2009

Physical Marine Science (PHMS)

Montclair State University

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.
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
PHLC615	Course Description	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

		Environmental Studies, EAES 250. Previous course PHMS 210 effective through Spring 2012.
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.

		Cross listed with Earth and Environmental Studies, EAES 451. Previous course PHMS 481 effective through Spring 2012.
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
PHMS452	Course Description	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.

		Previous course PHMS 460 effective through Spring 2012.
PHMS459	Title	Independent Study in the Marine Sciences.
	Prerequisites	Departmental approval.
	Number and type of credits	Independent Study in the Marine Sciences.
	Course Description	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.
PHMS490	Title	Field Methods in the Marine Sciences.
	Prerequisites	Departmental approval.
	Number and type of credits	2 hours lecture, 4 hours lab.
	Course Description	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.
PHMS551	Title	Coastal Geomorphology.
	Prerequisites	Matriculation in an EAES or MS Biology graduate program and equivalent of EAES 200 or departmental approval.
	Special Fee	Special fee.
	Number and type of credits	3 hours lecture, 2 hours lab.
	Course Description	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.
PHMS559	Title	Special Problems in the Marine Sciences.
PHMS559	Prerequisites	Departmental approval.
	Course Description	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

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