

Sports Medicine 1

COURSE OUTLINE - UC

DESCRIPTION:

Sports Medicine 1 is designed for students interested in athletic training, physical therapy, kinesiology, and other related fields in sports medicine. This course covers industry regulations, medical terminology, basic anatomy and physiology of the human body combined with the study of diseases, bloodborne pathogens, vitals statistics, infection control, and wound care. Students will also gain theoretical and hands-on knowledge on documentation, kinesiology, nutrition, physical conditioning, sports psychology and the environmental impact of sports. Activities in this course include work-based learning that connects students to industry and the local community.

INFORMATION:

PRE-REQUISITE: None

LENGTH: One Year

SECTOR: Health Science and Medical Technology

PATHWAY: Patient Care

ARTICULATED: Yes

UC A-G APPROVAL: Yes: College-Preparatory Elective (G) – Laboratory Science – Biology / Life Sciences Requirement

O*NET SOC CODES:

29-1123 Recreational Therapists

29-9091 Athletic Trainers

31-2021 Physical Therapy Assistants

31-2022 Physical Therapist Aides

39-9031 Exercise Trainers and Group Fitness Instructors

41-4011 Sales Representatives

Orientation
<ul style="list-style-type: none"> A. Introduce the course and facilities. B. Discuss the syllabus and major objectives. C. Explain applicable classroom management procedures, and any operational guidelines. D. Review instructor/student expectations. E. Explain attendance requirements and procedures. F. Review grading and student evaluation procedures. G. Discuss the work-based learning aspect of the program, if applicable. H. Discuss the “next steps” related to additional education, training, and employment. I. Review classroom safety, emergency and disaster procedures.
1. Communication Skills
<ul style="list-style-type: none"> A. Demonstrate positive verbal communication skills using appropriate vocabulary, demeanor, and vocal tone in the classroom and/or worksite. B. Read and interpret written information and directions. C. Practice various forms of written communication appropriate to the occupation. D. Practice positive body language skills. E. Practice professional verbal skills for resolving a conflict. F. Demonstrate active listening skills including techniques for checking for understanding, and for obtaining clarification of directions.
2. Interpersonal Skills
<ul style="list-style-type: none"> A. Demonstrate positive teamwork skills by contributing to a group effort. B. Practice the importance of diversity awareness and sensitivity in the workplace. C. Define sexual harassment in the workplace and identify the employee’s role and responsibility. D. Practice participation skills. E. Identify different personality types and demonstrate flexibility and adaptability working with diverse individuals. F. Practice business and social etiquette skills appropriate to the occupation. G. Evaluate and discuss the role of business and personal ethics in decision making based on various job-related scenarios. H. Demonstrate the use of time management skills.
3. Employability Skills
<ul style="list-style-type: none"> A. Demonstrate appropriate attendance and punctuality practices for the classroom (and worksite, if applicable). B. Prepare a resume, cover letter, and job application.

- C. Demonstrate interviewing techniques in seeking employment, using appropriate tone, body language and professional dress and grooming standards.
- D. Identify strategies for employment retention.
- E. Identify and analyze sources of job information, including electronic sources and the impact of social networking on employability.
- F. Identify the need for continuing education, professional development, and professional growth in chosen field.
- G. Identify appropriate procedures for leaving a job.
- H. Review company policies and current trends in employee compatibility screening, drug screening, and background checks.

4. Leadership

- A. Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders.
- B. Work with peers to promote divergent and creative perspectives.
- C. Demonstrate how to organize and structure work, individually and in teams, for effective performance and the attainment of goals.
- D. Explain multiple approaches to conflict resolution and their appropriateness for a variety of situations in the workplace.
- E. Employ ethical behaviors and actions that positively influence others.
- F. Analyze the short-term and long-term effects a leader's actions and attitudes can have on productivity, morale, and organizational culture.

5. Personal and Occupational Safety

- A. Demonstrate procedures to be followed in case of emergencies.
- B. Describe and discuss the procedure for reporting a work-related hazard or injury (worker's comp), including ways to report a potential safety hazard to a supervisor.
- C. Identify and discuss cyber ethics, cyber safety, and cyber security.
- D. Apply personal safety practices to and from the job.
- E. Recognize the effects of substance abuse in the workplace.
- F. Explain the importance of CAL-OSHA in the industry.
- G. Take appropriate safety measures such as universal procedures.
- H. Define and discuss ergonomics/body mechanics in relationship to working conditions and patient care in the physical therapy environment.
- I. Establish a plan for handling emergency situations in a Sports Medicine setting.
- J. Explain the importance of the American Physical Therapy Association (APTA) and the National Athletic Trainers Association (NATA).

6. Sports Medicine Professional

- A. Define sports medicine and describe sports medicine settings.
- B. Identify professionals in various sports medicine and therapy settings.
- C. Explain the team approach to delivering health care to athletes.

- D. Identify the roles and responsibilities of the sports medicine team.
- E. Describe personal characteristics and aptitudes necessary for this career.

7. Medical Terminology

- A. List the major body systems.
- B. Correctly define, spell, and pronounce key terms associated with sports medicine cases, and use them in their proper context.
- C. Identify basic rules for defining medical words including commonly used roots, prefixes and suffixes.
- D. Demonstrate proper pronunciation of medical terms.
- E. Identify common abbreviations used in sports medicine settings.
- F. Practice word building skills.

8. Human Anatomy

- A. Identify anatomical descriptors and fundamental human body structure.
- B. Identify the physiological components and functions of the musculoskeletal system.
- C. Identify the physiological components and functions of the nervous system.
- D. Identify the physiological components and functions of the immune system.
- E. Identify the physiological components and functions of the digestive system.
- F. Identify the physiological components and functions of the endocrine system.
- G. Identify the physiological components and functions of the senses.
- H. Identify the physiological components and functions of the cardiovascular system.
- I. Identify the physiological components and functions of the respiratory system.
- J. Identify the physiological components and functions of the reproductive system.
- K. Identify the physiological components and functions of the urinary system.
- L. Identify the physiological components and functions of the integumentary system.
- M. Demonstrate the location of palpation joints.

9. Anatomy and Physiology in Sports Medicine

- A. Label bone, muscle and tissues in the shoulder, Elbow, forearm, arm, wrist and hand.
- B. Outline bone, muscle and tissues in the foot, ankle, knee, thigh, hip and pelvis.
- C. Describe bone, muscle and tissues in the chest.
- D. Define bone, muscle and tissues in the abdomen.
- E. Detail the skeletal anatomy of the head and throat.
- F. Describe the skeletal anatomy, cartilage and dermatomes of the spine.

10. Disease and Disorders in Athletes

- A. Describe systemic diseases and their impact on athletes.
- B. Identify common diseases and disorders of the musculoskeletal system in athletes and their treatment.
- C. Identify common neurological disorders in athletes and methods of treatment.
- D. Identify common diseases and disorders of the immune system in athletes and their treatment.
- E. Describe the most common digestive disorders in athletes and methods of treatment.
- F. Explain endocrine conditions associated with sports medicine.
- G. Identify diseases and disorders of the cardiovascular system in athletes.
- H. Differentiate type I from type II diabetes and list prevention/treatment methods.
- I. Describe respiratory problems system affecting athletes and methods of treatment.

11. Body Mechanics and Movements in Sports

- A. List types of body movements.
- B. Describe directions and movements in relation to anatomical components and position.
- C. Name joints and tissues in relation to the movements and exercises they produce.
- D. Determine muscle imbalances.
- E. Differentiate normal and abnormal gait.
- F. Demonstrate safe stances and corrective techniques for proper movements.

12. Protective Sports Equipment

- A. Identify appropriate attire and proper-fitting sports equipment including helmets.
- B. Describe function and care of sports protective equipment.
- C. Demonstrate proper removal of sports equipment in case of injury.
- D. Identify various sports braces and purposes of each.
- E. Discuss the legal ramifications related to the manufacture, purchase, and issue of protective equipment in sports.
- F. Recognize the governing agencies that set the standards and rules for equipment safety.

13. Emergency Preparation

- A. Describe the role of sports medicine and therapy personnel within an emergency situation.
- B. List the components of a first aid kit and equipment bags.
- C. Describe the function of first aid kits for specific emergencies, specific sports and away games.
- D. Identify emergency medical and non-medical equipment.
- E. Explain the components of an Emergency Action Plan and describe the different types.

- F. Assess an Emergency Action Plan including school layouts for various sporting events.
- G. Practice making a medical emergency call for an athlete.

14. Ethics, Law, and Liability

- A. Explain the legal interaction between coaches, athletic trainers, and players.
- B. Differentiate between personal, legal and professional ethics.
- C. Define legal concepts of the Health Insurance Portability and Accountability Act (HIPAA).
- D. Examine the consequences for HIPAA violations.
- E. Recognize the privacy and legal consequences related to social media postings.
- F. Discuss measures to minimize litigation in sports medicine and athletics.
- G. Discuss insurance requirements that protect athlete, trainer, and healthcare provider.

15. Observation, Reporting, and Charting

- A. Describe the legal importance of proper documentation.
- B. Identify and describe formats used for documenting information in a medical record, including computer software, SOAP (subjective findings, objective findings, assessment, and plan) notes, and narrative charting.
- C. Demonstrate appointment scheduling, filing, and record keeping using basic computer skills.
- D. Identify and explain a care plan for physical therapy.
- E. Recognize physical variance as related to vital signs and articulate the condition of the patient to the supervisor.
- F. List the various reports found in an athletic record.
- G. Discuss the purpose of an athletic physical.
- H. Complete an athletic injury report.

16. Bloodborne Pathogens, Illnesses and Wound Care

- A. Follow the facility policies and procedures for infection control while performing patient care.
- B. List and describe components of the infection cycle.
- C. Identify common blood borne pathogens in sports and how they can infect athletes and others.
- D. Describe methods for preventing infection transmission.
- E. Apply universal precautions as mandated by the Occupational Safety and Health Administration (OSHA).
- F. Demonstrate proper hand washing techniques.
- G. Demonstrate the proper use of personal protective equipment including putting on and taking off sterile gloves.
- H. Recognize the National High School Federation and the National Collegiate Athletic Association rules as they apply to bio-hazardous materials and their disposal.
- I. List and discuss signs and symptoms of common bacterial infections and viruses.
- J. Demonstrate methods for prevention and management of bacterial and virus infections.

- K. Describe common signs and symptoms of contagious diseases and how they affect athletic competition.
- L. Describe how to control and prevent contagious diseases.
- M. Demonstrate basic wound care within the scope of practice and OSHA standards.

17. Vital Signs

- A. Identify the vital signs, the body functions measured by each, and the normal measurements of each.
- B. Describe the equipment and methods used to obtain a patient's vital signs.
- C. Identify and locate major pulse points, including factors that affect pulse and respiratory rates.
- D. Demonstrate the procedure for taking vital signs, including blood pressure, heart rate, and respiratory rate.

18. Injury Prevention through Physical Conditioning

- A. Identify the major conditioning seasons in relation to specific sports.
- B. Identify the principles of conditioning including flexibility, strength, and cardio-respiratory endurance in fitness training.
- C. Differentiate between the types of exercises necessary in each season and sport.
- D. Distinguish the importance of the warm up period from the cool down period in sports training.

19. Nutrition

- A. Identify the six classes of nutrients and discuss their major functions.
- B. Discuss the relationship between good nutrition, diet, and performance enhancement and injury prevention.
- C. Identify components of a nutritional label and how they contribute to general health.
- D. Analyze the main ingredients of a pre-game meal.
- E. Distinguish between body weight and body composition and how to measure for body mass index.
- F. Identify and discuss eating disorders.
- G. Identify weight gain and weight loss principles in fitness training (including impact of salt on water absorption).

20. Environmental Factors and Sports Therapy

- A. Identify the signs, symptoms, prevention, and treatment of injury or illness due to environmental conditions.
- B. Discuss the dangers of over-exposure in the sun, dehydration, and precautions to take to protect against harm from the sun.
- C. Outline how the human body gets rid of excessive heat; identify how to care for heat related illnesses.
- D. Describe the person who may be more prone to cold-heat related injuries.
- E. Describe the precautions to be taken by an athlete who is outside during an electrical storm.
- F. Explain the effects of altitude, air quality and other environmental issues on physical performance.
- G. Analyze the impact of current environmental laws and regulations on society and the sports industry.

21. Portfolio

- A. Create a professional digital portfolio reflecting employability skills in the relevant industry to include an "About Me" page.
- B. Collect original works and documents that demonstrate technical skills and knowledge in the industry.
- C. Demonstrate knowledge of competencies by accompanying each selected document or work with a journal entry or summary.
- D. Write a brief resume and cover letter to be included in portfolio.
- E. Develop interviewing techniques using portfolio materials.
- F. Display portfolio materials for critique by a professional panel (industry partners and classmates).
- G. Gather feedback and update portfolio.

Key Assignments

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
1. Students will participate in mock interviews that represent current industry practices (e.g., skills demonstrations, resumes, applications, portfolios, personal websites, etc.).	1A, B, D 2D 3B, C, D, I, J 5J 6A 21A-G	1 2 3 4 10	2 3 4 10 11		LS 11-12.6 SLS 11-12.2 WHSST 11-12.4
2. Students will discuss the various roles and responsibilities of professionals in a sports medicine and therapy setting.	1A, B, D 2D 4A 5A, I 6A-E	1 2 3 11	2 3 5 10	B2.0 B5.0 B12.0	LS 11-12.1, 11-12.2, 11-12.6
3. Students will define medical terminology words including prefixes and suffixes, look up origin of words, practice pronunciation, spelling and meaning of terminology using index cards or Apps, such as Quizlet. Then using medical word building skills, students will create ten new medical words.	1A, B, D 2D 7A-F	1 4 5 10 11	2 4 5 10 11	B2.0 B5.0 B12.0	LS 11-12.1, 11-12.2, 11-12.6 RSIT 11-12.8 RLST 11-12.4 WHSST 11-12.4
4. Students will demonstrate knowledge of human anatomy and physiology in a practical lab exam by describing and locating anatomical structures, physiological components and functions on a disarticulated skeleton, anatomical models and/or diagrams.	1A, B, D 2D 8A-M 9A-F	1 2 5	2 4 5 10 11	B2.0 B5.0 B8.0 B12.0	LS 11-12.1, 11-12.2, 11-12.6 RSIT 11-12.8 RLST 11-12.4
5. Research and write a 2–3-page paper on an assigned disease or disorder associated with sports medicine and present findings to classmates. Paper and presentation must describe relevant anatomy, causes, signs, symptoms, treatments, and prevention of the disease or disorder.	1A, B, D 2D 10A-I	1 2 5 11	2 4 5 10	B2.0 B3.0 B5.0 B8.0 B12.0	LS 11-12.1, 11-12.2, 11-12.6 RSIT 11-12.8 RLST 11-12.4 WHSST 11-12.4

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
6. Students will design an experiment with a partner utilizing bar bells, handgrips, or other types of sporting with timed periods of work and rest. Students then measure the length-tension relationship in skeletal muscle and articulate how a muscle preforms after repeated use.	1A, B, D 2D 11A-F	1 2 5 9	2 5 6 10	B2.0 B4.0 B5.0 B8.0 B12.0	LS 11-12.1, 11-12.5, 11-12.6 PS 2.A
7. Students will demonstrate the purpose and use of various types of equipment used to prevent injury. Students will demonstrate methods used to properly fit and use protective equipment, including: <ul style="list-style-type: none"> Fitting ankle, knee, shoulder and wrist braces. Checking fittings for protection and safety. Properly fitting a football helmet, making sure all helmet pads are secure and checking the outer shell for cracks. Properly fitting shoulder pads, making sure to cover all necessary areas to prevent injuries. 	1A, B, D 2D 4A-C 5A, I 12A-F	1 2 5 8	2 6 8 10 11	B2.0 B4.0 B5.0 B6.0 B9.0 B10.0	RSIT 11-12.4 S-IC 1, 2, 3, 5, 6 PS 2.A
8. Create Emergency Action Plan (EAP) for a campus athletic facility to be implemented in case of a sports injury or emergency. The EAP must identify the specific roles of persons responding, and evacuation plans and a map.	1A, B, D 2D 4A-C 5A, I 13A-G	1 2 5 9	2 5 6 10 11	B2.0 B5.0 B6.0 B8.0 B10.0 B12.0	LS 11-12.1, 11-12.5, 11-12.6 WHSST 11-12.4
9. Following a discussion of ethics/liability and evaluation of case scenarios, teams of students will create a poster of HIPAA rules and consequences for breaking the rules. The poster will be posted in the class as a reference document for students throughout the entire year.	1A, B, D 2D 14A-G	1 2 4 6 11	2 4 5 8 10	B3.0 B6.0 B8.0 B10.0 B12.0	LS 11-12.6 RLST 11-12.3 WHSST 11-12.4
10. Given an injury scenario, students will schedule appointments, file athlete's records, complete athletic injury reports, take vital signs,	1A, B, D 2D	1 2	2 4	B4.0 B5.0	LS 11-12.1, 11-12.2, 11-12.3, 11-12.6

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
demonstrate proper documentation of SOAP notes, practice narrative charting, and complete electronic medical records.	4A-C 15A-H	4 5 12	5 8 10 11	B6.0 B7.0 B10.0 B12.0	RSIT 11-12.8 RLST 11-12.1, 11-12.4 WS 11-12.4 WHSST 11-12.2, 11-12.4
11. Students will write a 2-3 page paper on how blood borne pathogens are spread, their specific impact on athletes, and how to prevent contamination. Then students will demonstrate proper hands-on wound care procedures on an "injured" athlete.	1A, B, D 2D 5A, I 16A-M	1 2 4 6 11	2 4 5 10 11	B2.0 B5.0 B6.0 B9.0 B10.0 B12.0	LS 11-12.6 RLST 11-12.3 WHSST 11-12.4
12. In a lab experiment, students will evaluate pulse, blood pressure, respiratory rate, temperature and response of an athlete (student partner) before and after a sports activity. Using appropriate medical terminology and abbreviations, students will describe the relationship between changes in heart rate and blood pressure relative to changes in body position and work rate. Students will determine the "fitness index" for an adolescent and adult.	1A, B, D 2D 4A-C 17A-D	1 2 5 6 8 9 11	2 6 9 10 11	B2.0 B5.0 B6.0 B9.0 B10.0 B11.0 B12.0	LS 11-12.6 RLST 11-12.3 PS 2.A
13. Students will design different weight programs for three athletes in different sports teams. The program will include upper and lower exercises as well as techniques for improving flexibility, strength, and cardio-respiratory endurance. Students will update program based on feedback from athletes, then present results to classmates.	1A, B, D 2D 4A-C 18A-D	1 5 6 9 11	2 3 5 9 10 11	B2.0 B4.0 B5.0 B8.0 B11.0	LS 11-12.6 RLST 11-12.3
14. Students will complete a food journal for one week and analyze the nutritional content using online nutritional analysis calculations. Students will write a 2-3 page reflective essay on the	1A, B, D 2D 19A-G	1 2 4	2 3 4	B2.0 B3.0 B5.0	LS 11-12.6 WHSST 11-12.4 A-REI 1, 3, 10

Assignment	Competencies	Career Ready Practices	Anchor Standards	Pathway Standards	CCSS
findings, with suggestions on how to improve their nutrition and personal nutritional goals for the year.		6 11 12	5 10	B9.0	S-IC 1
15. Using scenarios or video clips of sporting events, students will identify environmental factors that may negatively impact the performance of the athletes. Using the identified environmental factors, students will describe the types of conditions, illnesses, and emergency situations that may arise; and the precautions that should be taken to minimize the environmental effects and prevent those issues.	1A, B, D 2D 20A-G	1 2 4 5 6 9	2 4 5 9 10	B2.0 B4.0 B5.0 B11.0	LS 11-12.6 RLST 11-12.3

Standards Assessed in this Program

Career Ready Practices

1. Apply appropriate technical skills and academic knowledge.
2. Communicate clearly, effectively, and with reason.
3. Develop an education and career plan aligned to personal goals.
4. Apply technology to enhance productivity.
5. Utilize critical thinking to make sense of problems and persevere in solving them.
6. Practice personal health and understand financial well-being.
7. Act as a responsible citizen in the workplace and the community.
8. Model integrity, ethical leadership, and effective management.
9. Work productively in teams while integrating cultural/global competence.
10. Demonstrate creativity and innovation.
11. Employ valid and reliable research strategies.
12. Understand the environmental, social, and economic impacts of decisions.

Anchor Standards

2.0 Communications

- Acquire and use accurately sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

3.0 Career Planning and Management

- Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

4.0 Technology

- Use existing and emerging technology, to investigate, research, and produce products and services, including new information, as required in the sector workplace environment.

5.0 Problem Solving and Critical Thinking

- Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

6.0 Health and Safety

- Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the sector workplace environment.

7.0 Responsibility and Flexibility

- Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the sector workplace environment and community settings.

8.0 Ethics and Legal Responsibilities

- Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

9.0 Leadership and Teamwork

- Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution.

10.0 Technical Knowledge and Skills

- Apply essential technical knowledge and skills common to all pathways in the sector following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstration and Application

- Demonstrate and apply the knowledge and skills contained in the Health Science and Medical Technology anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings and through the Cal-HOSA career technical student organization.

Pathway Standards

Health Science and Medical Technology - Patient Care Pathway

B2.0 Understand the basic structure and function of the human body and relate normal function to common disorders.

B3.0 Know how to apply mathematical computations used in healthcare delivery system.

B4.0 Recognize and practice components of an intake assessment relevant to patient care.

B5.0 Know the definition, spelling, pronunciation, and use of appropriate terminology in the healthcare setting.

B6.0 Communicate procedures and goals to patients using various communication strategies to respond to questions and concerns.

B7.0 Apply observation techniques to detect changes in the health status of patients.

B8.0 Demonstrate the principles of body mechanics as they apply to the positioning, transferring, and transporting of patients.

B9.0 Implement wellness strategies for the prevention of injury and disease.

B10.0 Comply with protocols and preventative health practices necessary to maintain a safe and healthy environment for patients, health care workers, coworkers, and self within the health care setting.

B11.0 Comply with hazardous waste disposal policies and procedures, including documentation, to ensure that regulated waste is handled, packaged, stored, and disposed of in accordance with federal, state, and local regulations.

B12.0 Adhere to the roles and responsibilities, within the scope of practice, that contribute to the design and implementation of treatment planning.

B13.0 Research factors that define cultural differences between and among different ethnic, racial, and cultural groups and special populations.

Common Core State Standards

ENGLISH LANGUAGE ARTS

Language Standards

LS 11-12.6: Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the (career and college) readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

LS 11-12.1: Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

LS 11-12.2: Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

LS 11-12.3: Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

LS 11-12.5: Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.

LS 11-12.6: Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Reading Standards for Information Text

RSIT 11-12.8: Delineate and evaluate the reasoning in seminal US texts, including the application of constitutional principles and use of legal reasoning (e.g., in US Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., *The Federalist*, presidential addresses).

Reading Standards for Literacy in Science and Technical Subjects

RLST 11-12.1: Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes to any gaps or inconsistencies in the account.

RLST 11-12.3: 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.

RLST 11-12.4: 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.

RLST 11-12.9: 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.

Speaking and Listening Standards

SLS 11-12.2: 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.

SLS 11-12.1: Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners, building on others ideas and expressing their own clearly and persuasively.

SLS 11-12.1d: 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 work.

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects

WHSST 11-12.2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

WHSST 11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate for task, purpose, and audience.

Writing Standards

WS 11-12.4: Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WS 11-12.6: Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback including new arguments and information.

WS 11-12.7: 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.

WS 11-12.8: 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 including footnotes and endnotes.

MATHEMATICS

Algebra-Reasoning with Equations and Inequalities

AREI 1: Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

AREI 3: Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Algebra - Reasoning with Equations and Inequalities

A-REI 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).

Statistics and Probability - Making Inferences and Justify Conclusions

S-IC 1: Understand statistics as a process for making inferences about population parameters based on a random sample from that population.

S-IC 2: Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model says a spinning coin falls heads up with probability 0.5. Would a result of 5 tails in a row cause you to question the model?

S-IC 3: Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.

S-IC 5: Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

S-IC 6: Evaluate reports based on data.

SCIENCE

Physical Sciences

PS 2.A: Forces and Motion