

# FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

## Aerospace Science & Leadership 3 Air Force Junior ROTC

**Date:** March 2014

**Subject Area:** Career Technical Education

**Proposed Grade Level(s):** 9 - 12

**Course Length:** One Year

**Grading:** A-F

**Number of Credits:** 5 per Semester

**Prerequisites:** None

### COURSE DESCRIPTION:

#### **Aerospace Science 3**

##### **Exploring Space: The High Frontier**

This course includes the latest information available on space and space exploration. The course begins with the study of the space environment from the earliest days of interest in astronomy and early ideas of the heavens through the Renaissance, and on into modern astronomy. It provides an in-depth study of the Earth, Sun, stars, Moon, and solar system, including the terrestrial and the outer planets. It discusses issues critical to travel in the upper atmosphere such as orbits and trajectories, unmanned satellites, and space probes. It investigates the importance of entering space, space vehicles, launch systems, and space missions. The section on manned spaceflight focuses on the Space Shuttle, space stations and beyond, covering milestones in the endeavor to land on the Moon and to safely orbit humans and crafts for temporary and prolonged periods. The course covers the human aspect of spaceflight, focusing on the human experience in space. It also examines the latest advances in space technology, including robotics in space, the Mars Rover, and commercial uses of space.

All throughout the course are scenarios, video segments, hands on activities and a technology enrichment activity is included in each lesson. The content of this course is correlated using the National Geography and Social Studies Standards. These include the National Geography Standards – *Geography for Life*, and the *National Council for the Social studies* (NCSS) standards. In addition, the technology enrichment activities are correlated to the *National Education Technology Standards for Students* (NETSS).

Twenty-First Century Skills as defined by Partnership for 21<sup>st</sup> Century Skills are integrated into the course. These include learning and innovation (thinking) skills-critical thinking and problem solving, creativity and innovation, and communication and collaboration; information, media and technology skills-information literacy, media literacy, and ICT (Information, Communications and Technology) literacy; life and career skills-flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility. Again, the content of this course is correlated using the National Geography and Social Studies Standards. These include the National Geography Standards – *Geography for Life*, and the *National Council for the Social studies* (NCSS) standards. In addition, the technology enrichment activities are correlated to the *National Education Technology Standards for Students* (NETSS).

##### **Cultural Studies: An Introduction to Global Awareness**

This is a customized course about the world's cultures. The course is specifically created for the US Army, Marine Corps, Navy, and Air Force Junior ROTC programs. It introduces students to the world's cultures through the study of world affairs, regional studies, and cultural awareness. The course delves into history, geography, religions, languages, cultural, political systems, economics, social issues, environmental concerns, and human rights. It looks at major events and significant figures that have shaped each region. Throughout the

course, there are readings, video segments, hands –on activities, other optional activities, technology enrichment, and assessments to guide in the re-enforcement of the material.

Twenty-First Century Skills as defined by Partnership for 21<sup>st</sup> Century Skills are integrated into the course. These include learning and innovation (thinking) skills-critical thinking and problem solving, creativity and innovation, and communication and collaboration; information, media and technology skills-information literacy, media literacy, and ICT (Information, Communications and Technology) literacy; life and career skills-flexibility and adaptability, initiative and self-direction, social and cross-cultural skills, productivity and accountability, and leadership and responsibility. Again, the content of this course is correlated using the National Geography and Social Studies Standards. These include the National Geography Standards – *Geography for Life*, and the *National Council for the Social studies* (NCSS) standards. In addition, the technology enrichment activities are correlated to the *National Education Technology Standards for Students* (NETSS).

### **Leadership Education 3 - Life Skills and Career Opportunities**

This course is designed to prepare students for life after high school in the high-tech, globally oriented, and diverse workplace of the 21<sup>st</sup> Century. Students will learn how to become a more confident financial planner and to save, invest, and spend money wisely, as well as how to avoid the credit trap. They will learn about real life issues such as understanding contracts, leases, warranties, legal notices, personal bills, practical and money-saving strategies for grocery shopping, apartment selection, and life with roommates. The Holland Interest Inventory and other self-assessments will help them to reveal their attitudes, aptitudes, and personal skills. This self-understanding will allow them to explore career paths and understand requirements that they will need to be successful at work and in life.

To help students increase their potential for success through education, they will learn how to select a school that is right for them; how to apply for admission to a vocational or technical school, community college/university; and how to succeed in these learning environments. The text provides additional information on how to conduct a successful job search, how to build a winning resume as well as effective interviewing skills.

Each unit of instruction and the associated student learning activities will include a multicultural perspective representative of the demographic makeup of Cordova High School. Field trips will also be arranged for students to visit industry experts in the various aerospace industry sectors.

### **GENERAL GOALS / ESSENTIAL QUESTIONS:**

By the end of the Aerospace Science course, each student will be able to:

- Know the history of Astronomy and the specific characteristics of the Earth, Moon and solar system, and the planets
- Comprehend the big picture of space exploration, including the history of spaceflight, organizations doing work in space, and the overall space environment
- Comprehend the importance of entering space, characteristics of manned and unmanned spaceflight, and how humans are affected by spaceflight
- Comprehend the key concepts for getting from the surface of the Earth into Earth orbit and to other planets and back again
- Comprehend how spacecraft, rockets, and launch vehicles are designed and built
- Comprehend the latest advances in space technology

By the end of the Aerospace course on Cultural Studies, each student will be able to:

- Know how historical, geographic, religious, and ethnic factors have shaped the six major regions of the world
- Know how economic, political, and social factors impact cultures

- Know how environmental resources influence global economic development
- Know how population density, famine, war, and immigration influence the world
- Know how the economic systems of communism and capitalism have shaped the six major regions of the world
- Comprehend how cultural perspectives of time, space, context, authority, interpersonal relationships, and orientation to community affect interactions among people

By the end of the Leadership course, each student will be able to:

- Analyze elements of successful financial management skills
- Create a plan to safeguard personal resources
- Analyze the different ways of pursuing a career path
- Analyze the requirements for applying to college or university
- Analyze positive and negative impact of college life in meeting career goals
- Evaluate the essential process for successfully pursuing desired career or job
- Evaluate benefits of working for the Federal Government
- Create a plan for success career development

### **CCSS READING COMPONENT:**

Students will be required to:

- Read articles related to spaceflight, astronomy, human physiology, aerospace engineering
- Read the required texts.
- Read and comprehend test questions and answers.

### **CCSS WRITING COMPONENT:**

Students will be required to:

- State their responses to questions in complete sentences.
- Develop a personal health plan and set career goals for five years.
- Complete a notebook that includes note taking from class lectures.
- Develop Power Point presentations on a variety of topics for group presentations.

### **CCSS SPEAKING AND LISTENING COMPONENT:**

Students will be required to:

- Participate as a member of a group in leadership situation.
- Respond to questions directed to them during class discussion.
- Participate in question/answer sessions with guest speakers.

### **DETAILED UNITS OF INSTRUCTION:**

**All Units of Instruction will include:**

- Introductory class discussion and teacher presentation.
- Appropriate audio-visual media.
- Hands on learning activities.
- Evaluation of student learning.
- Student reading, writing, and oral component.

#### Aerospace Science:

Exploring Space: The High Frontier

Unit One: The Space Environment

Unit Two: Exploring Space

Unit Three: Manned & Unmanned Spaceflight Unit Four: Space Technology

Cultural Studies: An Introduction to Global Awareness

Chapter One: The Middle East

Chapter Two: Asia

Chapter Three: Africa

Leadership Education:

LE 3: Life Skills and Career Opportunities

Unit One: Mapping Your Future

Unit Two: Charting Your Financial Course

Unit Three: Aiming Toward a College Degree

Unit Four: Pursuing a Career

Drill and Ceremonies

Unit One: Intro. to Drill and Ceremonies

Unit Two: Commands and the Command Voice

Unit Three: Conduct basic drill movements

Unit Four: Saluting

Unit Five: Expanding Drill Techniques

Unit Six: Functions of Group and a Wing

Unit Seven: Formation of Groups & Wings

Unit Eight: Purpose of Ceremonies and Parades

**TEXTBOOKS and RESOUCE MATERIALS:**

An Introduction to Global Awareness, Jones & Bartlett Publishing, 2010

Exploring Space: The High Frontier, Jones & Bartlett Publishing, 2011

Life Skills and Career Opportunities, Pearson Custom Publishing, 2003

Drill and Ceremonies, Air Force Manual 36-2203

**COMMON CORE STANDARDS TO BE ADDRESSED:**

**Reading: Informational Text**

Integration of Knowledge and Ideas

CCSS.ELA-Literacy.RI.11-12.7 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.

**Writing**

Text Types and Purposes

CCSS.ELA-Literacy.W.11-12.1 Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

CCSS.ELA-Literacy.W.11-12.2 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.

Production and Distribution of Writing

CCSS.ELA-Literacy.W.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 or information.

Research to Build and Present Knowledge

CCSS.ELA-Literacy.W.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.

## **Speaking and Listening**

### Comprehension and Collaboration

CCSS.ELA-Literacy.SL.11-12.1 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.

CCSS.ELA-Literacy.SL.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.

### Presentation of Knowledge and Ideas

CCSS.ELA-Literacy.SL.11-12.5 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.

## **Literacy in Technical Subjects**

### Key Ideas and Details

CCSS.ELA-Literacy.RST.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.

### Integration of Knowledge and Ideas

CCSS.ELA-Literacy.RST.11-12.7 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.

## **DISTRICT ESLRs TO BE ADDRESSED:**

### **Students will be:**

- **Self –Directed learners** – students will work independently to determine positive and collaborative outcomes to group problems
- **Effective communicators** – students will communicate through both written and oral presentations made in class and to local middle schools.
- **Quality Producers/Performers** – student work will be held to a high standard as set by the Air Force Junior ROTC worldwide program.
- **Constructive Thinkers** – students will be able to deconstruct, organize, plan and implement group projects and intramural events, document activities, and apply project management skills.
- **Collaborative Workers** – students will understand the importance of teamwork and complete various projects as a member of a team.
- **Responsible Citizens** – students will participate in community service activities

## Appendix

### **Transportation Knowledge and Performance Anchor Standards**

#### **1.0 Academics**

Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Transportation academic alignment matrix for identification of standards.

#### **2.0 Communications**

Acquire and accurately use Transportation sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats. (Direct alignment with LS 9-10, 11-12.6)

2.1 Recognize the elements of communication using a sender–receiver model.

2.2 Identify barriers to accurate and appropriate communication.

2.3 Interpret verbal and nonverbal communications and respond appropriately.

2.4 Demonstrate elements of written and electronic communication such as accurate spelling, grammar, and format.

2.5 Communicate information and ideas effectively to multiple audiences using a variety of media and formats.

2.6 Advocate and practice safe, legal, and responsible use of digital media information and communications technologies.

#### **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. (Direct alignment with SLS 11-12.2)

3.1 Identify personal interests, aptitudes, information, and skills necessary for informed career decision making.

3.2 Evaluate personal character traits such as trust, respect, and responsibility and understand the impact they can have on career success.

3.3 Explore how information and communication technologies are used in career planning and decision making.

3.4 Research the scope of career opportunities available and the requirements for education, training, certification, and licensure.

3.5 Integrate changing employment trends, societal needs, and economic conditions into career planning.

3.9 Develop a career plan that reflects career interests, pathways, and postsecondary options.

#### **4.0 Technology**

Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the workplace environment. (Direct alignment with WS 11-12.6)

4.1 Use electronic reference materials to gather information and produce products and services.

4.3 Use information and communication technologies to synthesize, summarize, compare, and contrast information from multiple sources.

4.5 Research past, present, and projected technological advances as they impact a particular pathway.

#### **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 Transportation sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques. (Direct alignment with WS 11-12.7)

5.1 Identify and ask significant questions that clarify various points of view to solve problems.

5.2 Solve predictable and unpredictable work-related problems using various types of reasoning (inductive, deductive) as appropriate.

5.3 Use systems thinking to analyze how various components interact with each other to produce outcomes in a complex work environment.

5.4 Interpret information and draw conclusions, based on the best analysis, to make informed decisions.

## **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 Transportation sector workplace environment. (Direct alignment with RSTS 9-10, 11-12.4)

6.2 Interpret policies, procedures, and regulations for the workplace environment, including employer and employee responsibilities.

6.3 Use health and safety practices for storing, cleaning, and maintaining tools, equipment, and supplies.

6.4 Practice personal safety when lifting, bending, or moving equipment and supplies.

## **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.

9.1 Define leadership and identify the responsibilities, competencies, and behaviors of successful leaders.

9.2 Identify the characteristics of successful teams, including leadership, cooperation, collaboration, and effective decision-making skills as applied in groups, teams, and career technical student organization activities.

9.3 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.

9.5 Understand that the modern world is an international community and requires an expanded global view.

9.6 Respect individual and cultural differences and recognize the importance of diversity in the workplace.

9.7 Participate in interactive teamwork to solve real world issues and problems

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