2009

Physical Marine Science (PHMS)

Montclair State University

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PHLC614
Title
Scientific Reasoning.
Number and type of credits
2 hours lecture.
Course Description
This course aims at familiarizing students with a variety of reasoning skills that are useful in scientific inquiry, while at the same time teaching them how to create a cognitive readiness in children to do science.

PHLC615
Title
Foundations of Philosophy for Children.
Number and type of credits
2 hours lecture.
Course Description
The course focuses on the educational relationship between children and thinking. It aims to assist students to understand the role of ideas in children's learning, the ways in which children can be encouraged to deliberate with regard to ill-defined conceptual issues, and to assist students to understand the relationship of Philosophy for Children to critical and creative thinking.

PHMS250
Title
Introduction to Marine Sciences.
Prerequisites
GNED 199, ENWR 105 or HONP 100 may be taken as a prerequisite or corequisite.
Special Fee
Special fee.
Number and type of credits
3 hours lecture, 3 hours lab.
Course Description
A general study of the marine sciences, including origin and evolution of the oceans, physical and chemical properties of seawater, marine life, oceanic circulation, atmospheric-ocean exchange and other processes that take place in the oceans. This course also deals with marine resources and human interaction with the marine environment. Field trips required. May be taught off-campus at the NJ Marine Sciences Consortium in the summer. Meets Gen Ed 2002 - Natural/Physical Science Laboratory. Cross listed with Earth and

Physical Marine Science

Number and type of credits
3 hours lecture.
Course Description
This course will enable prospective teachers who have already taken the foundational course in philosophy for children to teach children to apply basic reasoning skills to the social studies. The program, therefore, represents an integration of philosophy, logic and the social sciences. It is also a way of presenting the social studies as a discussion course in which the conceptual foundations of the behavioral sciences are reviewed and appraised.

PHLC615
Course Description
PHMS350  Title  Oceanography.
Prerequisites  EAES 240, EAES 250, PHMS 250 or departmental approval.
Number and type of credits  3 hours lecture.
Course Description  Study of the physical and chemical properties of sea water, oceanic circulation, waves and tides, and estuarine and shoreline processes. May be taught off-campus at the NJ Marine Sciences Consortium in the summer. Cross listed with Earth and Environmental Studies, EAES 350. Previous course PHMS 310 effective through Spring 2012.

PHMS422  Title  Biology of Marine Plankton.
Prerequisites  Departmental approval.
Number and type of credits  1 hour lecture, 3 hours lab.
Course Description  A study of the marine phytoplankton and zooplankton, their collection, analysis and interpretation. Their role in the ecosystem will be stressed as will be their distribution, particularly those of the near shore and estuarine environment. Field trips will be made to coastal New Jersey. Offered at the New Jersey Marine Sciences Consortium. Cross listed with Biology, BIMS 422.

PHMS450  Title  Marine Botany.
Prerequisites  Departmental approval.
Number and type of credits  3 hours lecture, 3 hours lab.
Course Description  An introduction to the structure, systematics, physiology and ecology of algae and metaphyta of the marine environment. Emphasis will be placed on the flora of the estuary and tidal marsh. Biology of the associated phytoplankton will be studied. Also offered at the site of New Jersey Marine Sciences Consortium. Cross listed with Biology, BIMS 450.

PHMS451  Title  Coastal Marine Geology.
Prerequisites  EAES 340, EAES 350, PHMS 350, AQUA 351, EAES 441 or departmental approval.
Number and type of credits  4 hours lecture.
Course Description  A study of the geologic processes concerned with the supra-, inter-, and sub-tidal areas of the near shore environment. Field studies will emphasize the dynamics of erosion and deposition as well as general sedimentation associated with modification of barrier beaches and other land forms of the New Jersey shoreline. Offered at the New Jersey Marine Sciences Consortium.
| PHMS452  | Title                      | Dynamic Beach Processes.  
|           | Prerequisites              | EAES 340, EAES 350, PHMS 350, AQUA 351, EAES 441 or departmental approval.  
|           | Number and type of credits | 1 hour lecture, 3 hours lab.  
|           | Course Description         | Study of the processes and forces involved in material transport within the beach zone. Offered at the New Jersey Marine Sciences Consortium. Cross listed with Earth and Environmental Studies, EAES 452. Previous course PHMS 483 effective through Spring 2012.  

| PHMS453  | Title                      | Tidal Marsh Sedimentations.  
|           | Prerequisites              | EAES 340, EAES 350, PHMS 350, AQUA 351, EAES 441 or departmental approval.  
|           | Number and type of credits | 1 hour lecture, 3 hours lab.  
|           | Course Description         | Processes involved in sediment transport and deposition within the marsh system. Geologic history of tidal marshes. Offered at the New Jersey Marine Sciences Consortium. Cross listed with Earth and Environmental Studies, EAES 453. Previous course PHMS 484 effective through Spring 2012.  

| PHMS456  | Title                      | Physical Oceanography.  
|           | Prerequisites              | EAES 350, PHMS 350, AQUA 351 or departmental approval.  
|           | Number and type of credits | 3 hours lecture, 3 hours lab.  
|           | Course Description         | A survey of modern oceanography and its methods including characteristics of sea water, theories of ocean currents and, in general, applications of biological, geological, physical, meteorological and engineering sciences to the study of the oceans. Offered at the site of the New Jersey Marine Sciences Consortium. Cross listed with Earth and Environmental Studies, EAES 456. Previous course PHMS 411 effective through Spring 2012.  

| PHMS458  | Title                      | Marine Science Education.  
|           | Prerequisites              | EAES 350, PHMS 350, AQUA 351 or departmental approval.  
|           | Number and type of credits | 1 hour lecture, 1 hour lab.  
|           | Course Description         | Selected field experiences and laboratory methods utilized to develop resources from the marine environment to be used in teaching the various disciplines. Offered at the site of the New Jersey Marine Sciences Consortium. Cross listed with Earth and Environmental Studies, EAES 458.  

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<tr>
<td>PHMS459</td>
<td>Independent Study in the Marine Sciences</td>
<td>Departmental approval</td>
<td>3 hours lecture, 2 hours lab.</td>
<td>Individual research projects will be selected under the guidance of a professor associated with the consortium. Open only to those advanced undergraduate students who have indicated a potential for original thinking. Offered at the New Jersey Marine Sciences Consortium. May be repeated three times for a maximum of 10.0 credits as long as the topic is different. Cross listed with Earth and Environmental Studies, EAES 459. Previous course PHMS 498 effective through Spring 2012.</td>
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<td>PHMS490</td>
<td>Field Methods in the Marine Sciences</td>
<td>Departmental approval</td>
<td>2 hours lecture, 4 hours lab.</td>
<td>The application and techniques of marine sampling, including those of biology, chemistry, geology, meteorology and physics. The nature and role of various pieces of sampling equipment. Field experience at the New Jersey Marine Sciences Consortium.</td>
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<td>PHMS551</td>
<td>Coastal Geomorphology</td>
<td>Matriculation in an EAES or MS Biology graduate program and equivalent of EAES 200 or departmental approval.</td>
<td>3 hours lecture, 2 hours lab.</td>
<td>Coastlines and their evolution; processes and materials of the coastal zone; shore zone hydrodynamics and sedimentation: beach and barrier systems with special emphasis on the New Jersey shoreline. Offered at the site of the New Jersey Marine Sciences Consortium. Cross listed with Earth and Environmental Studies, EAES 551. Previous course PHMS 581 effective through Spring 2012.</td>
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<td>PHMS559</td>
<td>Special Problems in the Marine Sciences</td>
<td>Departmental approval</td>
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<td>An opportunity for the qualified graduate student to do research in a field of marine science selected under the guidance of a professor. Open only to</td>
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Previous course PHMS 460 effective through Spring 2012.
graduate students who have indicated a potential for original thinking. Also
offered at the site of the New Jersey Marine Sciences Consortium. May be
repeated three times for a maximum of 10.0 credits as long as the topic is
different. Cross listed with Earth and Environmental Studies, EAES 559.
Previous course PHMS 598 effective through Spring 2012.

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<td>PHMS564</td>
<td>Benthic Ecology</td>
<td>Departmental approval.</td>
<td>1 hour lecture, 6 hours lab.</td>
<td>Community structure, tropic dynamics species diversity and distribution of bottom</td>
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<td>dwelling organisms in relationship to their environment. Lectures, lab work, field</td>
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<td>investigation of marine benthos. Offered at N.J. Marine Sciences Consortium.</td>
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<td>PHMS565</td>
<td>Tidal Marsh Ecology</td>
<td>Departmental approval.</td>
<td>3 hours lecture, 3 hours lab.</td>
<td>Salt marsh development and physiography: community structure, energetics, and</td>
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<td>interrelationships. The role of salt marshes in estuarine and marine systems.</td>
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<td>The impact of man on the marsh. Offered at N.J. Marine Sciences Consortium.</td>
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<td>PHMS566</td>
<td>Ecology of the Estuary</td>
<td>Departmental approval.</td>
<td>3 hours lecture, 3 hours lab.</td>
<td>Emphasis is placed upon the important biotic, chemical and physical parameters</td>
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<td>of New Jersey's estuaries. An underlying theme is the evolution and successional</td>
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<td>trends of estuarine communities. Ecology of individual communities is studied by</td>
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<td>field trips to Delaware Bay shore and to some Atlantic coastbays, marshes and off-</td>
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<td>shore barrier islands. Also offered at the N.J. Marine Sciences Consortium.</td>
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<td>PHYS100</td>
<td>Concepts in Science</td>
<td>Special fee.</td>
<td>3 hours lecture, 2 hours lab.</td>
<td>This is a one-semester physical science course with laboratory designed for those</td>
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<td>students not majoring in science areas. This course will introduce the student to</td>
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<td>methods of science while teaching some principles of physical science and some of</td>
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<td>their applications. Topics discussed include: energy and</td>
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