MRSC A195: MARINE POLICY AND CONSERVATION

Item	Value
Curriculum Committee Approval Date	12/04/2019
Top Code	040100 - Biology, General
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

Course Description

The world ocean is a complicated system with many current challenges. Addressing these challenges requires an interdisciplinary knowledge of not only marine science but also how ocean policy is made. Combining knowledge from ocean leaders in science and policy, students will learn about how scientists and researchers work within the policy making framework to address ocean related matters. Students will learn current ocean policy issues to substantiate the complexity of ocean-related decision making at the state, national, and international level. This course is designed to give students a basic understanding of how marine resources are managed and what laws, processes, and groups are involved in ocean conservation. ADVISORY: MRSC A100 or MRSC A100H. Transfer Credit: CSU; UC.

Course Level Student Learning Outcome(s)

1. Identify groups involved in ocean conservation and detail the roles they play in conserving the marine environment, resources, and organisms.
2. Analyze the threats that the marine realm faces and understand how to implement the laws and policies used to address ocean related challenges.
3. Communicate the role that science, research, and monitoring plays in informing and improving marine policy and conservation.

Course Objectives

- 1. Understand and discuss the various extractive and non-extractive resources humans get from the ocean.
- 2. Understand the role that economics, jurisdiction, law, and sociopolitical issues play in marine policy and conservation.
- 3. Understand the mechanisms behind the development and implementation of monitoring programs to inform future policy.
- 4. Understand how policies are enacted at various levels of government.
- 5. Understand the role that science, monitoring and data analysis plays in marine policy and conservation.
- 6. Identify the advantages and disadvantages of various monitoring methods in terms of their cost and technical ability to accurately inform the decision making process.
- 7. Understand the challenges associated with the development and implementation of monitoring programs
- 8. Assess the effectiveness of different monitoring protocols in terms of their ability to inform future policy.

Lecture Content

I. Intro to Marine Policy and Resource Management Why manage / conserve the oceans? (biodiversity, ecosystem functions, sustainable economics, aesthetics, stewardship, etc) Marine resource value / economics / ecosystem valuation II. Roles and Structures of Regulation Who can implement laws / regulations? Different jurisdictions: state, feds, exclusive economic zone (EEZs), high seas / global commons Structure of each levelCalifornia: Governor, CA Depart of Fish Wildlife, Ocean Protection Council, etc US: President, Congress, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS), Environmental Protection Agency (EPA), etc International: UN Convention on the Law of the Sea (UNCLOS), / sovereignty / Exclusive Economic Zs / free riding / Tragedy of commons) III. Development of Policy and Law How are laws and regulations made? Decision-making (stakeholders, role of NGOs / government, participatory planning, public sentiment, etc) Command and control vs market-based Structure / process at different levels (state, feds, international) National Environmental Policy Act and California Environmental Quality Act (Enivironmental Impact Statement/Environmental Impact Reports) IV. Enforcement and Monitoring Enforcement (highly regulated to paper parks) Research and monitoring (scientists and agencies to NGOs and citizen science programs) V. Protected Areas (types of MPAs, advantages) CA Marine Life Protection Act (MLPA), local examples National Marine Sanctuaries Act / program, EEZs Ocean zoning programs, High seas issues VI. Water quality and plastic pollution CA State Water Board Plastic bags, microplastics, microfibers Porter Cologne Act Fed Marine Debris Act Clean Water Act (CWA); Total Maximum Daily Loads, point vs non-point sources Nutrients / eutrophication, pharmaceuticals / endocrine disruptors MARPOL VII. Coastal Development CA Coastal Act / Coastal Commission Mitigation / easements Wetland conservation, sea level rise Coastal Zone Management Act (CZMA) VIII. Biodiversity / wildlife Unusual Mortallity Events (UMEs) Endangered Species Act (ESA) Invasive species; ballast water Marine Mammal Protection Act (MMPA) International Whaling Commission (IWC) / whales Convention on the International Trade of Endangered Species (CITES) IX. FisheriesRegulatory options (seasons, gear, licenses, sizes, number limits, ITQs, etc) Contrast states (CA vs Alaska vs gulf states) Magnuson Act/ Sustainable Fisheries Act Fisheries management councils / Essential Fish Habitat (EFH) / Habitat Areas of Particular Concern (HAPC) Tuna fishing (International Commission for the Conservation of Atlantic Tunas, scientific advisory boards vs determined quotas, dolphin safe tuna) X. Aquaculture Advantages / disadvantages, import trade-offs, Integrates Multi-Trophic Aquaculture National Aquaculture Act of 1980, NOAA Aquaculture Policy 2011 Consistency issues, lack of national policy (Pew / US Commission on Ocean Policy reports) Salmon hatcheries Catalina sea ranch (commercial), Hubbs (restoration), etc XI. Physical resources State Lands Commission Bureau of Ocean Energy Management Oil and natural gas Renewables: wind, waves, tides, thermal gradients Deep seabed mining XII. Climate Sea level rise, ocean acidification, etc Cap and trade Intergovernmental Panel On Climate Change (IPCC) Kyoto Protocol, Paris accords, etc XIII. Types of ocean monitoring programs Frameworks and methodologies XIV.Program design Scale Risk assessment XV. Communicating results and using to

advance conservation goals XVI. Connections between development, implementation of policy and conservation

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)

Instructional Techniques

Weekly lectures, field trips, power point presentations, short in-class internet or library based research assignments, viewing of instructional videos, reading assignments from textbook, individual guest speakers, and sharing research experiences.

Reading Assignments

5-7 hours - Weekly reading from assigned textbook or instructional material 1-2 hours - library/internet research on individual ideas/concepts to be presented in class

Writing Assignments

30 minutes/wk - Summarization and application of current events are due regularly. Semester long research project related to marine policy and conservation Exams will include a minimum of two critical thinking essays/brief response questions concerning elements of marine policy and conservation.

Out-of-class Assignments

1 hour/week - Research current events to share in class 10-12 hours total - Semester long research project related to marine policy and conservation

Demonstration of Critical Thinking

Regular quizzes over reading assignments and lectures, semester literature research report and presentation, three to four midterm exams that include multiple choice, true and false, matching, and at least two critical thinking essays.

Required Writing, Problem Solving, Skills Demonstration

Each of the midterms will include a minimum of two critical thinking essays concerning elements of marine policy and conservation. Student will prepare and present a written scientific library based research report on a marine policy and conservation.

Eligible Disciplines

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required.

Textbooks Resources

1. Required Ray, G. Carleton, and McCormick-Ray, Jerry.. Marine Conservation: Science, Policy, and Management, 1st ed. Wiley Blackwell, 2014 Rationale: Content of the book meets the course content of the class.

Other Resources

1. Instructor handouts