

**Murrieta Valley Unified School District**  
**High School Course Outline**  
**October 2011**

**Department:** Murrieta Mesa HS Department of Naval Science  
(NJROTC)

**Course Title:** NAVAL SCIENCE LEVEL 2 – MARITIME HISTORY AND  
NAUTICAL SCIENCES

**Course Number:** 7986

**Grade Level(s):** 10 – 12

**Length of Course:** One Academic School Year

**Prerequisite(s):** Successful completion of Naval Science Level 1

**UC/CSU (A-G) Requirement:** None

**Brief Course Description:**

This course meets District graduation requirements as an elective, can be taken for 1 semester as a science elective, and also meets District graduation requirements for physical education. The physical education components in Naval Science Level 1 goals K, L, and M are aligned with High School Course 2 in the California Physical Education Standards and meets statutory requirements in *Education Code* Section 51222 (secondary minutes requirement); and *Education Code* Section 51225.3 (a)(1)(F) (high school graduation requirement) requiring a minimum of 400 minutes of physical education each ten days

The NJROTC curriculum, as established in the policies, directives, and instructions of the Chief of Naval Education and Training (CNET), is separated into four (4) distinct levels. Each level, level one (1) thru level four (4) is designated for a respective grade level and/or first year NJROTC student. Accordingly, the naval science level one (1) program of instruction is designated for freshmen, or first time/year NJROTC students; level two (2) is designated for sophomore students; level three (3) is designated for junior students; and level four (4) is designated for senior students.

The purpose of **Naval Science Level 2 – Maritime History** is to build on the general introduction provided in Naval Science 1, to further develop the traits of citizenship and leadership in students, introduce cadets to the maritime history of the world and the United States from the American Revolution through present time. The material includes Bosnia, the demise of the Soviet Union, and the September 11, 2001 terrorists' attacks upon the United States.

The purpose of **Naval Science Level 2 – Nautical Sciences** is to introduce the various nautical sciences through classroom work and laboratory time. The development of core skills that student should master are integrated throughout the course and include geography, oceanography, astronomy, physical science, meteorology, and weather. The cadet will be expected to illustrate an understanding of maritime geography as it relates to our national resources, landforms, climate, soil, bodies of water, people, governments, military, and geopolitics. Minimum performance requirements of this course are established in accordance with current Chief of Naval Education Training (CNET) instruction, NAVEDTRA 37128. The performance standards in this course are based on the performance standards identified in the curriculum for the United States NJROTC.

## **I. Goals**

The NJROTC program goals are to provide an opportunity for secondary school students to learn about the basic elements and requirements for national security and their personal obligations as American citizens to contribute toward national security. The NJROTC goals, as established by the Chief of Naval Education and Training (CNET) are:

### **1. Promote Patriotism**

*This means love of country, respect for the flag, and pride in the American way of life as set forth in the Declaration of Independence and U.S. Constitution*

### **2. Develop informed and responsible citizens**

*NJROTC should make students aware of their responsibilities, duties, and rights as American citizens*

### **3. Promote habits of orderliness and precision**

*Experience repeatedly shows that such habits help people succeed in life (family, friends, co-workers, and career)*

### **4. Develop a high degree of personal honor, self-reliance, individual discipline, and leadership**

*These qualities are embodied by the Navy's Core Values of Honor, Courage, and Commitment*

### **5. Promote an understanding of basic elements and requirements for national security**

*Students should understand the need for armed forces and their relationship to a democratic republican government*

### **6. Develop respect for and an understanding of the need for constituted authority in a democratic society**

*Students should understand why we have laws and the role of government as set forth in the U.S. Constitution*

### **7. Provide incentives to live healthy and drug-free lives**

*Students should know how drug use and other harmful actions affect both themselves and others*

### **8. Develop leadership potential**

*The NJROTC program provides students with a wide range of opportunities to test themselves in leadership roles such as leading a drill team and performing the duties of assigned staff jobs*

**9. Promote high school completion**

*Students should know the value of their education and how to effectively manage their time to acquire the education to assist them in meeting their personal goals*

**10. Provide information on military service as one possible career option**

*First, and foremost, the NJROTC program is not a recruiting program. Instructors are strictly forbidden from recruiting for military services. However, instructors are obligated to provide students with information (benefits, military occupational specialties, college programs, etc.) on the various military services when asked*

**II. Outline of Content for Major Areas of Study**

**1. NAVAL SCIENCE LEVEL 2 – MARITIME HISTORY**

**A. SEA POWER AND EARLY WESTERN CIVILIZATION**

- a. Describe the importance of Sea Power.
- b. Explain how Sea Power evolved and its influence on the ancient world.
- c. Describe the fall of the Roman Empire and the subsequent thousand years of turmoil that followed.
- d. Describe the events that caused the Turks to lose the Battle of Lepanto in 1571 and their control of the Mediterranean area.
- e. Describe the conflict between England and Spain in 1570.
- f. Explain how the English defeated the Spanish Armada.

**B. THE AMERICAN REVOLUTION**

- a. Describe the taxing system used by England on the colonies and the subsequent events that led to the American Revolution.
- b. Explain the difficulties the British faced in fighting naval battles with the colonies.
- c. Describe how the American Navy was born and the significance of building the Navy.
- d. Cite the importance of the first American Naval operation against the English Navy in the American Revolution.
- e. Describe the two major events (turning point) of the battle of Saratoga and the impact it had on the American Revolutionary War.
- f. Explain how naval power affected the outcome of the War at Sea.
- g. Describe the events leading up to the battle of Yorktown and the subsequent end of the fighting in the colonies.

**C. THE GROWTH OF AMERICAN SEA POWER (1783-1860)**

- a. Explain the reasons why the American economy suffered in 1783.
- b. Cite the events surrounding the Navy Act of 1794.
- c. Explain the events during the quasi-war between America and France.
- d. Cite the events surrounding the capture and destruction of the U.S.S. Philadelphia.
- e. Describe the events that led to the final moves toward war between the United States and Britain.
- f. Describe the major sea battles between American and British forces during the War of 1812.
- g. Cite other high sea battles that occurred during the War of 1812.
- h. Explain the other major incidents where the British prevailed over America's sea vessels.
- i. Cite the offensive maneuvers used by the British Navy during the War of 1812.
- j. Explain how Sea Power influenced the spread of Western Civilization and the formative years of the new American republic.
- k. Explain the contribution the U.S. Navy made to the progress of world trade between 1815 and 1860.

**D. THE CIVIL WAR (1861-1865)**

- a. Describe how the issue of slavery divided the North and South and led to the outbreak of the Civil War in 1861.
- b. Describe the major events that occurred during 1860-1861 in America.
- c. Describe the resources of both the North and the South and the preparations required to fight the Civil War.
- d. Describe the role of the Union Navy during the Civil War.
- e. Describe the C.S.S. *Virginia* (Formerly U.S.S. Merrimack) and the U.S.S. *Monitor*.
- f. Describe how General Robert E. Lee was able to prolong the life of the Confederacy after the battle of Hampton Roads.
- g. Describe the Emancipation Proclamation as a significant psychological move for the North in the Civil War.
- h. Describe the Battle of Gettysburg as the turning point in the Civil War.
- i. Explain the role that Captain Semmes and the C.S.S. *Alabama* played in the Civil War.
- j. Explain the primary reason General Robert E. Lee was forced to surrender.
- k. Explain the changes to American life that occurred during or as a result of the Civil War.

**E. THE RISE TO WORLD POWER STATUS (1865-1914)**

- a. Describe the changes in foreign relations and technology that affected the U.S. Navy following the Civil War.

- b. Describe the education and training programs that were developed after the Civil War for the U.S. Navy
- c. Describe five (5) major contributions Alfred T. Mahan made to modern navies.
- d. Explain how the United States rebuilt its Navy or contributed to its expansion following the Civil War.
- e. Explain American reaction to the sinking of the U.S.S. *Maine* and the war preparations made by the United States before the start of the Spanish-American War.
- f. Describe the advances in naval power and technology under Theodore Roosevelt.
- g. Explain America's international relations from 1903 until World War I.
- h. Explain the difficulties and importance of building the Panama Canal.

#### **F. WORLD WAR I (1914-1918)**

- a. Explain the war plans made by Great Britain and Germany during World War I.
- b. Describe actions taken by the German and the British during the Pacific Action.
- c. Explain the operational advantages of the German U-boats over the Allies during World War I.
- d. Explain the events that brought America into World War I.
- e. Explain the operation and significance of the convoy system that was used by Great Britain during World War I.
- f. Describe the antisubmarine operations used by the U.S. Navy during World War I.
- g. Describe the role America played during World War I.
- h. Briefly describe events leading up to the surrender of Germany.

#### **G. THE INTERWAR YEARS (1918-1941)**

- a. Explain the conditions set forth in the Naval Disarmament Treaty.
- b. Identify the dictatorships that grew out of the great world depression.
- c. Explain the condition of the U.S. Navy during the pre-war years.
- d. Explain the final steps toward war in Europe.
- e. Explain U.S. isolationism/involvement from 1935 until the United States declared war on Japan on 8 December 1941.
- f. Explain and demonstrate the procedures for the platoon to take arms.

#### **H. WORLD WAR II: THE ATLANTIC WAR (1941-1945)**

- a. Explain the events that led up to the Japanese attack on Pearl Harbor.
- b. Describe the state of U.S. military readiness during and after the attack on Pearl Harbor.

- c. Explain three (3) miscalculations the Japanese made during and after the attack on Pearl Harbor.
- d. Explain the outcome of the battle of Anzio.
- e. Explain why successful Allied air attacks in Operation Overlord were essential to the success of the invasion of Normandy.
- f. Describe the major events of D-Day in Normandy.
- g. Describe the major events of Operation Anvil: Invasion of Southern France.

**I. WORLD WAR II: PACIFIC WAR (1941-1945)**

- a. Explain the events that led up to the Japanese attack on Pearl Harbor.
- b. Describe the state of U.S. military readiness during and after the attack on Pearl Harbor.
- c. Cite two (2) reasons the Battle of the Coral Sea was important.
- d. Explain the significance of the Battle of Midway.
- e. Describe the battles of Guadalcanal.
- f. Explain the submarine war in the Pacific.
- g. Describe the battle of the Philippines Sea.
- h. Describe the condition of the Imperial Japanese Navy following Battles for Leyte Gulf.
- i. Describe the U.S. occupation of Iwo Jima and its logistic significance.

**J. THE COLD WAR ERA (1945-1991)**

- a. Describe the views and events during the demobilization following World War II.
- b. Describe the events leading to the “Cold War.”
- c. Explain the postwar views and actions in relations to the unification of the armed forces and provisions for national security.
- d. Describe the events leading to formation of the North Atlantic Treaty Organization (NATO).
- e. Describe postwar activities in the Far East in regard to insurgencies, nationalism, and anti-colonialism.
- f. Describe initial stages of the Korean War.
- g. Describe naval contributions in the Korean War.
- h. Describe the events involved with Operation Chromite: Inchon.
- i. Describes the events involved in the Chinese Intervention within the Korean War.
- j. Describe the events involved in the Truce Talks of the Korean War.
- k. Describe the outcome of the Korean War in regard to naval participation, U.S. government policy, global perspective, and Communist objectives.
- l. Describe naval confrontations in the post-Korean era.
- m. Describe the Korean post-war period as it related to the U.S. Navy.
- n. Describe the Navy’s movement into the nuclear age.
- o. Describe major events in the Cuban missile crisis.

- p. Describe the major events which led to the breakup of Vietnam into North and South Vietnam.
- q. Describe the restrictions placed on military forces stationed in Vietnam.
- r. Describe the Vietnamization process established by the United States.
- s. Describe the major events that led to the end of the Vietnam War.
- t. Describe the events that were included in the Post-Vietnam Modernization efforts.
- u. Describe the joint U.S. task force's role in Grenada during the fall of 1983.
- v. Describe the role the United States played in restoring democracy to Panama and the importance of Operation Just Cause to U.S. interests in Panama.
- w. Describe the rise of terrorism worldwide with events in the Middle East during the 1980's.
- x. Describe the major events that occurred between Iran and Iraq in the Persian Gulf region.
- y. Describe the great changes experienced by the Soviet Union since 1985 and the rapid rise of the democratic movement within the Soviet Union after the demolition of the Berlin Wall.

**K. THE 1990s AND BEYOND**

- a. Describe the terms of START II signed by the U.S. and Russia in 1993.
- b. Describe the major events that occurred between Iran and Iraq in the Persian Gulf region.
- c. Describe the major events that occurred during both operations Desert Shield and Desert Storm.
- d. Describe the conflicts that took place in Somalia during the early 1990s.
- e. Describe some of the actions taken by the U.S. in the aftermath of Desert Storm.
- f. Describe international terrorist attacks against the U.S. during the late 1990s.
- g. Describe domestic terrorist events that occurred in the late 1990s and September 11, 2001.
- h. Describe the challenging years facing our Navy.

**2. NAVAL SCIENCE LEVEL 2 – NAUTICAL SCIENCES**

**A. MARITIME GEOGRAPHY OF THE WESTERN SEAS**

- a. Explain three (3) important reasons for the study of geography.
- b. Describe the subdivisions of the World Ocean.
- c. Cite the importance of geography in military planning and operations.
- d. Describe the Atlantic Ocean, Arctic Ocean, and Mediterranean Sea in terms of their economic and strategic importance to the United States and its allies.

- e. Explain the importance of the Caribbean Sea and Gulf of Mexico to the United States.

**B. MARITIME GEOGRAPHY OF THE EASTERN SEAS**

- a. Cite the importance of the Red Sea and the Gulf of Aden to American interest.
- b. Explain the role of the United States and its allies in the Persian Gulf and the Gulf of Oman.
- c. Describe the Indian Ocean in terms of its economic and strategic value to the United States and its allies.
- d. Describe the value of the Pacific Ocean to the United States and its allies.
- e. Describe the special features of the Antarctic Ocean.

**C. OCEANOGRAPHY**

- a. Describe the significance of oceanographic study.
- b. Explain four (4) reasons for the great interest now being shown in the world's oceans.
- c. Describe those historical events that created the great bodies of water.
- d. Describe the continental drift theory.
- e. Explain those great geological phenomena that occur today as a result of our changing Earth.

**D. UNDERSEA LANDSCAPES**

- a. Explain methods used to explore the ocean floor.
- b. Describe the benefits of the continental shelf.
- c. Describe the make-up of the continental slope.
- d. Explain the features of the deep ocean basin.
- e. Describe the sediments found on the ocean floor.

**E. SEAWATER: ITS MAKE UP AND MOVEMENTS**

- a. Describe the chemical makeup and physical properties of water.
- b. Describe the composition of seawater.
- c. Describe the causes of waves.
- d. Cite the causes of beaches, coastline erosion, ocean currents, and gyres.
- e. Describe the effects of tides on coastal areas.
- f. Describe the theory of tidal energy.

**F. LIFE IN THE SEAS**

- a. Describe how microscopic plant life is involved in the ecological system of the oceans.



- b. Describe life-sustaining characteristics of marine life at the edge of the sea.
- c. Describe the two (2) major divisions of marine animals and their characteristics.
- d. Describe four (4) categories of harmful marine animals that pose a threat to man.
- e. Describe the types of equipment used to improve man's capability to penetrate the sea.
- f. Describe the six (6) major groups of pollutants and their effects on marine life.

#### **G. METEOROLOGY**

- a. Describe the aspects of the science of weather and the Earth's atmosphere.
- b. Describe the significance of weather in history.
- c. Describe the meaning and characteristics of the troposphere, tropopause, stratosphere, ionosphere, and exosphere.
- d. Describe the aspects of atmospheric pressure.
- e. Describe the aspects in measuring temperature, relative humidity, and dew point.

#### **H. CLOUDS AND FOG**

- a. Describe the factors associated with cloud formation.
- b. Describe cloud classifications as they relate to cloud types, altitudes, classes, and overall appearance.
- c. Describe the factors associated when clouds are at sea.
- d. Explain the formation of rain.
- e. Describe the process of how fog is formed on the Earth's surface as well as hazards in relation to fog formation.

#### **I. WIND AND WEATHER**

- a. Describe the conditions that cause wind movements.
- b. Describe the effects of the Earth's revolution and inclination movement on our weather patterns.
- c. Describe the characteristics of low-pressure and high-pressure areas.
- d. Describe the type of monsoons in Southeast Asia.
- e. Describe the Beaufort Scale and how it is used.

#### **J. FRONTS AND STORMS**

- a. Describe the development of weather fronts.
- b. Describe the primary frontal zones: Inter-tropical Convergence Zone, Arctic Frontal Zone, and Polar Frontal Zone.
- c. Describe the characteristics of cold, warm, and occluded fronts.

- d. Describe the formations, characteristics, and development stages of a thunderstorm, hurricane, and tornado.
- e. Describe the purpose and function of Storm Warning Signals and Hurricane Warning System.

**K. WEATHER FORECASTING**

- a. Describe the function and structure of the National Weather Service.
- b. Describe the function of the Navy Weather Service.
- c. Describe the purpose of weather satellites.

**L. ASTRONOMY**

- a. Explain the theories of the creation of the universe.
- b. List the methods for astronomical observation.
- c. Describe the methods for using the telescope.
- d. Identify the methods for using the spectrum and balloon observatories.
- e. Describe examples of satellites and other exploratory spacecraft.
- f. Explain the efforts in exploring the Solar System.
- g. Explain the important events in the field of astronomy and space exploration in the next 20 years.

**M. MOON**

- a. Recognize basic facts about the Moon such as size, distance from Earth, and atmosphere.
- b. Describe the surface features and geographical structure of the Moon.
- c. Explain those theories that describe Moon craters and their formations.
- d. Describe the mountain ranges and riles on the surface of the Moon.
- e. Explain the effect moonquakes have on the Moon.
- f. Explain the basic reasons for Moon exploration.

**N. THE SUN**

- a. Explain the basic facts about the Sun, and its relationship to the Earth.
- b. Describe the composition of the Sun.
- c. Explain sunspots and the effects they have on the Earth's atmosphere.
- d. Explain the effects the Sun has on the Earth's magnetic field.
- e. Describe the effects the Sun's energy has on the Earth.
- f. Explain the importance of developing solar energy systems.

**O. THE PLANETS**

- a. Describe the solar system in which we live.
- b. Describe the major features and characteristics of the planets Mercury, Mars, Jupiter, Uranus, and Pluto.

- c. Describe special features of Venus as it relates to our solar system.
- d. Describe the prime features of Saturn and explain how it differs from other planets in our solar system.
- e. Describe the relationship of Neptune and Uranus.

**P. ASTERIODS, COMETS, AND METEORS**

- a. Identify the asteroid belt as it relates to our solar system.
- b. Describe the composition of comets and their movement.
- c. Identify the difference between meteoroids, meteors, and meteorites.

**Q. THE STARS**

- a. Explain the theory adopted as the common unit of astronomical distances.
- b. Explain the system used to classify stars.
- c. Explain the terms used to identify temporary stars from 134 B.C. to the present.
- d. Describe the three (3) Nebulae stars and their makeup.
- e. Describe the characteristics of our galaxy and the three (3) ways other galaxies are classified to their shapes.

**2.1 NAVAL SCIENCE LEVEL 2 – PHYSICAL SCIENCE**

**A. MOTION, FORCE, AND AERODYNAMICS**

- a. Describe the two (2) main topics in the field of physical science.
- b. Describe the six (6) steps in the scientific method approach.
- c. Describe the differences in a theory and a law.
- d. Describe Newton's three (3) laws of motion.
- e. Describe Bernoulli's theorem.

**B. BUOYANCY**

- a. Describe Archimedes Law.
- b. Explain how objects float.
- c. Explain how a submarine floats and submerges.
- d. Explain stability in a ship and its importance.

**C. BASIC ELECTRICITY**

- a. Describe the fundamental theory of electricity.
- b. Describe the properties of conductors and insulators.
- c. Describe the six (6) common methods of producing voltage.
- d. Describe battery construction and significant characteristics.
- e. Explain the principle of electrical circuits.
- f. Describe Ohm's Law as it relates to current and resistance.

- g. Describe the electrical power theory.

#### **D. ELECTRONICS**

- a. Discuss the principles of radio-frequency wave transmission.
- b. Describe the principles of radar.
- c. Describe the use of radar as a navigational aid.
- d. Describe the use of radar in combat.

#### **E. SOUND AND SONAR**

- a. Explain the effects that density and temperature have on sound.
- b. Explain how the ear detects sound.
- c. Describe Doppler Shift.
- d. Explain the characteristics of sound in seawater.
- e. Describe sonar and its characteristics.

### **III. Accountability Determinants**

#### **A. Key Assignments**

1. Semester Drill & Platoon Ceremony Inspections
2. Monthly Platoon Commander Uniform Inspections
3. Weekly Senior Naval Science Instructor Uniform Inspections
4. State Physical Fitness Test
5. Presidential Physical Fitness Test
6. Scientific Experiments and Projects
7. Weekly Quizzes
8. Semester Final Review
9. Semester Final

#### **B. Assessment Methods**

1. Quizzes
2. Tests (End of each semester)
3. Youth Physical Fitness Tests (One per semester)
4. Drill Performance Evaluation
5. Uniform Inspections
6. Assignment of Merits/De-Merits

### **IV. Instructional Materials and Methodologies**

#### **A. Required Textbook(s)**

1. NJROTC Cadet Field Manual

## **B. Supplementary Materials**

1. Classroom Performance System (CPS) to be utilized by instructor(s) for classroom lectures, quiz assignments, test administration; students will utilize CPS Pulse™ clickers to respond to all quizzes, and test.

\*(CPS is a system created by eInstruction, Inc. that utilizes a Mobi™ View Interactive Smart-Board, CPS Pulse™ clickers, and an Examination/Assessment Software Suite for the creation of all assignments)

## **C. Instructional Methodologies**

1. Classroom Performance System
2. Computer(s)
3. Television
4. DVD Player
5. PowerPoint©
6. Presentations
7. Group Discussions
8. Demonstrations
9. Handouts
10. Lecture(s)
11. Teaching Interviews
12. Case Study
13. Non-Scientific Practical Application(s)
14. Scientific Practical Application(s)