.K12.MP.2: Reason abstractly and quantitatively.
SC.912.N.2.1:	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science). Remarks/Examples
	Science is the systematic and organized inquiry that is derived from observations and experimentation that can be verified or tested by further investigation to explain natural phenomena (e.g. Science is testable, pseudo-science is not; science seeks falsifications, pseudo-science seeks confirmations.)
SC.912.N.2.2:	Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion. Remarks/Examples
	Identify scientific questions that can be disproved by experimentation/testing. Recognize that pseudoscience is a claim, belief, or practice which is presented as scientific, but does not adhere to strict standards of science (e.g. controlled variables, sample size, replicability, empirical and measurable evidence, and the concept of falsification). Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.

SC.912.N.2.4:	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability. Remarks/Examples
	Recognize that ideas with the most durable explanatory power become established theories, but scientific explanations are continually subjected to change in the face of new evidence. Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.2.5:	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations. Remarks/Examples
	Recognize that scientific questions, observations, and conclusions may be influenced by the existing state of scientific knowledge, the social and cultural context of the researcher, and the observer's experiences and expectations. Identify possible bias in qualitative and quantitative data analysis.
SC.912.N.3.1:	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer. Remarks/Examples
	Explain that a scientific theory is a well-tested hypothesis supported by a preponderance of empirical evidence. Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; and, MAFS.K12.MP.3: Construct

	viable arguments and critique the reasoning of others.
SC.912.N.3.2:	Describe the role consensus plays in the historical development of a theory in any one of the disciplines of science. Remarks/Examples
	Recognize that scientific argument, disagreement, discourse, and discussion create a broader and more accurate understanding of natural processes and events. Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.4.2:	Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental. Remarks/Examples
	Identify examples of technologies, objects, and processes that have been modified to advance society, and explain why and how they were modified. Discuss ethics in scientific research to advance society (e.g. global climate change, historical development of medicine and medical practices). Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them, and MAFS.K12.MP.2: Reason abstractly and quantitatively.
SC.912.P.10.1:	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. Remarks/Examples
	Differentiate between kinetic and potential energy. Recognize that energy cannot be created or destroyed, only transformed. Identify examples of transformation of energy: Heat to light in incandescent electric light bulbs; Light to heat in laser drills; Electrical to sound in radios; Sound to electrical in microphones; Electrical to chemical in battery rechargers; Chemical to electrical in dry cells; Mechanical to electrical in generators [power plants]; Nuclear to heat in nuclear reactors; Gravitational potential energy of a falling object is converted to kinetic energy then to heat and sound energy when the object hits the ground.
SC.912.P.8.10:	Describe oxidation-reduction reactions in living and non-living

	systems. Remarks/Examples
	Identify the substance(s) losing and gaining electrons in oxidation-reduction reactions. Discuss voltaic cells, various types of batteries, electrolysis of water, smelting and purification of metals, electrolysis of brine versus molten NaCl, neutralization reactions, electrolytic cells, and living systems (photosynthesis and cellular respiration).

RELATED GLOSSARY TERM DEFINITIONS (72)

Abiotic:	An environmental factor not associated with or derived from living organisms.
Activation energy:	The least amount of energy required to start a particular chemical reaction.
Adenosine triphosphate (ATP):	An organic compound that is composed of adenosine and three phosphate groups. It serves as a source of energy for many metabolic processes. ATP releases energy when it is broken down into ADP and phosphate by hydrolysis during cell metabolism.
Aerobic:	Occurring in the presence of oxygen or requiring oxygen to live. In aerobic respiration, which is the process used by the cells of most organisms, the production of energy from glucose metabolism requires the presence of oxygen.
Anaerobic :	Occurring in the absence of oxygen or not requiring oxygen to live. Anaerobic bacteria produce energy from food molecules without the presence of oxygen.
Anatomy:	The scientific study of the shape and structure of organisms and their parts.
Angiosperm:	Any of a large group of plants that produce flowers. They develop seeds from ovules contained in ovaries, and the seeds are enclosed by fruits, which develop from carpels.
Aquatic:	In or on the water
Bacteria:	Any of a large group of one-celled organisms that lack a cell nucleus, reproduce by fission or by forming spores, and in some cases cause disease.

Biotechnology:	The manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals).
Biotic:	Factors in an environment relating to, caused by, or produced by living organisms.
Bryophyte:	Any of a division (Bryophyta) of non-flowering and non-vascular plants comprising the mosses, liverworts, and hornworts, that undergo sexual reproduction via spores.
Catalyst:	A substance that speeds up or slows down the rate of a reaction without being consumed or altered.
Cell:	The smallest structural unit of an organism that is capable of independent functioning, consisting of cytoplasm and various organelles, all surrounded by a semipermeable cell membrane, which in some cells, is surrounded by a cell wall
Chemiosmotic:	Relating to or being a theory that seeks to explain the mechanism of ATP formation in oxidative phosphorylation by mitochondria and chloroplasts without recourse to the formation of high-energy intermediates by postulating the formation of an energy gradient of hydrogen ions across the organelle membranes that results in the reversible movement of hydrogen ions to the outside and is generated by electron transport or the activity of electron carriers.
Chloroplast:	A plastid in most cells of most plants that contains chlorophylls and carotenoid pigments and produces glucose through photosynthesis.
Clone:	To produce genetic material or produce or grow a cell, group of cells, or organism from a single original cell.
Conduction:	To transmit heat, sound, or electricity through a medium.
Consumer:	An organism that feeds on other organisms for food.
Current :	The amount of electric charge flowing past a specified circuit point per unit time.
Decomposer :	Any organism that feeds or obtains nutrients by breaking down organic matter from dead organisms.
Density:	Concentration of matter of an object; number of individuals in the same species that live in a given area; the mass per unit

	volume.
DNA:	Deoxyribonucleic acid; a nucleic acid that is genetic material; present in all organisms.
Electron:	A stable elementary particle in the lepton family having a mass at rest of 9.107 × 10^-28 grams and an electric charge of approximately -1.602 × 10^-19 coulombs. Electrons orbit about the positively charged nuclei of atoms in distinct orbitals of different energy levels, called shells.
Electrophoresis:	The migration of electrically charged molecules through a fluid or gel under the influence of an electric field. Electrophoresis is used especially to separate combinations of compounds, such as fragments of DNA, for the purpose of studying their components.
Embryology:	The branch of biology that deals with the formation, early growth, and development of living organisms.
Energy:	The capacity to do work.
Environment:	The sum of conditions affecting an organism, including all living and nonliving things in an area, such as plants, animals, water, soil, weather, landforms, and air.
Enzyme:	Any of numerous proteins produced in living cells that accelerate or catalyze chemical reactions.
Eukaryote:	An organism whose cells contain a nucleus surrounded by a membrane and containing DNA bound together by proteins (histones) into chromosomes.
Evolution :	A theory that the various types of species arise from pre-existing species and that distinguishable characteristics are due to modifications through successive generations.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Fission :	The process by which an atomic nucleus splits into two or more large fragments of comparable mass, simultaneously producing additional neutrons and vast amounts of energy; or, a process by which single-cell organisms reproduce asexually.
Forensic:	Relating to the use of science or technology in the investigation and establishment of facts or evidence in a court of law.

Fossil:	A whole or part of an organism that has been preserved in sedimentary rock.
Freeze:	To pass from the liquid to the solid state by loss of heat from the substance/system.
Fungus:	A kingdom of eukaryotic organisms that reproduce by spores and have cell walls that contain chitin, examples include the mushrooms, molds, yeasts, and mildews.
Gas:	One of the fundamental states of matter in which the molecules do not have a fixed volume or shape.
Genetic:	Affecting or determined by genes.
Gymnosperm:	A plant, such as a cycad or conifer, whose seeds are not enclosed within an ovary.
Heat:	Energy that transfers between substances because of a temperature difference between the substances; the transfer of energy is always from the warmer substance to the cooler substance
Hominid:	A group of primates of the family Hominidae, which includes modern humans.
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Inference :	The act of reasoning from factual knowledge or evidence.
Invertebrate:	An animal that has no backbone or spinal column and therefore does not belong to the subphylum Vertebrata of the phylum Chordata. Most animals are invertebrates. Corals, insects, worms, jellyfish, starfish, and snails are examples of invertebrates.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Kinetic energy:	The energy possessed by a body because of its motion.
Ligation:	Binding. In genetics, refers to binding fragments of DNA together.
Light:	Electromagnetic radiation that lies within the visible range.
Metal:	Any of a category of electropositive elements that usually have a shiny surface, are generally good conductors of heat and electricity, and can be melted or fused, hammered into thin sheets, or drawn into wires.

Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Mitochondrion:	A spherical or elongated organelle in the cytoplasm of nearly all eukaryotic cells that uses enzymes and membranes to make chemical energy available to the cell to make food to usable energy.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Molecule:	The smallest unit of matter of a substance that retains all the physical and chemical properties of that substance; consists of a single atom or a group of atoms bonded together.
Natural resource:	Something, such as a forest, a mineral deposit, or fresh water, that is found in nature and is necessary or useful to humans.
Nonrenewable resource:	A resource that can only be replenished over millions of years.
Observation :	What one has observed using senses or instruments.
Organ:	A structure containing different tissues that are organized to carry out a specific function of the body (e.g., heart, lungs, brain, etc.)
Organism:	An individual form of life of one or more cells that maintains various vital processes necessary for life.
Photosynthesis:	A chemical process by which plants use light energy to convert carbon dioxide and water into carbohydrates (sugars).
Pollution:	Any alteration of the natural environment producing a condition harmful to living organisms; may occur naturally or as a result of human activities.
Polymorphism:	The existence of two or more, usually discrete, different forms in an adult organism of the same species in the same habitat at the same time. In bees, the presence of queen, worker, and drone is an example of polymorphism. Differences between the sexes and between breeds of domesticated animals are not considered examples of polymorphism.
Producer :	An organism, usually a plant or bacterium, that produces organic

	compounds from simple inorganic molecules and energy (typically light energy) from the environment.
Prokaryote:	One-celled organisms of the kingdom Monera (or Prokaryota) that are the most primitive and ancient known forms of life.
Pteridophyte:	Vascular plants that reproduce by means of spores rather than by seeds, including the ferns and related plants, such as club mosses and horsetails.
Scientist:	A person with expert knowledge of one or more sciences, that engages in processes to acquire and communicate knowledge.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Theory :	A set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena.
Tide:	The regular rise and fall in the surface level of the Earth's oceans, seas, and bays caused by the gravitational attraction of the Moon and to a lesser extent of the Sun.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.
Vertebrate:	Any of a large group of chordates of the subphylum Vertebrata (or Craniata), characterized by having a backbone. Vertebrates include fish, amphibians, reptiles, birds, and mammals.
Virus:	A noncellular, usually disease-causing, particle with an outer protein code and a core of genetic material that is capable of growth and replication in living host cells.

Course: Anatomy and Physiology- 2000350

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4288

BASIC INFORMATION

Course Number:	2000350
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Anatomy and Physiology, ANAT PHYSIO, Anatomy, Physiology
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Anatomy and Physiology
Course Abbreviated Title:	ANAT PHYSIO
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Type:	Core
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety

	procedures are an integral part of this course. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007). **Special Notes:** **Instructional Practices** Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis: 1. Ensuring wide reading from complex text that varies in length. 2. Making close reading and rereading of texts central to lessons. 3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence. 4. Emphasizing students supporting answers based upon evidence from the text. 5. Providing extensive research and writing opportunities (claims and evidence).

STANDARDS (74)

Integrate Standards for Mathematical Practice (MP) as applicable.

- MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MAFS.K12.MP.2.1 Reason abstractly and quantitatively.
- MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MAFS.K12.MP.4.1 Model with mathematics.
- MAFS.K12.MP.5.1 Use appropriate tools strategically.
- MAFS.K12.MP.6.1 Attend to precision.
- MAFS.K12.MP.7.1 Look for and make use of structure.
- MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

HE.912.C.1.3:	Evaluate how environment and personal health are interrelated. Remarks/Examples
	Food options within a community; prenatal-care services; availability of recreational facilities; air quality; weather-safety awareness; and weather, air, and water conditions.
HE.912.C.1.5:	Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases. Remarks/Examples
	Health prevention, detection, and treatment of: breast and testicular cancer, suicide, obesity, and industrial-related chronic disease.
HE.912.C.1.7:	Analyze how heredity and family history can impact personal health. Remarks/Examples
	Drug use, family obesity, heart disease, mental health, and non-communicable illness or disease.
LAFS.1112.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
LAFS.1112.RST.1.2:	Determine the central ideas or conclusions of a text; summarize

	complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LAFS.1112.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LAFS.1112.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
LAFS.1112.RST.2.5:	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LAFS.1112.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
LAFS.1112.RST.3.7:	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
LAFS.1112.RST.3.8:	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LAFS.1112.RST.3.9:	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LAFS.1112.RST.4.10:	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.
SC.912.L.14.39:	Describe hypertension and some of the factors that produce it.
SC.912.L.14.41:	Describe fetal circulation and changes that occur to the circulatory system at birth.
LAFS.1112.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues,

	building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
LAFS.1112.SL.1.2:	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
LAFS.1112.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
LAFS.1112.SL.2.4:	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
LAFS.1112.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence

	and to add interest.
LAFS.1112.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
LAFS.1112.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
LAFS.1112.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
SC.912.L.14.42:	Describe the anatomy and the physiology of the lymph system.
LAFS.1112.WHST.1.1:	Write arguments focused on *discipline-specific content.* a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.

LAFS.1112.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
LAFS.1112.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LAFS.1112.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LAFS.1112.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to

	ongoing feedback, including new arguments or information.
LAFS.1112.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
MAFS.912.F-IF.2.4:	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* Remarks/Examples
	Algebra 1, Unit 2: For F.IF.4 and 5, focus on linear and exponential functions. **Algebra 1 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Tasks are limited to linear functions, quadratic functions, square root functions, cube root functions, piecewise-defined functions (including step functions and absolute value functions), and exponential functions with domains in the integers. Compare note (ii) with standard F-IF.7. The function types listed here are the same as those listed in the Algebra I column for standards F-IF.6 and F-IF.9. **Algebra 2 Assessment Limits and Clarifications** i) Tasks have a real-world context ii) Tasks may involve polynomial, exponential, logarithmic, and trigonometric functions. Compare note (ii) with standard F-IF.7. The function types listed here are the same as those listed in the Algebra II column for standards F-IF.6 and F-IF.9.

MAFS.912.F-IF.3.7:	MACC.912.F-IF.3.7 (2013-2014): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. **MAFS.912.F-IF.3.7 (2014-2015): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.** **a. Graph linear and quadratic functions and show intercepts, maxima, and minima.** **b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.** **c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.** **d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.** **e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.** Remarks/Examples Algebra 1, Unit 2: For F.IF.7a, 7e, and 9 focus on linear and

	exponentials functions. Include comparisons of two functions presented algebraically. For example, compare the growth of two linear functions, or two exponential functions such as $y=3^n$ and $y=100^2$
MAFS.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.S-ID.1.1:	Represent data with plots on the real number line (dot plots, histograms, and box plots). Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.

MAFS.912.S-ID.1.3:	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.4:	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
MAFS.912.S-ID.2.5:	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
MAFS.912.S-ID.2.6:	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear, and exponential models.* b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. Remarks/Examples
	Students take a more sophisticated look at using a linear function to model the relationship between two numerical variables. In addition to fitting a line to data, students assess how well the model fits by analyzing residuals.

	S.ID.6b should be focused on linear models, but may be used to preview quadratic functions in Unit 5 of this course. **Algebra 1 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Exponential functions are limited to those with domains in the integers. **Algebra 2 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Tasks are limited to exponential functions with domains not in the integers and trigonometric functions.
SC.912.L.14.11:	Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue.
SC.912.L.14.12:	Describe the anatomy and histology of bone tissue.
SC.912.L.14.13:	Distinguish between bones of the axial skeleton and the appendicular skeleton.
SC.912.L.14.14:	Identify the major bones of the axial and appendicular skeleton.
SC.912.L.14.16:	Describe the anatomy and histology, including ultrastructure, of muscle tissue.
SC.912.L.14.17:	List the steps involved in the sliding filament of muscle contraction.
SC.912.L.14.18:	Describe signal transmission across a myoneural junction.
SC.912.L.14.20:	Identify the major muscles of the human on a model or diagram. Remarks/Examples
	Refer to MAFS.K12.MP.4: Model with mathematics.
SC.912.L.14.21:	Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system.
SC.912.L.14.23:	Identify the parts of a reflex arc.
SC.912.L.14.24:	Identify the general parts of a synapse and describe the

	physiology of signal transmission across a synapse.
SC.912.L.14.25:	Identify the major parts of a cross section through the spinal cord.
SC.912.L.14.26:	Identify the major parts of the brain on diagrams or models. Remarks/Examples
	Annually Assessed on Biology EOC. Connections: MAFS.K12.MP.4: Model with mathematics.
SC.912.L.14.28:	Identify the major functions of the spinal cord.
SC.912.L.14.29:	Define the terms endocrine and exocrine.
SC.912.L.14.30:	Compare endocrine and neural controls of physiology.
SC.912.L.14.32:	Describe the anatomy and physiology of the endocrine system.
SC.912.L.14.33:	Describe the basic anatomy and physiology of the reproductive system.
SC.912.L.14.34:	Describe the composition and physiology of blood, including that of the plasma and the formed elements.
SC.912.L.14.35:	Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions.
SC.912.L.14.36:	Describe the factors affecting blood flow through the cardiovascular system.
SC.912.L.14.38:	Describe normal heart sounds and what they mean.
SC.912.L.14.44:	Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport and the mechanisms that control the rate of ventilation.
SC.912.L.14.46:	Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption and the neural and hormonal mechanisms of control.
SC.912.L.14.47:	Describe the physiology of urine formation by the kidney.
SC.912.L.14.49:	Identify the major functions associated with the sympathetic and parasympathetic nervous systems.
SC.912.L.14.50:	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems.

SC.912.L.14.51:	Describe the function of the vertebrate integumentary system.
SC.912.L.14.52:	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. Remarks/Examples Annually Assessed on Biology EOC. Also assesses SC.912.L.14.6; HE.912.C.1.7; and HE.912.C.1.5.
SC.912.L.16.8:	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer. Remarks/Examples Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health.
SC.912.L.18.1:	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.18.11.
SC.912.L.18.11:	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,**

(Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).

5. **Plan investigations,** (Design and evaluate a scientific investigation).
6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).
7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

Remarks/Examples

Connections for 6-12 Literacy in Science

<u>For Students in Grades 9-10</u>

LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.

LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

	LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. For Students in Grades 11-12 LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.2:	Describe and explain what characterizes science and its methods. Remarks/Examples
	Science is characterized by empirical observations, testable questions, formation of hypotheses, and experimentation that results in stable and replicable results, logical reasoning, and coherent theoretical constructs. Connections: MAFS.K12.MP.3: Construct viable arguments and

	critique the reasoning of others.

RELATED GLOSSARY TERM DEFINITIONS (46)

Absorption :	1-The taking up and storing of energy, such as radiation, light, or sound, without it being reflected or transmitted. 2- The movement of a substance, such as a liquid or solute, across a cell membrane by means of diffusion or osmosis.- The process by which one substance, such as a solid or liquid, takes up another substance, such as a liquid or gas, through minute pores or spaces between its molecules. A paper towel takes up water, and water takes up carbon dioxide, by absorption.
Activation energy:	The least amount of energy required to start a particular chemical reaction.
Anatomy:	The scientific study of the shape and structure of organisms and their parts.
Axial skeleton:	The bones constituting the head and trunk of a vertebrate body.
Cardiovascular system:	The bodily system consisting of the heart, blood vessels, and blood that circulates blood throughout the body, delivers nutrients and other essential materials to cells, and removes waste products.
Catalyst:	A substance that speeds up or slows down the rate of a reaction without being consumed or altered.
Cell:	The smallest structural unit of an organism that is capable of independent functioning, consisting of cytoplasm and various organelles, all surrounded by a semipermeable cell membrane, which in some cells, is surrounded by a cell wall
Circulatory system:	The bodily system consisting of the heart, blood vessels, and blood that circulates blood throughout the body, delivers nutrients and other essential materials to cells, and removes waste products.
Coagulation:	The process of changing from a liquid to a gel or solid state by a series of chemical reactions, especially the process that results in the formation of a blood clot.
Conduction:	To transmit heat, sound, or electricity through a medium.

Connective tissue:	Tissue that connects, supports, binds, or encloses the structures of the body. Connective tissues are made up of cells embedded in an extracellular matrix and include bones, cartilage, mucous membranes, fat, and blood.
Digestive system:	The alimentary canal and digestive glands regarded as an integrated system responsible for the ingestion, digestion, and absorption of food.
Endocrine:	Of or relating to endocrine glands or the hormones secreted by them.
Enzyme:	Any of numerous proteins produced in living cells that accelerate or catalyze chemical reactions.
Epithelial tissue:	Membranous tissue covering internal organs and other internal surfaces of the body.
Exocrine:	Producing, being, or relating to a secretion that is released outside its source.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Gas:	One of the fundamental states of matter in which the molecules do not have a fixed volume or shape.
Hemostasis:	The stoppage of blood flow through a blood vessel or body part.
Heredity:	The passage of biological traits or characteristics from parents to offspring through the inheritance of genes.
Histology:	The scientific study of the microscopic structure of organism tissues.
Hypertension:	Abnormally high blood pressure and especially arterial blood pressure.
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Immune system:	The body system that protects the organism by distinguishing foreign tissue and neutralizing potentially pathogenic organisms or substances. The immune system includes organs such as the skin and mucous membranes, which provide an external barrier to infection, cells involved in the immune response, such as lymphocytes, and cell products such as lymphokines.

Course: Anatomy and Physiology Honors-2000360

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4290

BASIC INFORMATION

Course Number:	2000360
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Anatomy and Physiology Honors, ANAT PHYSIO HON, Anatomy, Physiology, Honors
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Anatomy and Physiology Honors
Course Abbreviated Title:	ANAT PHYSIO HON
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Type:	Core
Course Level:	3
Status:	Draft - Board Approval Pending
Honors?	Yes

General Notes:	While the content focus of this course is consistent with the Anatomy and Physiology course, students will explore these concepts in greater depth. In general, the academic pace and rigor will be greatly increased for honors level course work. Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. The National Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007). **Special Notes:** **Instructional Practices** Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis: 1. Ensuring wide reading from complex text that varies in length. 2. Making close reading and rereading of texts central to lessons. 3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence. 4. Emphasizing students supporting answers based upon evidence from the text. 5. Providing extensive research and writing opportunities

	(claims and evidence).

STANDARDS (88)

Integrate Standards for Mathematical Practice (MP) as applicable.

- MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MAFS.K12.MP.2.1 Reason abstractly and quantitatively.
- MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MAFS.K12.MP.4.1 Model with mathematics.
- MAFS.K12.MP.5.1 Use appropriate tools strategically.
- MAFS.K12.MP.6.1 Attend to precision.
- MAFS.K12.MP.7.1 Look for and make use of structure.
- MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

HE.912.C.1.3:	Evaluate how environment and personal health are interrelated. Remarks/Examples
	Food options within a community; prenatal-care services; availability of recreational facilities; air quality; weather-safety awareness; and weather, air, and water conditions.
HE.912.C.1.5:	Analyze strategies for prevention, detection, and treatment of communicable and chronic diseases. Remarks/Examples
	Health prevention, detection, and treatment of: breast and testicular cancer, suicide, obesity, and industrial-related chronic disease.
HE.912.C.1.7:	Analyze how heredity and family history can impact personal health. Remarks/Examples
	Drug use, family obesity, heart disease, mental health, and non-communicable illness or disease.
LAFS.1112.RST.1.1:	Cite specific textual evidence to support analysis of science and

	technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
LAFS.1112.RST.1.2:	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LAFS.1112.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LAFS.1112.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
LAFS.1112.RST.2.5:	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LAFS.1112.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
LAFS.1112.RST.3.7:	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
LAFS.1112.RST.3.8:	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LAFS.1112.RST.3.9:	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LAFS.1112.RST.4.10:	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.
LAFS.1112.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues,

	building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
LAFS.1112.SL.1.2:	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
LAFS.1112.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
LAFS.1112.SL.2.4:	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
LAFS.1112.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence

	and to add interest.
LAFS.1112.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
LAFS.1112.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
LAFS.1112.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
LAFS.1112.WHST1.1d:	Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.
LAFS.1112.WHST.1.1:	Write arguments focused on *discipline-specific content.* a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows

	from or supports the argument presented.
LAFS.1112.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
LAFS.1112.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LAFS.1112.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

LAFS.1112.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
LAFS.1112.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
MAFS.912.F-IF.2.4:	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. *Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.* Remarks/Examples
	Algebra 1, Unit 2: For F.IF.4 and 5, focus on linear and exponential functions. **Algebra 1 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Tasks are limited to linear functions, quadratic functions, square root functions, cube root functions, piecewise-defined functions (including step functions and absolute value functions), and exponential functions with domains in the integers. Compare note (ii) with standard F-IF.7. The function types listed here are the same as those listed in the Algebra I column for standards F-IF.6 and F-IF.9. **Algebra 2 Assessment Limits and Clarifications** i) Tasks have a real-world context ii) Tasks may involve polynomial, exponential, logarithmic, and trigonometric functions. Compare note (ii) with standard F-IF.7. The function types listed here are the same as those listed in the Algebra II column for

	standards F-IF.6 and F-IF.9.
MAFS.912.F-IF.3.7:	MACC.912.F-IF.3.7 (2013-2014): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. **MAFS.912.F-IF.3.7 (2014-2015): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.** **a. Graph linear and quadratic functions and show intercepts, maxima, and minima.** **b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.** **c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.** **d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.** **e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.**

	Remarks/Examples
	Algebra 1, Unit 2: For F.IF.7a, 7e, and 9 focus on linear and exponentials functions. Include comparisons of two functions presented algebraically. For example, compare the growth of two linear functions, or two exponential functions such as $y=3^n$ and $y=100^2$
MAFS.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.S-IC.2.6:	Evaluate reports based on data.
MAFS.912.S-ID.1.1:	Represent data with plots on the real number line (dot plots, histograms, and box plots). Remarks/Examples
	In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

	Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.3:	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). Remarks/Examples In grades 6 – 8, students describe center and spread in a data distribution. Here they choose a summary statistic appropriate to the characteristics of the data distribution, such as the shape of the distribution or the existence of extreme data points.
MAFS.912.S-ID.1.4:	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve.
MAFS.912.S-ID.2.5:	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
MAFS.912.S-ID.2.6:	Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. *Use given functions or choose a function suggested by the context. Emphasize linear, and exponential models.* b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. Remarks/Examples

	Students take a more sophisticated look at using a linear function to model the relationship between two numerical variables. In addition to fitting a line to data, students assess how well the model fits by analyzing residuals. S.ID.6b should be focused on linear models, but may be used to preview quadratic functions in Unit 5 of this course. **Algebra 1 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Exponential functions are limited to those with domains in the integers. **Algebra 2 Assessment Limits and Clarifications** i) Tasks have a real-world context. ii) Tasks are limited to exponential functions with domains not in the integers and trigonometric functions.
SC.912.L.14.11:	Classify and state the defining characteristics of epithelial tissue, connective tissue, muscle tissue, and nervous tissue.
SC.912.L.14.12:	Describe the anatomy and histology of bone tissue.
SC.912.L.14.13:	Distinguish between bones of the axial skeleton and the appendicular skeleton.
SC.912.L.14.14:	Identify the major bones of the axial and appendicular skeleton.
SC.912.L.14.15:	Identify major markings (such as foramina, fossae, tubercles, etc.) on a skeleton. Explain why these markings are important.
SC.912.L.14.16:	Describe the anatomy and histology, including ultrastructure, of muscle tissue.
SC.912.L.14.17:	List the steps involved in the sliding filament of muscle contraction.
SC.912.L.14.18:	Describe signal transmission across a myoneural junction.
SC.912.L.14.19:	Explain the physiology of skeletal muscle.
SC.912.L.14.20:	Identify the major muscles of the human on a model or diagram. Remarks/Examples

	Refer to MAFS.K12.MP.4: Model with mathematics.
SC.912.L.14.21:	Describe the anatomy, histology, and physiology of the central and peripheral nervous systems and name the major divisions of the nervous system.
SC.912.L.14.22:	Describe the physiology of nerve conduction, including the generator potential, action potential, and the synapse.
SC.912.L.14.23:	Identify the parts of a reflex arc.
SC.912.L.14.25:	Identify the major parts of a cross section through the spinal cord.
SC.912.L.14.27:	Identify the functions of the major parts of the brain, including the meninges, medulla, pons, midbrain, hypothalamus, thalamus, cerebellum and cerebrum.
SC.912.L.14.28:	Identify the major functions of the spinal cord.
SC.912.L.14.29:	Define the terms endocrine and exocrine.
SC.912.L.14.30:	Compare endocrine and neural controls of physiology.
SC.912.L.14.31:	Describe the physiology of hormones including the different types and the mechanisms of their action.
SC.912.L.14.34:	Describe the composition and physiology of blood, including that of the plasma and the formed elements.
SC.912.L.14.35:	Describe the steps in hemostasis, including the mechanism of coagulation. Include the basis for blood typing and transfusion reactions.
SC.912.L.14.36:	Describe the factors affecting blood flow through the cardiovascular system.
SC.912.L.14.37:	Explain the components of an electrocardiogram.
SC.912.L.14.38:	Describe normal heart sounds and what they mean.
SC.912.L.14.39:	Describe hypertension and some of the factors that produce it.
SC.912.L.14.40:	Describe the histology of the major arteries and veins of systemic, pulmonary, hepatic portal, and coronary circulation.
SC.912.L.14.41:	Describe fetal circulation and changes that occur to the circulatory system at birth.

SC.912.L.14.42:	Describe the anatomy and the physiology of the lymph system.
SC.912.L.14.43:	Describe the histology of the respiratory system.
SC.912.L.14.44:	Describe the physiology of the respiratory system including the mechanisms of ventilation, gas exchange, gas transport and the mechanisms that control the rate of ventilation.
SC.912.L.14.45:	Describe the histology of the alimentary canal and its associated accessory organs.
SC.912.L.14.46:	Describe the physiology of the digestive system, including mechanical digestion, chemical digestion, absorption and the neural and hormonal mechanisms of control.
SC.912.L.14.47:	Describe the physiology of urine formation by the kidney.
SC.912.L.14.48:	Describe the anatomy, histology, and physiology of the ureters, the urinary bladder and the urethra.
SC.912.L.14.49:	Identify the major functions associated with the sympathetic and parasympathetic nervous systems.
SC.912.L.14.50:	Describe the structure of vertebrate sensory organs. Relate structure to function in vertebrate sensory systems.
SC.912.L.14.51:	Describe the function of the vertebrate integumentary system.
SC.912.L.14.52:	Explain the basic functions of the human immune system, including specific and nonspecific immune response, vaccines, and antibiotics. Remarks/Examples Annually Assessed on Biology EOC. Also assesses SC.912.L.14.6; HE.912.C.1.7; and HE.912.C.1.5.
SC.912.L.16.10:	Evaluate the impact of biotechnology on the individual, society and the environment, including medical and ethical issues. Remarks/Examples Annually assessed on Biology EOC.
SC.912.L.16.13:	Describe the basic anatomy and physiology of the human reproductive system. Describe the process of human development from fertilization to birth and major changes that occur in each trimester of pregnancy. Remarks/Examples

	Annually assessed on Biology EOC.
SC.912.L.16.8:	Explain the relationship between mutation, cell cycle, and uncontrolled cell growth potentially resulting in cancer. Remarks/Examples Integrate HE.912.C.1.7. Analyze how heredity and family history can impact personal health.
SC.912.L.18.11:	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
SC.912.L.18.2:	Describe the important structural characteristics of monosaccharides, disaccharides, and polysaccharides and explain the functions of carbohydrates in living things.
SC.912.L.18.3:	Describe the structures of fatty acids, triglycerides, phospholipids, and steroids. Explain the functions of lipids in living organisms. Identify some reactions that fatty acids undergo. Relate the structure and function of cell membranes.
SC.912.L.18.4:	Describe the structures of proteins and amino acids. Explain the functions of proteins in living organisms. Identify some reactions that amino acids undergo. Relate the structure and function of enzymes.
SC.912.L.18.6:	Discuss the role of anaerobic respiration in living things and in human society.
SC.912.L.18.8:	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record

measurements at appropriate levels of precision. Follow safety guidelines).

3. **Examine books and other sources of information to see what is already known,**
4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).
5. **Plan investigations,** (Design and evaluate a scientific investigation).
6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).
7. **Pose answers, explanations, or descriptions of events,**
8. **Generate explanations that explicate or describe natural phenomena (inferences),**
9. **Use appropriate evidence and reasoning to justify these explanations to others,**
10. **Communicate results of scientific investigations, and**
11. **Evaluate the merits of the explanations produced by others.**

Remarks/Examples

Connections for 6-12 Literacy in Science

<u>For Students in Grades 9-10</u>

LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.

LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text.

LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an

	equation) into words. LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. <u>For Students in Grades 11-12</u> LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.2:	Describe and explain what characterizes science and its methods. Remarks/Examples
	Science is characterized by empirical observations, testable

	questions, formation of hypotheses, and experimentation that results in stable and replicable results, logical reasoning, and coherent theoretical constructs. Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.

RELATED GLOSSARY TERM DEFINITIONS (77)

Absorption :	1-The taking up and storing of energy, such as radiation, light, or sound, without it being reflected or transmitted. 2- The movement of a substance, such as a liquid or solute, across a cell membrane by means of diffusion or osmosis.- The process by which one substance, such as a solid or liquid, takes up another substance, such as a liquid or gas, through minute pores or spaces between its molecules. A paper towel takes up water, and water takes up carbon dioxide, by absorption.
Activation energy:	The least amount of energy required to start a particular chemical reaction.
Aerobic:	Occurring in the presence of oxygen or requiring oxygen to live. In aerobic respiration, which is the process used by the cells of most organisms, the production of energy from glucose metabolism requires the presence of oxygen.
Alimentary canal:	The tubular passage that extends from mouth to anus and functions in digestion and absorption of food and elimination of residual waste.
Amino acid:	An organic molecule containing an amino group (-NH2), a carboxyl (-COOH) group, and a variable side chain (R group) that distinguishes the amino acid. Proteins are synthesized from amino acids.
Anaerobic :	Occurring in the absence of oxygen or not requiring oxygen to live. Anaerobic bacteria produce energy from food molecules without the presence of oxygen.
Anatomy:	The scientific study of the shape and structure of organisms and their parts.
Axial skeleton:	The bones constituting the head and trunk of a vertebrate body.

Biotechnology:	The manipulation (as through genetic engineering) of living organisms or their components to produce useful usually commercial products (as pest resistant crops, new bacterial strains, or novel pharmaceuticals).
Carbohydrate:	Any of a group of organic compounds that includes sugars, starches, celluloses, and gums and serves as a major energy source in the diet of animals. These compounds are produced by photosynthetic plants and contain only carbon, hydrogen, and oxygen, usually in the ratio 1:2:1.
Cardiovascular system:	The bodily system consisting of the heart, blood vessels, and blood that circulates blood throughout the body, delivers nutrients and other essential materials to cells, and removes waste products.
Catalyst:	A substance that speeds up or slows down the rate of a reaction without being consumed or altered.
Cell:	The smallest structural unit of an organism that is capable of independent functioning, consisting of cytoplasm and various organelles, all surrounded by a semipermeable cell membrane, which in some cells, is surrounded by a cell wall
Cerebellum :	The part of the vertebrate brain that is located below the cerebrum at the rear of the skull and that coordinates balance and muscle activity. In mammals, the cerebellum is made up of two connecting hemispheres that consist of a core of white matter surrounded by gray matter.
Cerebrum :	The largest part of the vertebrate brain, filling most of the skull and consisting of two cerebral hemispheres divided by a deep groove and joined by the corpus callosum, a transverse band of nerve fibers. The cerebrum processes complex sensory information and controls voluntary muscle activity. In humans it is the center of thought, learning, memory, language, and emotion.
Circulatory system:	The bodily system consisting of the heart, blood vessels, and blood that circulates blood throughout the body, delivers nutrients and other essential materials to cells, and removes waste products.
Coagulation:	The process of changing from a liquid to a gel or solid state by a series of chemical reactions, especially the process that results in the formation of a blood clot.

Conduction:	To transmit heat, sound, or electricity through a medium.
Connective tissue:	Tissue that connects, supports, binds, or encloses the structures of the body. Connective tissues are made up of cells embedded in an extracellular matrix and include bones, cartilage, mucous membranes, fat, and blood.
Digestive system:	The alimentary canal and digestive glands regarded as an integrated system responsible for the ingestion, digestion, and absorption of food.
Disaccharide:	Any of a class of sugars, including lactose and sucrose, that are composed of two monosaccharides.
Endocrine:	Of or relating to endocrine glands or the hormones secreted by them.
Environment:	The sum of conditions affecting an organism, including all living and nonliving things in an area, such as plants, animals, water, soil, weather, landforms, and air.
Enzyme:	Any of numerous proteins produced in living cells that accelerate or catalyze chemical reactions.
Epithelial tissue:	Membranous tissue covering internal organs and other internal surfaces of the body.
Exocrine:	Producing, being, or relating to a secretion that is released outside its source.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Fatty acid:	Any of a large group of organic acids, especially those found in animal and vegetable fats and oils. Fatty acids are mainly composed of long chains of hydrocarbons ending in a carboxyl group. A fatty acid is saturated when the bonds between carbon atoms are all single bonds. It is unsaturated when any of these bonds is a double bond.
Fertilization:	The process by which the female reproductive cell (egg) is united with the male reproductive cell (sperm).
Foramen:	An opening or short passage, especially in the body.
Fossa:	A small cavity or depression, as in a bone.
Gas:	One of the fundamental states of matter in which the molecules

	do not have a fixed volume or shape.
Hemostasis:	The stoppage of blood flow through a blood vessel or body part.
Heredity:	The passage of biological traits or characteristics from parents to offspring through the inheritance of genes.
Histology:	The scientific study of the microscopic structure of organism tissues.
Hormone:	A substance, usually a peptide or steroid, produced by one tissue and conveyed by the bloodstream to another to affect physiological activity, such as growth or metabolism.
Hypertension:	Abnormally high blood pressure and especially arterial blood pressure.
Hypothalamus:	The part of the brain that lies below the thalamus, forming the major portion of the ventral region of the diencephalon and functioning to regulate bodily temperature, certain metabolic processes, and other autonomic activities.
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Immune system:	The body system that protects the organism by distinguishing foreign tissue and neutralizing potentially pathogenic organisms or substances. The immune system includes organs such as the skin and mucous membranes, which provide an external barrier to infection, cells involved in the immune response, such as lymphocytes, and cell products such as lymphokines.
Inference :	The act of reasoning from factual knowledge or evidence.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Light:	Electromagnetic radiation that lies within the visible range.
Medulla:	The central portion of an anatomical structure, such as the adrenal gland or the kidney.
Membrane:	A thin layer of tissue that surrounds or lines a cell, a group of cells, or a cavity; any barrier separating two fluids.
Meninx :	A membrane, especially one of the three membranes enclosing the brain and spinal cord in vertebrates.
Microscope:	An instrument with lenses and light that is used to observe

	objects too small to be visible with only the eyes.
Midbrain:	The middle part of the vertebrate brain. In most animals except mammals, the midbrain processes sensory information. In mammals, it serves primarily to connect the forebrain with the hindbrain.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Monosaccharide:	Any of a class of carbohydrates that cannot be broken down to simpler sugars by hydrolysis and that constitute the building blocks of oligosaccharides and polysaccharides.
Mutation:	A change in genetic sequence.
Nervous system:	The system of cells, tissues, and organs that regulates the body's responses to internal and external stimuli. In vertebrates it consists of the brain, spinal cord, nerves, ganglia, and parts of the receptor and effector organs.
Observation :	What one has observed using senses or instruments.
Organ:	A structure containing different tissues that are organized to carry out a specific function of the body (e.g., heart, lungs, brain, etc.)
Organism:	An individual form of life of one or more cells that maintains various vital processes necessary for life.
Phospholipid:	Any of various phosphorus-containing lipids, such as lecithin, that are composed mainly of fatty acids, a phosphate group, and a simple organic molecule such as glycerol.
Physiology:	The scientific study of an organism's vital functions, including growth, development, reproduction, the absorption and processing of nutrients, the synthesis and distribution of proteins and other organic molecules, and the functioning of different tissues, organs, and other anatomic structures.
Plasma :	The pale yellow or gray-yellow, protein-containing fluid portion of the blood in which the blood cells and platelets are normally suspended.
Polysaccharide:	Any of a class of carbohydrates, such as starch and cellulose,

	consisting of a number of monosaccharides joined by glycosidic bonds.
Pons:	A thick band of nerve fibers in the brainstem of humans and other mammals that links the brainstem to the cerebellum and upper portions of the brain. It is important in the reflex control of involuntary processes, including respiration and circulation. All neural information transmitted between the spinal cord and the brain passes through the pons.
Reflex arc:	The neural path of a reflex.
Reproductive system:	The system of organs involved with animal reproduction, especially sexual reproduction.
Respiratory system:	The system of organs and structures in which gas exchange takes place, consisting of the lungs and airways in air-breathing vertebrates, gills in fish and many invertebrates, the outer covering of the body in worms, and specialized air ducts in insects.
Skeleton:	The internal structure of vertebrate animals, composed of bone or cartilage, that supports the body, serves as a framework for the attachment of muscles, and protects the vital organs and associated structures.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Spinal cord:	The long, cordlike part of the central nervous system that is enclosed within the vertebral column (spine) and descends from the base of the brain, with which it is continuous. The spinal cord branches to form the nerves that convey motor and sensory impulses to and from the tissues of the body.
Steroid:	Any of numerous naturally occurring or synthetic fat-soluble organic compounds having, as a basis, 17 carbon atoms arranged in four rings and including the sterols and bile acids, adrenal and sex hormones, certain natural drugs such as digitalis compounds, and the precursors of certain vitamins.
Synapse:	The junction across which a nerve impulse passes from one nerve cell to another nerve cell, a muscle cell, or a gland cell.
Thalamus:	The part of the vertebrate brain that lies at the rear of the forebrain. It relays sensory information to the cerebral cortex and regulates the perception of touch, pain, and temperature.

Tissue:	Similar cells acting to perform a specific function.
Triglyceride:	A naturally occurring ester of three fatty acids and glycerol that is the chief constituent of fats and oils.
Tubercle:	A small rounded projecting part or outgrowth, such as a wartlike excrescence on the roots of some leguminous plants or a knoblike process in the skin or on a bone.
Urethra:	The canal through which urine is discharged from the bladder in most mammals and through which semen is discharged in the male.
Urinary bladder:	An elastic, muscular sac situated in the anterior part of the pelvic cavity in which urine collects before excretion.
Vaccine:	A preparation of a weakened or killed pathogen, such as a bacterium or virus, or of a portion of the pathogen's structure, that stimulates immune cells to recognize and attack it, especially through antibody production.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.
Vertebrate:	Any of a large group of chordates of the subphylum Vertebrata (or Craniata), characterized by having a backbone. Vertebrates include fish, amphibians, reptiles, birds, and mammals.

Course: Botany- 2000370

Direct link to this page:http://www.cpalms.org/Public/PreviewCourse/Preview/4293

BASIC INFORMATION

Course Number:	2000370
Grade Levels:	9,10,11,12
Keyword:	PreK to 12 Education, Pre K to 12 Education, Grades 9 to 12 and Adult Education, 9 to 12, 9-12, High School, Science, Biological Sciences, Botany, BOTANY
Course Path:	**Section:** Grades PreK to 12 Education Courses **Grade Group:** Grades 9 to 12 and Adult Education Courses **Subject:** Science **SubSubject:** Biological Sciences
Course Title:	Botany
Course Abbreviated Title:	BOTANY
Number of Credits:	One credit (1)
Course length:	Year (Y)
Course Type:	Core
Course Level:	2
Status:	Draft - Board Approval Pending
General Notes:	Laboratory investigations that include the use of scientific inquiry, research, measurement, problem solving, laboratory apparatus and technologies, experimental procedures, and safety procedures are an integral part of this course. The National

	Science Teachers Association (NSTA) recommends that at the high school level, all students should be in the science lab or field, collecting data every week. School laboratory investigations (labs) are defined by the National Research Council (NRC) as an experience in the laboratory, classroom, or the field that provides students with opportunities to interact directly with natural phenomena or with data collected by others using tools, materials, data collection techniques, and models (NRC, 2006, p. 3). Laboratory investigations in the high school classroom should help all students develop a growing understanding of the complexity and ambiguity of empirical work, as well as the skills to calibrate and troubleshoot equipment used to make observations. Learners should understand measurement error; and have the skills to aggregate, interpret, and present the resulting data (National Research Council, 2006, p.77; NSTA, 2007). **Special Notes:** **Instructional Practices** Teaching from a range of complex text is optimized when teachers in all subject areas implement the following strategies on a routine basis: 1. Ensuring wide reading from complex text that varies in length. 2. Making close reading and rereading of texts central to lessons. 3. Emphasizing text-specific complex questions, and cognitively complex tasks, reinforce focus on the text and cultivate independence. 4. Emphasizing students supporting answers based upon evidence from the text. 5. Providing extensive research and writing opportunities (claims and evidence).

STANDARDS (80)

Integrate Standards for Mathematical Practice (MP) as applicable.

- MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.
- MAFS.K12.MP.2.1 Reason abstractly and quantitatively.
- MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
- MAFS.K12.MP.4.1 Model with mathematics.
- MAFS.K12.MP.5.1 Use appropriate tools strategically.
- MAFS.K12.MP.6.1 Attend to precision.
- MAFS.K12.MP.7.1 Look for and make use of structure.
- MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

LAFS.1112.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.
LAFS.1112.RST.1.2:	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.
LAFS.1112.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
LAFS.1112.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.
LAFS.1112.RST.2.5:	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
LAFS.1112.RST.2.6:	Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
LAFS.1112.RST.3.7:	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

LAFS.1112.RST.3.8:	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
LAFS.1112.RST.3.9:	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
LAFS.1112.RST.4.10:	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.
LAFS.1112.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others' ideas and expressing their own clearly and persuasively. a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed. c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives. d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.
LAFS.1112.SL.1.2:	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the

	credibility and accuracy of each source and noting any discrepancies among the data.
LAFS.1112.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.
LAFS.1112.SL.2.4:	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.
LAFS.1112.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.
LAFS.1112.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
LAFS.1112.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
LAFS.1112.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
LAFS.910.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions.
LAFS.1112.WHST.1.1:	Write arguments focused on *discipline-specific content.* a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.

	b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented.
LAFS.1112.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts. d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the

	discipline and context as well as to the expertise of likely readers. e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).
LAFS.1112.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
LAFS.1112.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
LAFS.1112.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.
LAFS.1112.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
LAFS.910.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
LAFS.910.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics.
LAFS.910.RST.2.5:	Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
LAFS.910.RST.3.7:	Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.

LAFS.910.RST.3.9:	Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.
LAFS.910.RST.4.10:	By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently.
LAFS.910.SL.1.1a:	Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.
LAFS.910.SL.1.1b:	Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed.
LAFS.910.SL.1.1c:	Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions.
LAFS.910.SL.1.1d:	Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented.
LAFS.910.SL.1.2:	Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
LAFS.910.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence.
LAFS.910.SL.2.4:	Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.
LAFS.910.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

LAFS.910.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic).
LAFS.910.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.
MAFS.912.F-IF.3.7:	MACC.912.F-IF.3.7 (2013-2014): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end

	behavior. d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior. e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. **MAFS.912.F-IF.3.7 (2014-2015): Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.** **a. Graph linear and quadratic functions and show intercepts, maxima, and minima.** **b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.** **c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.** **d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.** **e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.** Remarks/Examples
	Algebra 1, Unit 2: For F.IF.7a, 7e, and 9 focus on linear and exponentials functions. Include comparisons of two functions presented algebraically. For example, compare the growth of two linear functions, or two exponential functions such as $y=3^n$ and $y=100^2$
MAFS.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

	Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
MAFS.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. Remarks/Examples
	Algebra 1, Unit 1: Working with quantities and the relationships between them provides grounding for work with expressions, equations, and functions.
SC.912.L.14.10:	Discuss the relationship between the evolution of land plants and their anatomy.
SC.912.L.14.2:	Relate structure to function for the components of plant and animal cells. Explain the role of cell membranes as a highly selective barrier (passive and active transport).
SC.912.L.14.3:	Compare and contrast the general structures of plant and animal cells. Compare and contrast the general structures of prokaryotic and eukaryotic cells. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.14.2.
SC.912.L.14.5:	Explain the evidence supporting the scientific theory of the origin of eukaryotic cells (endosymbiosis).
SC.912.L.14.53:	Discuss basic classification and characteristics of plants. Identify bryophytes, pteridophytes, gymnosperms, and angiosperms.
SC.912.L.14.7:	Relate the structure of each of the major plant organs and tissues to physiological processes. Remarks/Examples
	Annually Assessed on Biology EOC.
SC.912.L.14.8:	Explain alternation of generations in plants.
SC.912.L.14.9:	Relate the major structure of fungi to their functions.

SC.912.L.15.1:	Explain how the scientific theory of evolution is supported by the fossil record, comparative anatomy, comparative embryology, biogeography, molecular biology, and observed evolutionary change. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.10; SC.912.N.1.3; SC.912.N.1.4; SC.912.N.1.6; SC.912.N.2.1; SC.912.N.3.1; and SC.912.N.3.4.
SC.912.L.15.3:	Describe how biological diversity is increased by the origin of new species and how it is decreased by the natural process of extinction.
SC.912.L.15.4:	Describe how and why organisms are hierarchically classified and based on evolutionary relationships.
SC.912.L.15.5:	Explain the reasons for changes in how organisms are classified.
SC.912.L.15.6:	Discuss distinguishing characteristics of the domains and kingdoms of living organisms. Remarks/Examples
	Annually Assessed on Biology EOC. Also assesses SC.912.L.15.4; SC.912.L.15.5; SC.912.N.1.3; and SC.912.N.1.6.
SC.912.L.16.1:	Use Mendel's laws of segregation and independent assortment to analyze patterns of inheritance. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.16.2.
SC.912.L.16.2:	Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.
SC.912.L.17.10:	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.
SC.912.L.17.4:	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.
SC.912.L.17.6:	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.

SC.912.L.17.7:	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.
SC.912.L.17.8:	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.
SC.912.L.17.9:	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.E.7.1.
SC.912.L.18.1:	Describe the basic molecular structures and primary functions of the four major categories of biological macromolecules. Remarks/Examples Annually assessed on Biology EOC. Also assesses SC.912.L.18.11.
SC.912.L.18.10:	Connect the role of adenosine triphosphate (ATP) to energy transfers within a cell.
SC.912.L.18.11:	Explain the role of enzymes as catalysts that lower the activation energy of biochemical reactions. Identify factors, such as pH and temperature, and their effect on enzyme activity.
SC.912.L.18.12:	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent. Remarks/Examples Annually assessed on Biology EOC.
SC.912.L.18.5:	Discuss the use of chemiosmotic gradients for ATP production in chloroplasts and mitochondria.
SC.912.L.18.7:	Identify the reactants, products, and basic functions of photosynthesis.
SC.912.L.18.8:	Identify the reactants, products, and basic functions of aerobic and anaerobic cellular respiration.

SC.912.L.18.9:	Explain the interrelated nature of photosynthesis and cellular respiration. Remarks/Examples
	Annually assessed on Biology EOC. Also assesses SC.912.L.18.7; SC.912.L.18.8; SC.912.L.18.10.
SC.912.P.10.1:	Differentiate among the various forms of energy and recognize that they can be transformed from one form to others. Remarks/Examples
	Differentiate between kinetic and potential energy. Recognize that energy cannot be created or destroyed, only transformed. Identify examples of transformation of energy: Heat to light in incandescent electric light bulbs; Light to heat in laser drills; Electrical to sound in radios; Sound to electrical in microphones; Electrical to chemical in battery rechargers; Chemical to electrical in dry cells; Mechanical to electrical in generators [power plants]; Nuclear to heat in nuclear reactors; Gravitational potential energy of a falling object is converted to kinetic energy then to heat and sound energy when the object hits the ground.
SC.912.P.10.18:	Explore the theory of electromagnetism by comparing and contrasting the different parts of the electromagnetic spectrum in terms of wavelength, frequency, and energy, and relate them to phenomena and applications. Remarks/Examples
	Describe the electromagnetic spectrum (i.e., radio waves, microwaves, infrared, visible light, ultraviolet, X-rays and gamma rays) in terms of frequency, wavelength and energy. Solve problems involving wavelength, frequency, and energy.
SC.912.P.12.12:	Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction. Remarks/Examples
	Various factors could include: temperature, pressure, solvent and/or solute concentration, sterics, surface area, and catalysts. The rate of reaction is determined by the activation energy, and the pathway of the reaction can be shorter in the presence of enzymes or catalysts. Examples may include: decomposition of hydrogen peroxide using manganese (IV) oxide; nitration of benzene using concentrated sulfuric acid; hydrogenation of a C=C double bond using nickel.

SC.912.P.8.12:	Describe the properties of the carbon atom that make the diversity of carbon compounds possible. Remarks/Examples
	Explain how the bonding characteristics of carbon lead to a large variety of structures ranging from simple hydrocarbons to complex polymers and biological molecules.
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following: 1. **Pose questions about the natural world,** (Articulate the purpose of the investigation and identify the relevant scientific concepts). 2. **Conduct systematic observations,** (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines). 3. **Examine books and other sources of information to see what is already known,** 4. **Review what is known in light of empirical evidence,** (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models). 5. **Plan investigations,** (Design and evaluate a scientific investigation). 6. **Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs),** (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage). 7. **Pose answers, explanations, or descriptions of events,** 8. **Generate explanations that explicate or describe natural phenomena (inferences),** 9. **Use appropriate evidence and reasoning to justify these explanations to others,** 10. **Communicate results of scientific investigations, and**

	11. **Evaluate the merits of the explanations produced by others.** Remarks/Examples
	Connections for 6-12 Literacy in Science <u>For Students in Grades 9-10</u> LAFS.910.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. LAFS.910.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks attending to special cases or exceptions defined in the text. LAFS.910.RST.3.7 Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. LAFS.910.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. LAFS.910.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. <u>For Students in Grades 11-12</u> LAFS.1112.RST.1.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. LAFS.1112.RST.1.3 Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. LAFS.1112.RST.3.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem. LAFS.1112.WHST.1.2 Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

	LAFS.1112.WHST.3.9 Draw evidence from informational texts to support analysis, reflection, and research. Connections for Mathematical Practices MAFS.K12.MP.1: Make sense of problems and persevere in solving them. MAFS.K12.MP.2: Reason abstractly and quantitatively. MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others. [Viable arguments include evidence.] MAFS.K12.MP.4: Model with mathematics. MAFS.K12.MP.5: Use appropriate tools strategically. MAFS.K12.MP.6: Attend to precision. MAFS.K12.MP.7: Look for and make use of structure. MAFS.K12.MP.8: Look for and express regularity in repeated reasoning.
SC.912.N.1.2:	Describe and explain what characterizes science and its methods. Remarks/Examples
	Science is characterized by empirical observations, testable questions, formation of hypotheses, and experimentation that results in stable and replicable results, logical reasoning, and coherent theoretical constructs. Connections: MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.
SC.912.N.2.4:	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability. Remarks/Examples
	Recognize that ideas with the most durable explanatory power become established theories, but scientific explanations are continually subjected to change in the face of new evidence. Connections: MAFS.K12.MP.1: Make sense of problems and persevere in solving them; MAFS.K12.MP.3: Construct viable arguments and critique the reasoning of others.

RELATED GLOSSARY TERM DEFINITIONS (64)

Abiotic:	An environmental factor not associated with or derived from living organisms.
Acid:	A substance that increases the H+ concentration when added to a water solution Acids turn blue litmus paper red, have a pH of less than 7, and their aqueous solutions react with bases and certain metals to form salts.
Activation energy:	The least amount of energy required to start a particular chemical reaction.
Adenosine triphosphate (ATP):	An organic compound that is composed of adenosine and three phosphate groups. It serves as a source of energy for many metabolic processes. ATP releases energy when it is broken down into ADP and phosphate by hydrolysis during cell metabolism.
Aerobic:	Occurring in the presence of oxygen or requiring oxygen to live. In aerobic respiration, which is the process used by the cells of most organisms, the production of energy from glucose metabolism requires the presence of oxygen.
Anaerobic :	Occurring in the absence of oxygen or not requiring oxygen to live. Anaerobic bacteria produce energy from food molecules without the presence of oxygen.
Anatomy:	The scientific study of the shape and structure of organisms and their parts.
Angiosperm:	Any of a large group of plants that produce flowers. They develop seeds from ovules contained in ovaries, and the seeds are enclosed by fruits, which develop from carpels.
Atom:	The smallest unit of a chemical element that can still retain the properties of that element.
Biotic:	Factors in an environment relating to, caused by, or produced by living organisms.
Bryophyte:	Any of a division (Bryophyta) of non-flowering and non-vascular plants comprising the mosses, liverworts, and hornworts, that undergo sexual reproduction via spores.
Catalyst:	A substance that speeds up or slows down the rate of a reaction without being consumed or altered.

Cell:	The smallest structural unit of an organism that is capable of independent functioning, consisting of cytoplasm and various organelles, all surrounded by a semipermeable cell membrane, which in some cells, is surrounded by a cell wall
Chemiosmotic:	Relating to or being a theory that seeks to explain the mechanism of ATP formation in oxidative phosphorylation by mitochondria and chloroplasts without recourse to the formation of high-energy intermediates by postulating the formation of an energy gradient of hydrogen ions across the organelle membranes that results in the reversible movement of hydrogen ions to the outside and is generated by electron transport or the activity of electron carriers.
Chloroplast:	A plastid in most cells of most plants that contains chlorophylls and carotenoid pigments and produces glucose through photosynthesis.
Codominant:	Relating to two alleles of a gene pair in a heterozygote that are both fully expressed.
Compound:	A substance made up of at least two different elements held together by chemical bonds that can only be broken down into elements by chemical processes.
Concentration:	The relative amount of a particular substance, a solute, or mixture.
Conduction:	To transmit heat, sound, or electricity through a medium.
Consumer:	An organism that feeds on other organisms for food.
Decomposer :	Any organism that feeds or obtains nutrients by breaking down organic matter from dead organisms.
Diversity:	The different species in a given area or specific period of time.
Dominance:	Tendency of certain (dominant) alleles to mask the expression of their corresponding (recessive) alleles.
Electromagnetic spectrum:	The entire range of electromagnetic radiation. At one end of the spectrum are gamma rays, which have the shortest wavelengths and high frequencies. At the other end are radio waves, which have the longest wavelengths and low frequencies. Visible light is near the center of the spectrum.
Embryology:	The branch of biology that deals with the formation, early growth, and development of living organisms.

Endosymbiosis:	Symbiosis in which a symbiont dwells within the body of its symbiotic partner.
Energy:	The capacity to do work.
Environment:	The sum of conditions affecting an organism, including all living and nonliving things in an area, such as plants, animals, water, soil, weather, landforms, and air.
Enzyme:	Any of numerous proteins produced in living cells that accelerate or catalyze chemical reactions.
Evolution :	A theory that the various types of species arise from pre-existing species and that distinguishable characteristics are due to modifications through successive generations.
Experiment:	A procedure that is carried out and repeated under controlled conditions in order to discover, demonstrate, or test a hypothesis.
Fossil:	A whole or part of an organism that has been preserved in sedimentary rock.
Freeze:	To pass from the liquid to the solid state by loss of heat from the substance/system.
Frequency:	The number of cycles or waves per unit time.
Fungus:	A kingdom of eukaryotic organisms that reproduce by spores and have cell walls that contain chitin, examples include the mushrooms, molds, yeasts, and mildews.
Gymnosperm:	A plant, such as a cycad or conifer, whose seeds are not enclosed within an ovary.
Heat:	Energy that transfers between substances because of a temperature difference between the substances; the transfer of energy is always from the warmer substance to the cooler substance
Hypothesis :	A tentative explanation for an observation, phenomenon, or scientific problem that can be tested by further investigation.
Inference :	The act of reasoning from factual knowledge or evidence.
Infrared :	Relating to the invisible part of the electromagnetic spectrum with wavelengths longer than those of visible red light but shorter than those of microwaves.

Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Kinetic energy:	The energy possessed by a body because of its motion.
Law :	A statement that describes invariable relationships among phenomena under a specified set of conditions.
Light:	Electromagnetic radiation that lies within the visible range.
Membrane:	A thin layer of tissue that surrounds or lines a cell, a group of cells, or a cavity; any barrier separating two fluids.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Mitochondrion:	A spherical or elongated organelle in the cytoplasm of nearly all eukaryotic cells that uses enzymes and membranes to make chemical energy available to the cell to make food to usable energy.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Molecule:	The smallest unit of matter of a substance that retains all the physical and chemical properties of that substance; consists of a single atom or a group of atoms bonded together.
Observation :	What one has observed using senses or instruments.
Organ:	A structure containing different tissues that are organized to carry out a specific function of the body (e.g., heart, lungs, brain, etc.)
Organism:	An individual form of life of one or more cells that maintains various vital processes necessary for life.
Photosynthesis:	A chemical process by which plants use light energy to convert carbon dioxide and water into carbohydrates (sugars).
Polygenic:	Any of a group of nonallelic genes that collectively control the inheritance of a quantitative character or modify the expression of a qualitative character.
Producer :	An organism, usually a plant or bacterium, that produces organic compounds from simple inorganic molecules and energy

	(typically light energy) from the environment.
Pteridophyte:	Vascular plants that reproduce by means of spores rather than by seeds, including the ferns and related plants, such as club mosses and horsetails.
Recessive:	An allele for a trait that will be masked unless the organism is homozygous for this trait.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Theory :	A set of statements or principles devised to explain a group of facts or phenomena, especially one that has been repeatedly tested or is widely accepted and can be used to make predictions about natural phenomena.
Tissue:	Similar cells acting to perform a specific function.
Ultraviolet :	Relating to electromagnetic radiation having frequencies higher than those of visible light but lower than those of x-rays, approximately 1015 -1016 hertz.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.
Wavelength:	The distance between crests of a wave.
X-ray:	A high-energy stream of electromagnetic radiation having a frequency higher than that of ultraviolet light but less than that of a gamma ray (in the range of approximately 1016 - 1019 hertz).

Inference :	The act of reasoning from factual knowledge or evidence.
Investigation :	A systematic process that uses various types of data and logic and reasoning to better understand something or answer a question.
Light:	Electromagnetic radiation that lies within the visible range.
Microscope:	An instrument with lenses and light that is used to observe objects too small to be visible with only the eyes.
Model :	A systematic description of an object or phenomenon that shares important characteristics with the object or phenomenon. Scientific models can be material, visual, mathematical, or computational and are often used in the construction of scientific theories.
Mutation:	A change in genetic sequence.
Nervous system:	The system of cells, tissues, and organs that regulates the body's responses to internal and external stimuli. In vertebrates it consists of the brain, spinal cord, nerves, ganglia, and parts of the receptor and effector organs.
Observation :	What one has observed using senses or instruments.
Organ:	A structure containing different tissues that are organized to carry out a specific function of the body (e.g., heart, lungs, brain, etc.)
Physiology:	The scientific study of an organism's vital functions, including growth, development, reproduction, the absorption and processing of nutrients, the synthesis and distribution of proteins and other organic molecules, and the functioning of different tissues, organs, and other anatomic structures.
Plasma :	The pale yellow or gray-yellow, protein-containing fluid portion of the blood in which the blood cells and platelets are normally suspended.
Reflex arc:	The neural path of a reflex.
Reproductive system:	The system of organs involved with animal reproduction, especially sexual reproduction.

Respiratory system:	The system of organs and structures in which gas exchange takes place, consisting of the lungs and airways in air-breathing vertebrates, gills in fish and many invertebrates, the outer covering of the body in worms, and specialized air ducts in insects.
Skeleton:	The internal structure of vertebrate animals, composed of bone or cartilage, that supports the body, serves as a framework for the attachment of muscles, and protects the vital organs and associated structures.
Space:	The limitless expanse where all objects and events occur. Outer space is the region of the universe beyond Earth's atmosphere.
Spinal cord:	The long, cordlike part of the central nervous system that is enclosed within the vertebral column (spine) and descends from the base of the brain, with which it is continuous. The spinal cord branches to form the nerves that convey motor and sensory impulses to and from the tissues of the body.
Synapse:	The junction across which a nerve impulse passes from one nerve cell to another nerve cell, a muscle cell, or a gland cell.
Tissue:	Similar cells acting to perform a specific function.
Vaccine:	A preparation of a weakened or killed pathogen, such as a bacterium or virus, or of a portion of the pathogen's structure, that stimulates immune cells to recognize and attack it, especially through antibody production.
Variable:	An event, condition, or factor that can be changed or controlled in order to study or test a hypothesis in a scientific experiment.
Vertebrate:	Any of a large group of chordates of the subphylum Vertebrata (or Craniata), characterized by having a backbone. Vertebrates include fish, amphibians, reptiles, birds, and mammals.