

University of Maine at Machias

2008 Revisions to 2007-2009 Catalog



**9 O'Brien Avenue
Machias, ME 04654**

**Telephone 207-255-1200
Fax 207-255-4864
<http://www.umm.maine.edu>**

A member of the University of Maine System

FINANCIAL INFORMATION

TUITION AND FEES

Semester financial obligations are expected to be paid in full on or before the opening day of each semester. Individual financial situations can be discussed with the Business Office for consideration of deferred payment arrangements. Tuition and fees must be paid in advance at the Business Office, the First Stop, the UMM Calais Center or by mail on or before the first class session.

Tuition and course fees are payable in U.S. funds by cash, check or VISA/MasterCard/Discover.

The financial requirements of the University, changing costs, state and legislative action, and other matters may require an adjustment to these charges and expenses. The University reserves the right to make such adjustments to the estimated charges and expenses as may from time to time be necessary in the opinion of the Board of Trustees, up to the date of final registration for a given academic term. The applicant acknowledges this reservation by the submission of an application for admission or by course registration.

TUITION (2008-09)

Undergraduate, On-Campus

In-state	\$190 per credit hour
Out-of-state	\$528 per credit hour
New England Regional	\$285 per credit hour
Canadian	\$300 per credit hour

The tuition per credit hour for courses broadcast over the statewide Interactive Television (ITV) network and/or other distance education courses will vary according to the tuition rate of the campus that originates the course. These tuition rates will be available each semester registration period.

FEES (2008-09)

Acceptance deposit	\$50.00
Application fee	\$40.00
Applied music/private lesson	\$85.00
Art fee	\$60.00
Deferred payment plan 3 - month	\$25.00
Deferred payment plan 10 - month	\$50.00
Health insurance	\$375.00 per year
<small>(Spouse and dependent coverage available at additional premium cost.)</small>	
Distance Learning technology fee	\$6.00 per cr hr
ITV materials handling fee	\$7.00 per cr hr
Lab fee	\$10.00

Late payment fee	\$50.00
Non-negotiable check	\$25.00
Orientation fee	\$50.00
Prior Learning assessment	\$25.00 per cr hour
Student activity fee	
Full-time students	\$240.00 per year
Part-time students	\$11.00 per cr hour
Transcript fee	\$3.00
Unified Fee (supports technology, the Center for Lifelong Learning, and other campus improvements)	\$55 per semester plus \$12 per cr hour.

ROOM AND BOARD (2008-09)

Board Level I	\$3,266 per year
Board Level II	\$3,110 per year
Board Level III	\$3,550 per year
Room, traditional double	\$3,308 per year
Room, traditional single	\$4,074 per year
Room, large single	\$4,726 per year
Room, double suite	\$4,074 per year
Room, single suite	\$5,040 per year
Room deposit (new students)	\$100

IN/OUT-OF-STATE TUITION STATUS

In-state or out-of-state tuition classification is made by the Admissions Office and conveyed at the time the applicant is notified of their acceptance to UMM. The Vice President for Administration and Finance should be notified immediately of any disagreement with the decision, as any appeal or changes cannot be made after September 1 for fall semester and January 1 for spring semester.

TUITION ASSISTANCE

The University of Maine at Machias no longer defers payment of tuition charges for students employed by school administrative districts, school unions, or other agencies/companies who reimburse directly to students following their successful completion of an academic session. Students are responsible for paying to UMM the tuition costs at the time of registration and seeking employer reimbursement through the normal school union/district, or agency/company process.

If tuition charges are to be covered by an outside agency or scholarship, other than UMM, and paid directly to UMM, documentation (either an approved purchase order or a memo from the outside agency) must be sent to the UMM Business Office. In the case of military personnel, an approved request for tuition assistance must be furnished to the UMM Business Office.

Biology Major

Biology is one of the traditional liberal arts; it informs us about ourselves, the dynamics of the natural world around us, and how we interact with our environment. In so doing, biology complements the other liberal arts programs as a context for human endeavors.

Biology provides the basis of knowledge in the areas of medicine, agriculture, psychology, and ecology. Studies of nature and natural phenomena have long been the inspiration for works of art, literature, and music. At the same time, rapid advancements in biotechnology affect nearly every facet of our lives from the foods we eat and the drugs we take, to the fibers that are used to make our clothes. With our increasing ability to manipulate the genetic structure of humans and other organisms, as well as the structure and composition of entire ecosystems, comes an increased responsibility for all citizens to act in an informed manner.

Within that context, the major objectives of the B.A. in Biology at UMM are to:

- (1) provide a broad and substantive training in scientific inquiry appropriate for students seeking careers in the biological sciences or in secondary education immediately following graduation;
- (2) provide rigorous training for students planning to further their education in professional studies or graduate school; and
- (3) allow sufficient flexibility to encourage students to pursue a concentration, a minor, or a second major.

Students will study biological systems at the level of the cell, the organism, and the ecosystem. Courses in mathematics, physics, and chemistry will enhance students' understanding of the physical laws that govern the activities of living organisms. All coursework is enhanced by extensive study in the laboratory and in the field with emphasis on hypothesis formulation and testing, and experimental design.

All students in the biology major are required to complete 57 credits of program requirements. A highlight of these requirements is the opportunity to participate in a Senior Thesis that allows students to do an in-depth study of an area of particular interest to them. Alternatively, students may enroll in a Senior Seminar that explores advanced topics in biology based on a student's previous training. Students may elect additional coursework to complete either a Pre-Professional, Wildlife Biology, or Fisheries Biology concentration. Biology courses required in either concentration will fulfill biology electives in the program requirements.

UMM's remarkable location on the coast of Maine endows the program with an unusual richness in experiences for field studies or independent studies in the surrounding forests, lakes, rivers, and coastal environments, such as the Indian River Field Station. Additional opportunities in marine research and/or outreach exist at UMM's field station at the nearby Black Duck Cove facility, operated by the Downeast Institute for Applied Marine Research and Education.

Career Options

With its opportunity for student-based research, the biology major is particularly suitable for those interested in more advanced study in biology or in professional training. The successful graduate is well prepared to enter the public or private sector as a research assistant or technician in a variety of field and laboratory settings where a solid scientific background is essential. Students completing the concentration in Field Biology will be well suited for a variety of fisheries, wildlife, and naturalist positions with government or private agencies. The pre-professional concentration, in addition to preparing students for entrance into health-related fields, provides the successful graduate with the fundamental background needed for any of the general biology career options or continued study in graduate school. Graduates of science programs who have also completed the requirements for a secondary education minor are in high demand. With the addition of the appropriate minor, graduates may also choose to pursue a career in scientific writing or illustration.

General Requirements

All University Core requirements must be met in addition to the Biology program requirements. Note that completion of some courses within the major, such as in mathematics, will also fulfill Core requirements.

A minimum cumulative GPA of 2.00 in the degree program requirements is necessary for graduation. This GPA must be achieved by the completion of a total of 60 credits. If the student fails to maintain this average in subsequent semesters, a warning may be issued. A student may lose matriculated status if the average remains below 2.0 after the completion of another 12 credits. Students may petition to be readmitted to the program.

Program requirements		33 cr
BIO 111	General Zoology	4
BIO 112	General Botany	4
BIO 222	Cell Biology	4
BIO 245	General Ecology	4
BIO 265	Genetics	4
BIO 340	Evolution	3

<i>Select:</i>	
<i>BIO 401-403 Senior Thesis</i>	3
<i>and</i>	
<i>BIO electives at 200 level or higher</i>	7
<i>or:</i>	
<i>BIO 404-406 Senior Thesis in Research</i>	6
<i>and</i>	
<i>BIO electives at 200 level or higher</i>	4
<i>or:</i>	
<i>BIO 410 Senior Seminar in Biology</i>	3
<i>and</i>	
<i>BIO electives at 200 level or higher</i>	7

Cognate course requirements 24 cr

CHY 101 General Chemistry I	4
CHY 102 General Chemistry II	4
CHY 221 Organic Chemistry I	4
MAT 126 Calculus I	4
PHY 111 Physics I	4

<i>Select one from:</i>	4
<i>MAT 127 Calculus II</i>	
<i>PHY 112 Physics II</i>	

A student may select one of the concentrations below. A concentration is not required to complete the Biology degree.

Pre-Professional Concentration 28 cr

The pre-professional concentration is designed for students planning to pursue careers in medicine, veterinary medicine, dentistry, optometry, pharmacy, or other professions requiring a rigorous background in the life and physical sciences. Courses within this concentration will prepare students to successfully complete entrance exams required by professional schools. Students are encouraged to meet early and often with their advisor to prepare other aspects of their education such as internships, workshops, and volunteer activities in their desired field.

BIO 221 General Microbiology	4
BIO 323 Comparative Vertebrate Anatomy and Physiology	5
BIO 350 Developmental Biology	3
CHY 222 Organic Chemistry II	4
CHY 322 Biochemistry	4
MAT 127 Calculus II	4
PHY 112 Physics II	4

Since some of the above courses will also meet program requirements, the pre-professional concentration requires only an additional 17 to 20 credits.

Wildlife Biology Concentration 32-34 cr

BIO xxx Fish and Wildlife Management	2
BIO 355 Conservation Biology	4

BIO 229 Plant Taxonomy	4
MAT 215 Applied Statistics	4

Choose 1 of:	2 - 4
ENV 105 Intro to Trees and Wildflowers of Maine	
BIO 333 Plant Ecology	

Choose 2 of:	8
BIO 212 Ornithology	
BIO 216 Mammalogy	
BIO 218 Herpetology	
BIO 224 General Entomology	
MAT 215 Applied Statistics	4

Choose 1 of:	4
MAT 127 Calculus II	
BIO/MAT 315 Experimental Design and Analysis for Biologists	
GIS 230 Geographic Information Systems Applications I	

Since some of the above courses will also meet program requirements, the wildlife biology concentration requires only an additional 21 to 30 credits.

Fisheries Biology Concentration 33-34 cr

BIO xxx Fish and Wildlife Management	2
BIO 355 Conservation Biology	4

Choose 1 of:	3 - 4
ENV 103 Oceanography	
BIO 324 Limnology	
BIO 313 Ichthyology	4

Choose 1 of:	8
BIO 221 Microbiology	
BIO 227 Invertebrate Zoology	
BIO 224 General Entomology	
MAT 215 Applied Statistics	4
GIS 230 Geographic Information Systems Applications I	4

Choose 1 of:	4
BIO/MAT 315 Experimental Design and Analysis for Biologists	
MAT 127 Calculus II	
GIS 3xx Geographic Information Systems Applications II	
(previously offered as GIS 301 Special Topics)	

Since some of the above courses will also meet program requirements, the wildlife biology concentration requires only an additional 22 to 30 credits.

General Electives

Students are encouraged to consult with their advisors in selecting elective courses in and out of biology with future career plans and personal interests in mind.

Environmental Studies Major

The Bachelor of Science in Environmental Studies offers students a broad field of study encompassing various disciplines and areas of professional specialization. The focus is the study of organisms in their natural environment, and the interactions occurring between people and their natural environment. Environmental problems are multifaceted and contain biological, chemical, social, historical, psychological, and economic elements that must be addressed. Thus, to understand the complexity of environmental problems and work effectively in an environmental career, an individual must have both an area of major academic concentration and a broadly based education. The Environmental Studies program requirements are structured to meet this dual need.

Career Options

A graduate with a B.S. in Environmental Studies will be prepared for a wide variety of employment opportunities. The possibilities include positions in business and industry, state and federal environmental protection agencies, environmental consulting firms, state and national conservation groups, and environmental education organizations. In addition, the program offers sufficient preparation for graduate studies in areas such as ecology, conservation biology, wildlife biology, environmental law, and policy analysis.

General Requirements

All University Core requirements must be met, in addition to the Environmental Studies requirements. Note that completion of some courses within the major, such as in mathematics, will also fulfill Core requirements.

A minimum cumulative Grade Point Average (GPA) of 2.00 in the program requirements is necessary for graduation. This GPA must be achieved by the completion of a total of 60 credits. If the student fails to maintain this average in subsequent semesters, a warning may be issued. The student may lose matriculated status if the average remains below 2.0 after the completion of another 12 credits. A student may petition to be readmitted to the program.

ANT 212	Environmental Anthropology	3
ANT 313	Political Ecology	-or-
POS 305	Environmental Policy	3
BIO 111	General Zoology	4
BIO 112	General Botany	4
BIO 245	General Ecology	4
CHY 101	General Chemistry I	4
CHY 102	General Chemistry II	4
ECO 223	Environmental Economics	3
ENV 112	Environmental Issues	3

ENV 2XX	Scientific Writing and Presentation (Professional Writing and Presentation?)	2
ENV 1XX, 2XX, 3XX, 4XX	Environmental Studies: Issues and Actions	8

Four Year rotation of themes such as:

Energy
Climate Change
Sustainable Agriculture/Communities
Local Environmental Issues

MAT 215	Applied Statistics	-or-	
MAT 113	Intro to Statistics		3 - 4

Program Total: 45 - 46

Concentration:

All Students must complete a concentration based on fulfilling the requirements of any UMM minor (except Environmental Studies). The concentration must include a minimum of 24 credits, 9 of which must be at the 300 level, in the discipline of the minor.

Marine Biology Major

UMM's location is ideal for courses related to marine biology, ecology, and mariculture. Students have direct access to intertidal and subtidal marine habitats and organisms, finfish and shellfish aquaculture sites and hatcheries, and commercial fishing ports. This access to marine environments gives UMM students unique field and laboratory experiences.

Program Goals

- o To provide a rich and rigorous undergraduate experience in marine biology that focuses on the biological, social, and historic uniqueness of our geographic setting.
- o To provide students an opportunity to enhance their analytical and communication skills through independent study or senior thesis.
- o To provide students with access to mariculture or other marine-based industries to enhance their competitive advantage in the job market.
- o To prepare students to think critically at all junctures of their academic and work-related careers.

Students are required to meet University Core requirements and must earn a minimum of 120 credits and achieve a cumulative GPA of at least 2.00.

Common program requirements

BIO 111 General Zoology	4
BIO 112 General Botany	4
ENV 103 Oceanography	3
BIO 206 Introduction to Marine Biology	4
BIO 245 General Ecology	4
BIO 265 Genetics	4
MAT 215 Applied Statistics	4
CHY 101 General Chemistry I	4
CHY 102 General Chemistry II	4
BIO 227 Invertebrate Zoology	4
BIO 352 Algal Biology	4
BIO 360 Marine Ecology	4
BIO 315 Experimental Design and Analysis for Biologists	4
BIO 482 Senior Seminar in Marine Biology	
-or- BIO 460 Seminar in Marine Ecology	
-or- BIO 401/402/403 Senior Thesis in Biology	
-or- BIO 404/405/406 Senior Thesis in Biological Research	4-6

Ecological and organismal (select 12 credits)

BIO 313 Ichthyology	4
BIO 216 Mammalogy	4
BIO 332 Introduction to Mariculture	
-or- BIO 310 Special Topics in Mariculture	

-or- COE 201 Cooperative Education I (in Mariculture)	4
BIO 223 Marine Mammals & Pelagic Birds	4
BIO 221 General Microbiology	4
BIO 212 Ornithology	4
BIO 375 Population and Community Ecology	3

Select 16 credits total from the following two groups:

Cognate A: Management and technology (select a maximum of 8 credits)

CHY 224 Analytical Chemistry	4
BIO 355 Conservation Biology	4
CHY 234 Environmental Chemistry I	4
GEY 111 Physical Geology	4
GIS 230 Geographic Information Systems Applications I (GIS)	4
GIS XXX GIS II (under development)	3-4
ENV 355 Marine Resource Economics and Management	3
MTR 101 Meteorology	4

Cognate B: Research and graduate preparatory (select a minimum of 8 credits)

MAT 126 Calculus I	4
MAT 127 Calculus II	4
PHY 111 Physics I	4
PHY 112 Physics II	4
CHY 221 Organic Chemistry I	4
CHY 222 Organic Chemistry II	4
CHY 322 Biochemistry	4

THEATRE MINOR

18 crs

1) Required (3 Credits):

THE 101 Introduction to Theatre 3

2) Applied Courses (9 – 15 Credits):

THE 102 Fundamentals of Acting 3

THE 116 Play Production* 1-3

THE 219 Stagecraft and Design* 3

THE 319 Stagecraft and Design* 3

THE 219 Performance Workshop* 3

THE 319 Performance Workshop* 3

*may be repeated for credit

3) Optional Courses (0 - 6 Credits):

THE courses or equivalent theater/drama focused courses, one of which *must* be 300 level or above.

Possible courses include:

ENG 315 Studies in Drama 3

ENG 453 Shakespeare 3

and any other courses that are offered in areas such as Screenwriting, Playwriting, and Musical Theatre.

Course Descriptions

For the 2008-2009 listing and descriptions of University course offerings, please see the Courses and Registration section off the Academics page of the UMM website (www.umm.maine.edu). Descriptions are also available on the University MaineStreet site: mainestreet.maine.edu (choose “Class Search” on the left)

New Faculty and Staff

Noah Dean, Assistant Professor of Mathematics
B.S., Duke University
Ph.D., Purdue University

Matthew Holsapple, Student Success
Coordinator
B.S., University of Maine

Angelynn King, Director of Library
B.S., University of Virginia
M.S., Catholic University of America

Daniel Qualls, Assistant Professor of Education
B.A., M.A., University of Memphis
M.A., East Tennessee State University
Ph.D., University of Tennessee

Carlos Roldan, Assistant Professor of
Mathematics and Physics
B.S., Universidad Del Valle, Colombia
M.S., University of Puerto Rico
M.S., Ph.D., University of Massachusetts

Erik Smith, Director of Marketing and Public
Relations
B.S., University of Maine

Michael Urban, Assistant Professor of
Education
B.A.S., University of Minnesota
M.A., Ph.D., University of Northern Colorado