The School of Marine Science (SMS), along with Arts & Sciences, School of Education, Mason School of Business and W&M Law School, is one of five graduate and professional programs of the College of William & Mary. As the second oldest college in the nation, William & Mary is known as both a “Public Ivy” and a leading research university. The School of Marine Science, which is also an integral part of the Virginia Institute of Marine Science (VIMS), is located in Gloucester Point, only 16 miles from the main campus in Williamsburg and across the York River from historic Yorktown. The Chesapeake Bay ecosystem is literally “just outside the door” for students who come to study at the VIMS campus. The VIMS commitment to its three-part mission - to conduct interdisciplinary research in coastal ocean and estuarine science, educate students and citizens, and provide advisory service to policy makers, industry, and the public - creates a unique and dynamic training ground for students who want to interface science and its application in service to the global community. The first VIMS marine science master’s was awarded in 1943 and the doctoral program was inaugurated in 1964. With the VIMS 75th anniversary just around the corner, we celebrate over 900 VIMS alumni, many of whom have gone on to distinguished careers in academia and research-focused institutions, government agencies at the local, state and federal levels, and corporate and private sectors.

The School of Marine Science offers the M.S. and Ph.D. in Marine Science, with a concentration in one of the core marine science disciplines. Students entering without a M.S. are offered a M.S. bypass option. A subconcentration in Marine Policy and a Master of Science in Marine Science and Master of Public Policy Joint Program are other options. The programs are fully accredited by the Southern Association of Colleges and Schools. Students select a faculty advisor and department prior to matriculation and are required to complete departmental requirements in addition to the SMS core curriculum and electives, and a thesis or dissertation. Interdisciplinary studies are encouraged and students may have co-advisors in different departments. Interested students also have a wealth of opportunities to participate in areas
of applied research and advisory service to government and other organizations.

An undergraduate minor in marine science is jointly offered and administered by the School of Marine Science and Arts & Sciences. Courses are offered both on the main William & Mary campus and on the VIMS campus. The nearby Chesapeake Bay gives students the ability to explore a unique ecosystem firsthand, while distant field courses allow students to experience an even broader spectrum of environments. More information on undergraduate courses and the marine science minor is available at: http://www.wm.edu/as/marinescience/
College of William & Mary

2013 - 2014 Graduate Catalog

SMS: Academic Calendar

» SMS Home » Policies » Departments » Course Descriptions » Faculty

- Fall Semester 2013
- Spring Semester 2014
- Summer Sessions 2014

NOTE: Additional dates and deadlines of importance may also be found on the Academic Calendars & Exam Schedules pages of the University Registrar’s web site www.wm.edu/registrar. Calendar dates are subject to change.

Fall Semester 2013

May 4 - Aug 27  Fall Schedule Adjustment for Continuing Students
Aug 1           Tuition and Fees Due for Fall 2013 (Friday)
Aug 1 – 27      Registration for New Degree-Seeking Graduate Students
Aug 26-27       New Student Orientation (Monday-Tuesday)
Aug 26-28       Registration for Non-Degree Seeking Students (Monday-Wednesday)
Aug 28          Classes Begin: 8 a.m. (Wednesday)
                Add/Drop Begins
Sept 2          Labor Day: Classes in Session (Monday)
Sept 6          Last Day to Add/Drop (Friday)
Sept 7          Withdrawal Period Begins (Saturday)
Sept 27         Online Filing Deadline for Graduation in May or August 2014 (Friday)
Oct 12-15       Fall Break (Saturday-Tuesday)
Oct 25          Last Day to Withdraw (Friday)
Nov 4 – Dec 6   Advance Spring Registration for Continuing Students
Nov 27 - Dec 1  Thanksgiving Break (Wednesday-Sunday)
Dec 6           Classes End: 5 p.m. (Friday)
                Last Day to Submit Grades for Spring 2013 Incomplete Coursework (I)
Dec 7 – Jan 14  Spring Schedule Adjustment for Continuing Students
Dec 7-8         Reading Period I (Saturday-Sunday)
Dec 9-13        Examinations (Monday-Friday)
<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 13</td>
<td>Last Day to Submit Theses and Dissertations for January 2014 Graduation (Friday)</td>
</tr>
<tr>
<td>Dec 14-15</td>
<td>Reading Period II (Saturday-Sunday)</td>
</tr>
<tr>
<td>Dec 16-18</td>
<td>Examinations (Monday-Wednesday)</td>
</tr>
<tr>
<td>Dec 23 - Jan 1</td>
<td>Winter Break: Administrative Offices Closed</td>
</tr>
<tr>
<td>Jan 2</td>
<td>Fall 2013 Semester Grades Due by 9 a.m. (Thursday)</td>
</tr>
<tr>
<td>Jan 10</td>
<td>Winter Degree Conferral Date (Friday; No Ceremony)</td>
</tr>
</tbody>
</table>

**Spring Semester 2014**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 7 – Jan 14</td>
<td>Spring Schedule Adjustment for Continuing Students</td>
</tr>
<tr>
<td>Jan 2-14</td>
<td>New Student Registration</td>
</tr>
<tr>
<td>Jan 10</td>
<td>Winter Degree Conferral Date (Friday; No Ceremony)</td>
</tr>
<tr>
<td>Jan 13-15</td>
<td>Registration for Non-Degree Seeking Students</td>
</tr>
<tr>
<td>Jan 15</td>
<td>Classes Begin: 8 a.m. (Wednesday)</td>
</tr>
<tr>
<td></td>
<td>Add/Drop Begins</td>
</tr>
<tr>
<td>Jan 20</td>
<td>MLK Holiday; No Classes (Monday)</td>
</tr>
<tr>
<td>Jan 27</td>
<td>Last Day to Add/Drop (Monday)</td>
</tr>
<tr>
<td>Jan 28</td>
<td>Withdrawal Period Begins (Tuesday)</td>
</tr>
<tr>
<td>Feb 15</td>
<td>Online Filing Begins for Graduation in January, May or August 2015 (Saturday)</td>
</tr>
<tr>
<td>Mar 1-9</td>
<td>Spring Break (Saturday-Sunday)</td>
</tr>
<tr>
<td>Mar 14</td>
<td>Last Day to Withdraw (Friday)</td>
</tr>
<tr>
<td>Mar 17 – Apr 20</td>
<td>Advance Summer Registration for Continuing Students</td>
</tr>
<tr>
<td>Mar 17 – May 4</td>
<td>Advance Fall Registration for Continuing Students</td>
</tr>
<tr>
<td>Apr 21</td>
<td>Summer Schedule Adjustment for Continuing Students Begins (Monday)</td>
</tr>
<tr>
<td>Apr 25</td>
<td>Classes End: 5 p.m. (Friday)</td>
</tr>
<tr>
<td></td>
<td>Last Day to Submit Grades for Fall 2013 Incomplete Coursework (I)</td>
</tr>
<tr>
<td></td>
<td>Last Day to Submit Theses and Dissertations for May 2014 Graduation</td>
</tr>
<tr>
<td>Apr 26-27</td>
<td>Reading Period I (Saturday-Sunday)</td>
</tr>
<tr>
<td>Apr 28 – May 2</td>
<td>Examinations (Monday-Friday)</td>
</tr>
<tr>
<td>May 3-4</td>
<td>Reading Period II (Saturday-Sunday)</td>
</tr>
<tr>
<td>May 5-7</td>
<td>Examinations (Monday-Wednesday)</td>
</tr>
<tr>
<td>May 5 – Aug 26</td>
<td>Fall Schedule Adjustment for Continuing Students</td>
</tr>
<tr>
<td>May 9</td>
<td>Spring 2014 Grades Due for May Graduates (Incl. UG Students) by 9 a.m. (Friday)</td>
</tr>
<tr>
<td>May 11</td>
<td>May Commencement (Sunday)</td>
</tr>
<tr>
<td>May 14</td>
<td>Remaining Spring 2014 Grades Due by 9 a.m. (Wednesday)</td>
</tr>
</tbody>
</table>

**Summer Sessions 2014**

*Calendar dates are subject to change.*
Overall Important Dates

Jul 1  Online Filing Deadline for January 2015 Graduation
Jul 4  Independence Day: Administrative Offices Closed; Classes in Session (Friday)
Aug 8  Last Day to Submit Theses and Dissertations for August 2014 Graduation
Aug 22 August Graduation Date (Friday; No Ceremony)

Session I: May 27 - June 27

May 27-30 * Add/Drop Period for Summer Session I
May 31 * Withdrawal Period Begins for Summer Session I (Saturday)
Jul 3  Summer Session I Grades Due by 9 a.m. (Thursday)

Session II: June 30 - August 1

Jun 30 - Jul 3 * Add/Drop Period for Summer Session II
Jul 4  Independence Day: Administrative Offices Closed; Classes in Session (Friday)
       Withdrawal Period Begins for Summer Session II
Aug 8  Summer Session II Grades Due by 9 a.m. (Friday)

Session III: May 27 - August 1

May 27 - Jun 6 * Add/Drop Period for Summer Session III
Jun 7 * Withdrawal Period Begins for Summer Session III (Saturday)
Jul 4  Independence Day: Administrative Offices Closed; Classes in Session (Friday)
Aug 8  Summer Session III Grades Due by 9 a.m. (Friday)
Within the limits of its facilities and its obligations as a state university, the College of William & Mary offers the possibility of admission to all qualified students without regard to sex, race, color, age, religion, national origin, sexual orientation, or disability.

**General Requirements for Admission**

Students interested in pursuing marine science as a profession should consult with their academic advisors, or the School of Marine Science, Office of Academic Studies (AD-AS@vims.edu), early in their college careers to identify an academic program that will prepare them for graduate study in marine science. All applicants should have a strong background in basic science, including physics and chemistry (through organic), mathematics through calculus, and contemporary biology courses. The prospective chemical, geological or physical oceanography student should have an undergraduate degree with appropriate course work in chemistry, geology or related geophysical science, physics, meteorology, mathematics or engineering, and a solid quantitative background. Course work in statistics is recommended for all students.

For additional School of Marine Science admission information and the on-line application, please visit our website at: http://www.vims.edu/education/graduate/

**Degree-Seeking Students**

Students are admitted as Regular or Provisional graduate students in either the M.S. or Ph.D. program. For matriculation as a Regular graduate student, an applicant must have completed the requirements for a bachelor’s degree at an accredited college, with a record of high performance, and must have the recommendations of the SMS Admission Committee and a faculty advisor, and be approved by the Associate Dean of Academic Studies of the School of Marine Science.

A student without a master’s degree enters the program as a master’s student; however, those wishing to continue directly to the Ph.D. degree may apply to bypass the M.S. degree, provided the student meets the criteria for the bypass (see M.S. Bypass Option). Bypass requires the recommendation of the student’s advisory committee, department chair, the Academic Status and Degrees Committee, and approval by the Associate Dean of Academic Studies.

An applicant judged deficient in preparatory studies or other areas may be admitted as a Provisional student. A Provisional student may petition for Regular student status after successful completion of those requirements stipulated in his/her notification of admission. Petition for change in status shall be reviewed by the Academic Status and Degrees Committee, using as criteria overall academic performance and performance standards previously specified on the student’s notification of admission. If recommended by ASDC, the petition must be approved by the Associate Dean of Academic Studies. Graduate credit earned by a Provisional student will be applied toward the graduate degree upon successful conversion to
Regular student status.

**Non Degree-Seeking Students**

The School of Marine Science accepts non-degree seeking applications from individuals who have earned a bachelor’s degree from an accredited college or university. Permission to enroll in a graduate marine science course as a non-degree seeking student must be applied for every semester and does not imply admission to any graduate program at the College of William and Mary. With permission of the Associate Dean of Academic Studies, graduate credit earned in a marine science course as a non-degree seeking student may be applied toward a marine science degree if the student is admitted to a SMS degree program.
SMS: Degree Programs

- Master of Science
- Doctor of Philosophy
- M.S. and M.P.P. Joint Program
- M.S. Bypass Option
- Marine Policy Subconcentration
- Undergraduate Marine Science Program
Requirements for the Master of Science degree are listed below. In addition to completing degree requirements, a student must adhere to a prescribed timeline and document completion of major milestones in the degree program.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>No. of Months for Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Professor</td>
<td>8</td>
</tr>
<tr>
<td>Committee/Research Topic</td>
<td>9</td>
</tr>
<tr>
<td>Pre-Qualifying Interview</td>
<td>12</td>
</tr>
<tr>
<td>Qualifying Exam/Prospectus Defense</td>
<td>18</td>
</tr>
<tr>
<td>Admission to Candidacy</td>
<td>24</td>
</tr>
<tr>
<td>Seminar Presentation/Thesis Defense</td>
<td>1-3 months prior to completion of degree requirements</td>
</tr>
<tr>
<td>Completion of Degree Requirements</td>
<td>36</td>
</tr>
</tbody>
</table>

1. **Major Professor** - The student selects a School of Marine Science faculty member as a major professor. [read more...](#)
2. **Advisory Committee** - The advisory committee, chosen by the student in consultation with the advisor, consists of at least four members and must be approved by the Associate Dean of Academic Studies before the comprehensive and qualifying exams are scheduled. [read more...](#)
3. **Pre-Qualifying Interview** - The student is expected to schedule a meeting early in the program to discuss academic preparation and research ideas with the committee. [read more...](#)
4. **Qualifying Exam and Prospectus Defense** - The qualifying examination must be passed and prospectus must be accepted by the student’s committee. [read more...](#)
5. **Residency and Enrollment Requirements** - Two consecutive semesters, excluding summer sessions, must be spent as a full-time resident student in good academic standing. [read more...](#)
6. **Required Courses** - The SMS core and departmental course requirements must be completed. [read more...](#)
7. **Admission to Candidacy** - A student may be admitted to candidacy when he/she has completed the requirements listed above and has achieved a grade point average of B (3.0) or better. [read more...](#)
8. **Credit Requirements** - The degree requires at least 36 credit hours of advanced work. [read more...](#)
9. **Seminar and Defense** - The student must present a seminar and successfully defend a thesis. [read more...](#)
10. **Completion of Degree Requirements** - The requirements for the degree, including submission of the approved dissertation must be completed within three years of matriculation. [read more…](#)

**M.S. Bypass Option**

A student originally accepted to the M.S. program who clearly demonstrates early potential to successfully conduct Ph.D. level research may petition to bypass the M.S. degree program and proceed directly toward the doctorate. Students interested in the bypass option should file a Notification of Intent to Bypass M.S. Degree form as early as possible and in all cases prior to taking and passing a comprehensive examination, no later than the end of second calendar year following matriculation. Following the successful completion of the comprehensive exam, and by the start of the third calendar year, the student may submit an Application to Bypass the M.S. Degree to the Academic Status and Degrees Committee. The application package will include:

1. An approved Notification of Intent to Bypass M.S. Degree form;
2. A CV and 1-2 page statement by the student describing the student’s achievements and demonstrated potential to conduct independent research;
3. A 1-2 page statement by the student’s advisor describing the student’s achievements and demonstrated potential to conduct independent research;
4. A recommendation by the advisory committee that the student be allowed to bypass the master’s degree.

The VIMS Registrar will provide evidence that the student is in good academic standing, has completed the SMS core course requirements for the M.S. degree and successfully completed the comprehensive exam. Evidence of scholarly potential in the form of independent research, professional presentations, submitted or accepted manuscripts and research proposals will strengthen a student’s petition for the bypass. The Academic Status and Degrees Committee will recommend to the Associate Dean of Academic Studies whether or not permission to bypass should be granted. A bypass also represents a change in funding obligations for most students and, for that reason, must be approved by the student’s department chair. Appeals of an adverse decision of the Academic Status and Degrees Committee or department chair may be made to the Associate Dean of Academic Studies. The School of Marine Science will not be obligated to fund the program of a student who fails to submit the application to bypass in a timely fashion. In order to apply the doctoral program milestones equitably, the Academic Status and Degrees Committee will determine an “effective completion date” for the doctoral program, which normally will be designated as 72 months from the date of matriculation.
Requirements for the Doctor of Philosophy degree are listed below. In addition to completing requirements, a student must adhere to a prescribed timeline and document completion of major degree program milestones.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>No. of Months for Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Professor</td>
<td>8</td>
</tr>
<tr>
<td>Committee / Research Topic</td>
<td>9</td>
</tr>
<tr>
<td>Pre-Qualifying Interview</td>
<td>18</td>
</tr>
<tr>
<td>Comprehensive Exam</td>
<td>21</td>
</tr>
<tr>
<td>Qualifying Exam / Prospectus Defense</td>
<td>30</td>
</tr>
<tr>
<td>Admission to Candidacy</td>
<td>34</td>
</tr>
<tr>
<td>Seminar Presentation / Dissertation Defense</td>
<td>1-3 months prior to completion of degree requirements</td>
</tr>
<tr>
<td>Completion of Degree Requirements</td>
<td>see below</td>
</tr>
</tbody>
</table>

1. **Major Professor** - The student selects a School of Marine Science faculty member as a major professor. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)

2. **Advisory Committee** - The advisory committee, chosen by the student in consultation with the advisor, consists of at least five members and must be approved by the Associate Dean of Academic Studies before the comprehensive and qualifying exams are scheduled. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)

3. **Pre-Qualifying Interview** - The student is expected to schedule a meeting early in the program to discuss academic preparation and research ideas with the committee. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)

4. **Comprehensive Exam** - A written exam is administered by the student’s advisory committee and must be passed before the qualifying exam. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)

5. **Qualifying Exam and Prospectus Defense** - The qualifying examination must be passed and prospectus must be accepted by the student’s committee. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)

6. **Residency and Enrollment Requirements** - Two consecutive semesters, excluding summer sessions, must be spent as a full-time resident student in good academic standing. A minimum of three years of graduate study beyond the baccalaureate is required by the degree completion date. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)

7. **Required Courses** - The SMS core and departmental course requirements must be completed. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)

8. **Admission to Candidacy** - A student may be admitted to candidacy when he/she has completed the requirements listed above and has achieved a grade point average of B (3.0) or better. [read more...](http://catalog.wm.edu/preview_program.php?catoid=6&poid=914&print)
9. **Credit Requirements** - The degree requires at least 42 credit hours of advanced work. [read more…]

10. **Seminar and Defense** - The student must present a seminar and successfully defend a dissertation. [read more…]

11. **Completion of Degree Requirements** - The requirements for the degree, including submission of the approved dissertation must be completed within faculty-approved time lines [read more…]
   - 4 years for a student entering with a M.S. from the School of Marine Science
   - 5 years for a student entering with a M.S. or equivalent degree from another institution
   - 6 years for a student who is approved to bypass the M.S. degree
College of William & Mary

2013 - 2014 Graduate Catalog

Marine, Environmental and Public Policy

The School of Marine Science (SMS) recognizes the critical need to improve communication between marine scientists and resource managers, policy makers, and the public. This requires literacy in the language of policy. Students enrolled in the M.S. and Ph.D. programs in Marine Science who want exposure to marine, environmental and public policy can elect one of the following options:

Joint Master of Science and Master of Public Policy Program

A joint program allows students to obtain either a Master of Science (M.S.) or Doctor of Philosophy (Ph.D.) degree in Marine Science and Master of Public Policy (M.P.P.) concurrently in a reduced amount of time compared to completing the degrees independently. Candidates interested in this program must apply to and gain acceptance by both SMS and the Thomas Jefferson Program in Public Policy offered at W&M’s main campus.

Subconcentration in Marine Policy

School of Marine Science students may complete additional course work for a subconcentration in marine policy. Students exercising this option will receive a notation of “Subconcentration in Marine Policy” on their transcript. The subconcentration is offered in collaboration with W&M’s Thomas Jefferson Program in Public Policy and the Marshall Wythe School of Law. In addition to the course work required for the M.S. or Ph.D. degrees in Marine Science, requirements for the subconcentration are as follows:

1. Completion of 10 credits of course work to include the following courses:
   a. MSCI 689 - Public Policy for Science & Professions, 3 credits. (main campus)
   b. MSCI 687 - Environmental Policy, 3 credits. (main campus)
   c. MSCI 698, Sea Grant Policy Seminar Series. 1 credit.
   d. Elective course (3 credits) from the following menu:
      - MSCI 684 - Coastal and Marine Policy Implementation: The Art & Science of Governance
      - MSCI 693 (Law 424), Environmental Law (main campus)
      - MSCI 694 (Law 425), Land Use Control (main campus)
2. All grades for coursework in the Marine Policy subconcentration must be B- or above.
3. A student must receive the approval of his/her advisor prior to pursuing the subconcentration.
4. Once the student has advisor approval for the subconcentration, the SMS Graduate Registrar must be notified.

Coursework

Within the SMS, students may access a wide range of cross-departmental policy and resource management-oriented courses that are designed to provide a more complete understanding of marine and environmental policy and its application to marine problems. In addition, courses related to environmental law are available through the Marshall-Wythe School of Law at the Williamsburg campus. Additional information on SMS courses may be accessed using the navigation, above.
An undergraduate minor in marine science (18 credit hours) is jointly offered and administered by the School of Marine Science and Arts & Sciences (main campus). The minor provides interested students with an interdisciplinary introduction to the marine sciences that supplements the strong education they receive in a disciplinary science major. Courses are offered both at the VIMS Gloucester Point campus and the main campus. The undergraduate minor in marine science addresses the growing national demand for undergraduate education in the earth and environmental sciences in general, and in the marine sciences specifically.

Advanced undergraduates (juniors and seniors) who receive permission of the instructor may also participate in some SMS graduate level courses. For instance, biology, chemistry, and physics majors may enroll in suitable 500-level marine science courses for credit towards the bachelor’s degree and to fulfill the requirements of the undergraduate minor in marine science provided certain conditions are met (see College of William and Mary Undergraduate Program Catalog for more details). Undergraduates also may enroll for credit to conduct research projects in marine science. The student is responsible for making the necessary arrangements with an individual School of Marine Science faculty member, and the consent of the chairperson of the student’s major department is also required.
School of Marine Science (SMS) students generally are bound by the requirements stated in the catalog for the academic year stated in their Notification of Admission letter. The department in which a student specializes and individual advisory committees may prescribe additional requirements for their students.

### Academic Residency

To fulfill the full-time academic residency requirement of the SMS, students must:

1. Successfully complete the core course requirements;
2. Be a full-time student in academic standing for two consecutive semesters.

### Required Coursework

#### SMS Core Curriculum

Successful completion of the SMS core curriculum ensures that students achieve a broad understanding of the essential processes that define oceanic, coastal, and estuarine environments. Students are expected to build upon this foundation by pursuing specialized and advanced courses tailored to the needs of their individual research projects.

Relative to this goal, specific objectives of the SMS core course curriculum are to:

- Educate students in the fundamentals of marine science in a way that fosters interdisciplinary and synthetic understanding of oceanic, coastal and estuarine systems;
- Provide students with an appreciation for the integration of marine science and its application to complex environmental problems;
- Ensure that students have the methodological, quantitative and communication skills needed to pursue successful careers in marine science.
Students must pass all required SMS core courses with a grade of B- or better by the end of their second year following matriculation. Students are required to choose courses in each of the following four groups, I-IV, as follows:

   - A Ph.D. student must choose four (4) of the fundamentals courses outside of the student’s specialty.
   - A M.S. student must choose three (3) of the fundamentals courses outside of the student’s specialty. (For example, a student in the Department of Biological Sciences is encouraged to take Fundamentals of Biological Oceanography; however, it will not satisfy the core course requirement.)
   - Successful completion of an advanced principles core course outside of one’s specialty in lieu of one of the above Fundamentals Courses will also satisfy the above core course requirement. In order for a core course to satisfy the core course requirements, a grade of B- or above must be earned in the course.

II. Advanced Principles Core Courses:
   - Students in either degree program must choose one of the advanced principles courses their department of specialty (For example, a student in the Department of Biological Sciences must take MSCI 526):
     - Biological Sciences: MSCI 526
     - Environmental & Aquatic Animal Health: Any course in the department over the 550 level
     - Fisheries Science: MSCI 528
     - Physical Sciences, discipline specific: MSCI 520 (physical oceanography); MSCI 522 (geological oceanography); MSCI 524 (marine chemistry)

III. Quantitative Core Courses:
   - Students in either degree program must choose at least one of the following quantitative courses; the required course may be specified by each department: MSCI 504, MSCI 554, or MSCI 642

IV. Interdisciplinary Core Requirement:
   - All SMS graduate students are required to take the following interdisciplinary course: MSCI 503

**Department Required Courses**

In addition to the SMS core courses specified above, students take additional courses as required by their department:

**Biological Science:** MSCI 515A - Biological Sciences Seminar (every Spring Semester).

**Environmental and Aquatic Animal Health:** MSCI 515B - EAAH Dept Seminar (every Fall and Spring Semester) and at least one additional departmental offering.

**Fisheries Science:** MSCI 515C - Fisheries Science Seminar (every Spring Semester) and one of the following: MSCI 625, MSCI 667, MSCI 669, MSCI 670, or MSCI 671.

**Physical Sciences:** MSCI 515D - Physical Sciences Seminar (every Fall and Spring semester) and at least one advanced course (550-level or higher) appropriate to the student’s specialty.

*Students are expected to register for seminar (MSCI 515A-D) as required by their respective departments; however, only two (2) credits will be applicable to the degree.*
Core Course Exemption

With the exception of MSCI 503, students who have had comparable course work elsewhere may petition for exemption from any of the SMS core courses. The application for core course exemption must be approved by the core instructor(s) of the SMS course for which exemption is sought. Prior to consulting the core instructor, the student must attach the following to the application for exemption: (1) a syllabus of the student’s applicable prior course work and (2) a transcript showing the grade/credits of the student’s prior course work. The SMS instructor must indicate on the application that he/she has reviewed the student’s previous studies and is satisfied that those studies are sufficient to permit exemption from the applicable core course. The application and attachments must be submitted in entirety to the Academic Status and Degrees Committee, in care of the SMS Registrar (Registrar@vims.edu). Credits for exempted courses will not be transferred to a student’s record until the student petitions the Academic Status and Degrees Committee for credit transfer and the Associate Dean of Academic Studies approves the request. There are no exemptions from MSCI 503.

Retaking a Course

In order for a core course to satisfy the core course requirements, a grade of B- or above must be earned in the course. A deficiency in a core course may be made up by:

1. retaking the course and passing with a grade of B- or better;
2. taking another course from the core group (outside of specialty) with a grade of B- or better;
3. taking an Advanced Principles core course (outside of specialty) with a grade of B- or better.

In the case of non-core coursework, degree credit is granted only for the course in which a student earns a grade of “C” or above. A graduate student may also repeat one non-core course in which a grade of “C” or lower is received. When a course is repeated, both the initial and new grades earned are included in computations of quality point requirements. Any student receiving more than one “D” or “F” in a program of study will be dismissed from the degree program.

Transfer of Academic Credit

On the recommendation of the Academic Status and Degrees Committee and the approval of the Associate Dean of Academic Studies, a student admitted to a degree program may apply up to 15 hours of graduate credit for graduate courses equivalent to the SMS core courses earned at another accredited institution. Credit may be transferred only for courses in which the student received a grade of “B” or better and will not be counted in compiling his/her quality point average at William and Mary.

To petition for acceptance of transfer credits, the approved application must be submitted to the Academic Status and Degrees Committee in care of the SMS Registrar, (Registrar@vims.edu). The application must include documentation for the course(s) proposed to supplant the core course(s), and a statement from each School of Marine Science faculty teaching the course for which transfer credits are sought. The faculty member’s statement must indicate that he/she has reviewed the student’s previous studies and is satisfied that those studies are sufficient to permit acceptance of the applicable transfer credits.

Students may petition for up to six additional credit hours of graduate work not already applied toward another degree, but the total transfer credits cannot exceed 15 hours. The credits must have been earned in courses appropriate to the student’s program in the SMS and must fall within the time specified by the general college requirements for degrees.

Auditing a Course
Any graduate student may register to audit a graduate or undergraduate course with permission of the instructor, the student’s advisor and the Associate Dean of Academic Studies. A required audit form may be obtained from the SMS Registrar. Before beginning the audit, the student and the instructor must agree on what is required for the audit to be successful. The audited course is listed on the student’s official transcript as either a grade of ‘O’ for a successful audit, or ‘U’ for an unsuccessful audit.

**System of Grading and Quality Points**

The grades A (excellent), B (good), C (fair), P (pass), in certain courses, D (unsatisfactory), and F (failure) are used to indicate the quality of work in a course. “W” indicates that a student withdrew from the College before mid-semester or dropped a course between mid-semester and the last day of class and was passing at the time that the course was dropped.

For each semester credit in a course in which a student is graded A, 4 quality points are awarded; A-, 3.7; B+, 3.3; B, 3; B-, 2.7; C+, 2.3; C, 2; C-, 1.7. P carries credit but is not included in a student’s quality point average; D and F carry no credit, but the hours attempted are included in the student’s average.

In addition to the grades A, B, C, P, D, F, and W, the symbols “G” and “I” are used on grade reports and in the College records. “G” is given to work in progress towards M.S. (MSCI 599) or Ph.D. (MSCI 699) research, since there is insufficient evidence upon which to base a grade. “I” indicates that because of illness or other major extenuating circumstances, the student has postponed, with the explicit consent of the instructor, the completion of certain required work. “I” automatically becomes “F” at the end of the next semester if the postponed work has not been completed.

**Degree Program Milestones**

Student progress within the degree programs of the SMS is guided by milestones, which specify how long a student has to complete each degree requirement. In addition to fulfilling course and credit-hour requirements, the student must complete and document the program milestones. Forms for documenting completed milestones are available from the Office of Academic Studies or may be printed from the following URL: [http://www.vims.edu/intranet/graduate_studies/forms](http://www.vims.edu/intranet/graduate_studies/forms). The milestones for degree completion in the SMS are described below. For timelines by degree, refer to summaries for the M.S., M.S. Bypass Option, and Ph.D. program.

**Selection of Major Professor:** The student must select a SMS faculty member as a major professor. The major professor and advisory committee direct the student’s program. Should a student’s major professor retire or leave the SMS before the student completes the degree, the student is required to select an appropriate on-campus co-advisor.

**Selection of Committee & Research Topic (M.S.):** The advisory committee, chosen by the student in consultation with the advisor, consists of at least four members. A majority of the committee members must be from the SMS faculty. The committee must include at least one SMS faculty member who is both outside of the student’s research discipline and outside of the student’s home department. An additional committee member with appropriate qualifications from within or outside of the SMS may be included. The committee must be approved by the Associate Dean of Academic Studies before the qualifying exam is scheduled.

**Selection of Committee & Research Topic (Ph.D.):** The advisory committee, chosen by the student in consultation with the advisor, consists of at least five members. A majority of the committee members must be from the SMS faculty. The committee must include at least one SMS faculty member who is both outside of the student’s research discipline and outside of the student’s home department. At least one committee member with appropriate qualifications must be from outside the College of William and Mary. The committee must be approved by the Associate Dean of Academic Studies.
before the comprehensive and qualifying exams are scheduled.

**Pre-Qualifying Interview:** Every student is required to have a pre-qualifying interview with the committee prior to the qualifying exam. Master of Science students should have their pre-qualifying interview before the end of their first year (i.e., before the beginning of the second fall semester for students matriculating in Fall). Ph.D. students should have the interview before the end of the second fall semester.

**Comprehensive Examination (M.S. Bypass and Ph.D.):** A written comprehensive exam at the Ph.D. level allows a student to demonstrate comprehension and integration of material from the disciplines of marine science that are relevant to the student’s area of specialization. Successful completion of a rigorous comprehensive exam signals that a student is ready to pursue advanced training and original scientific research. The comprehensive examination milestone is 21 months. The exam must be passed within 6 months. If more than one section is not passed, the student receives a “no pass” for the entire exam. The student is allowed one exam retake for any sections that were not passed. A Ph.D. student may take the exam twice and will be given an option to enroll in the M.S. degree program if they do not pass. Master’s bypass candidates who do not pass the first examination are not permitted to advance directly to the Ph.D. program.

The objective of the written comprehensive examination is to ensure that the student has an appropriate general understanding of the field as well as the specific knowledge needed to undertake their research project. The exam will be created, administered, and graded by the student’s advisory committee. The student’s advisor will notify the Associate Dean of Academic Studies of the outcome of the pass/fail exam and if any remedial action is needed. Following the exam, a copy of the questions, as well as the graded exam with the questions and student responses will be submitted to the Associate Dean of Academic Studies. The questions will be maintained electronically in the Office of Academic Studies. The graded exam will be maintained in the student’s file.

**Qualifying Examination and Prospectus Defense:** The qualifying examination and prospectus defense gauge a student’s progress early in his/her research program. The qualifying examination milestone is 18 months for a M.S. student and 30 months for a Ph.D. student. The exam must be completed within 6 or 12 months of the milestone date for M.S. and Ph.D. students, respectively. A student who fails to meet the milestone in the timeframe specified will be placed on academic probation. A student on academic probation will have one calendar year to satisfy any outstanding deficiencies. Failure to do so will result in automatic termination of the student’s degree program.

The qualifying examination is an oral exam designed to test a student’s scientific competence and ability to pursue the research project. The exam consists of two components: (1) questions that address knowledge specific to the proposed research project and (2) questions concerning the general knowledge in the student’s field of study. The qualifying examination will be administered by the student’s advisory committee and chaired by a moderator who is not a member of the student’s advisory committee. The moderator must be identified at least three weeks prior to the examination. Students must file appropriate paperwork for the scheduling and announcement of the qualifying examination with the Office of Academic Studies. Consistent with SMS procedures, the examination will be advertised and open to all faculty members. The examination allows a student’s advisory committee to identify any deficiencies in a student’s preparation to successfully conduct and complete the degree program. The minimum elapsed time between successful completion of the qualifying examination and the final defense must be no less than six months for M.S. students and no less than one year for Ph.D. students. SMS policy prohibits audio or video recording of exams, although exceptions may be made for students with documented disabilities.

The prospectus is a formal written presentation of the proposed research. Its purpose is to present the rationale for selection of the hypotheses and methodology to be used in testing the hypotheses. It must include a problem statement, review of current literature in the area of study, and a detailed plan of study, as well as a summary of preliminary research conducted.
by the student. The prospectus must also provide a detailed rationale for the proposed work, clearly stated objectives, and testable hypothesis(es) when appropriate, consistent with the problem statement, and a description of research design, field and laboratory studies, methods and data analysis intended to test the hypothesis. The prospectus must be formally approved by the committee.

**Admission to Candidacy:** A student who has completed the SMS core and departmental requirements, passed the comprehensive exam (Ph.D. only) and qualifying exam, and has an approved prospectus may apply for candidacy. The student must also have achieved a grade point average of B (3.0) or better, averaged over all courses taken for credit at the time of application for admission to candidacy. The student will be admitted to candidacy upon a favorable recommendation of the student’s advisory committee and the Academic Status and Degrees Committee, followed by a majority vote of the Academic Council and the approval of the Associate Dean of Academic Studies.

**Credit Requirements (M.S.):** At least 36 credit hours of advanced work, of which at least nine (9) credit hours have been earned in courses numbered 550 or above with a cumulative grade point average of 3.0 or better, are required for the M.S. degree. In addition, a student must have registered for thesis credit (MSCI 599 - Thesis) for at least one semester. No more than six (6) thesis credits may be counted toward the minimum 36 credits required for the M.S. degree. Students are expected to register for seminar (MSCI 515A-D) as required by their respective departments; however, only two (2) credits will be applicable to the degree.

**Credit Requirements (Ph.D.):** At least 42 credit hours of advanced work, of which at least 15 credit hours have been earned in courses numbered 550 or above with a grade point average of 3.0 or better, are required for the Ph.D. degree. In addition, a student must have registered for dissertation credit (MSCI 699 - Dissertation) for a least one semester. At least nine (9) but no more than 12 dissertation credits may be counted toward the 42 credits required for the Ph.D. degree. Students are expected to register for seminar (MSCI 515A-D) as required by their respective departments; however, only two (2) credits will be applicable to the degree.

**Seminar Presentation and Defense of Thesis or Dissertation:** The defense of a thesis or dissertation will consist of two parts. First, all students are required to present a seminar to the marine science faculty, staff and students on their thesis or dissertation research. The seminar will be advertised and open to any interested individuals.

Second, immediately following the seminar, the student will undergo an oral examination, the defense of his or her thesis or dissertation, by the student’s Advisory Committee. The defense will be chaired and administered by a moderator who is not a member of the student’s committee. Any interested faculty members of the College are invited to attend. SMS policy prohibits audio or video recording of exams and defenses, although exceptions may be made for students with documented disabilities.

At the conclusion of the defense, the student’s Advisory Committee will vote on a pass/fail decision, and indicate this on the Thesis/Dissertation Defense Acceptance Form. Unanimous committee approval is necessary for satisfactory completion of both a student’s thesis or dissertation defense and the final version of the thesis or dissertation.

**Graduation Milestones:** The requirements for the degree, including submission of the approved thesis or dissertation to the Swem and Hargis Libraries, must be completed within the following time lines established by the faculty:

- 36 months - students pursuing a master’s degree
- 48 months - students pursuing a Ph.D. who enter the program with an SMS master’s degree
- 60 months - students pursuing a Ph.D. who enter the program with an outside master’s degree
- 72 months - students pursuing a Ph.D. who bypass completion of a master’s degree

Failure to meet major milestones (Qualifying Examination, Comprehensive Examination, Graduation) is evidence that
student is not making satisfactory progress in the program and may result in loss of funding, academic probation or dismissal from the program.

**VIMS Employees**: The same degree program milestones and SMS rules and regulations apply unless permission to change degree program milestones has been approved by the Academic Status and Degrees Committee and the Associate Dean of Academic Studies.

### Graduation

#### Filing for Graduation

Students filing for graduation must complete an Online Graduation Application in Banner. Instructions are found at: [http://www.wm.edu/offices/registrar/graduation/onlinegraduation](http://www.wm.edu/offices/registrar/graduation/onlinegraduation).

There is a one-time graduation fee, currently $75.00, payable for the initial filing date. Only first-time filers can use the online filing process. If a student is unable to complete the requirements for graduation by the date specified, he/she must notify the SMS Registrar and complete a paper form to re-file for a new graduation date. There is no graduation fee charge for re-filing.

#### Submission of Theses and Dissertations

All graduating students are required to submit copies of their theses or dissertations, ready for binding, to both the Swem and Hargis Libraries no later than 5:00 p.m. on the deadline date listed in the calendar in this catalog. A receipt of payment of binding fees from the SMS Cashier also must be presented to the respective libraries. One copy of the thesis or dissertation is required for archiving in Swem Library and two copies for Hargis Library. Additional copies will be required for advisors and personal use.

In addition, each graduating student must deposit an electronic (PDF) copy of his/her thesis or dissertation with the Hargis Library. Authors will retain all copyrights for their work.

Ph.D. students must submit to Swem Library one additional copy of their dissertation abstract for UMI Dissertation Publishing. This may be the abstract prepared by the student for his/her dissertation, however, the abstract for UMI should not be numbered. At the bottom of the last page of the abstract for UMI, the author’s full name, name of school or department, name of college, the advisor’s name, and the advisor’s title should be centered on separate lines. The additional abstract and the student’s Agreement Form will be submitted to ProQuest’s UMI Dissertation Publishing for production of an archival microform copy and inclusion in the ProQuest dissertation database.

#### Conferral of Degrees

The College confers degrees in August, January and May of each year. The commencement ceremony is in May. Degree recipients of the previous August and January are recognized and invited to attend the May ceremony. Students who will complete requirements in August rather than May may participate in the spring commencement with permission of the Associate Dean of Academic Studies and the Vice President for Student Affairs.
Students enrolled in the graduate program of the School of Marine Science are students of the College of William and Mary and must abide by academic and general policies set forth by the College. Students are also eligible for services provided by the College of William and Mary on the main campus in Williamsburg.
Academic Standing

Admission to the SMS graduate program implies a significant commitment on the part of the student, the student’s advisor and the department, as well as VIMS and the SMS. To remain in good academic standing a student must maintain a cumulative GPA of B or better ($\geq 3.0$) with no core course grade lower than B-, and continue to make satisfactory progress as defined by College degree requirements and regulations of the School of Marine Science.

The Academic Status and Degrees Committee, SMS Registrar, and the Associate Dean of Academic Studies regularly review student transcripts and milestone progress to ensure the timely completion of degree requirements at the individual and School of Marine Science levels. A student who fails to remain in good academic standing may lose funding or be terminated from the degree program.

Academic Probation
1. A student with a cumulative grade point average less than a B will be placed on academic probation. In the case of a grade deficiency in a SMS core course, the student must make up the deficiency by retaking the course and passing with a grade of B- or better, by taking another course from the core group of Fundamentals courses (outside of specialty) or by taking an Advanced Principles core course (outside of specialty) which must also be passed with a grade of B- or better. Probation will last until a student’s cumulative average is raised to at least a B (3.0) and/or the core course requirement is satisfied, but will not exceed one calendar year. Failure to raise the cumulative grade average to B or address a core course grade deficiency within one calendar year will result in dismissal from the School of Marine Science. Reinstatement is possible only with the approval of the Academic Status and Degrees Committee and the Associate Dean of Academic Studies.

2. A student who fails to complete the qualifying exam milestone within 6 months of the program due date for M.S. students, or 12 months of the program due date for Ph.D. students will be placed on academic probation. A student on academic probation will have one year to satisfy any outstanding milestone deficiencies in order to prevent automatic termination of the degree program.

3. A student who fails to adhere to degree program milestones may be placed on academic probation.

**Degree Program Time Extension**

A student who fails to meet the graduation milestone must apply for an extension to the Academic Status and Degrees Committee. The milestone for graduation is 36 months for a M.S. student and 48-72 months for Ph.D. students (read more). Adequate justification for the extension is required, as is the permission of the student’s advisor and committee members. In addition, the student and student's advisor may be required to meet with the Associate Dean of Academic Studies to discuss reasons for delay and remediation plans. If an extension is recommended by the Academic Status and Degrees Committee and approved by the Associate Dean of Academic Studies, the student must complete all requirements for the degree program within a maximum of one year for the M.S. or two years for the Ph.D. Students who exceed the first extension may continue in the degree program with the recommendation of the Academic Status and Degrees Committee and the approval of the Associate Dean of Academic Studies, but will be required to cover their own tuition costs out of pocket (i.e., grant or contract funds, or other institutional support, regardless of source, may not be used). A student who exceeds the graduation milestone by 2 years for M.S., or 3 years for Ph.D., will be terminated from the degree program. A student who exceeds the time limit for degree completion and who has not been granted a time extension will not be permitted to register in the School of Marine Science.

**Leave of Absence**

Under unusual circumstances, and following consultation with a student’s advisor, the Associate Dean of Academic Studies may grant a leave of absence. An approved leave of absence is limited to a maximum of one calendar year during the student’s degree program, and relieves the student of the obligation of paying tuition. It is understood that a student on leave of absence is not present on campus, not receiving financial support and not drawing upon campus resources. A student must terminate the leave of absence and be a registered student in the semester in which his/her degree requirements are completed or in which he/she graduates.

The milestone timeline and time limit for degree completion requirements will be stopped for a student with an approved leave of absence. Upon return from approved leave, the student’s milestone timeline and time limit to degree completion will resume.
Registration

**Full-time students:** All continuing full-time degree-seeking students who have not been granted leave must register for a minimum of nine credit hours each semester, and a minimum of two credit hours during the summer session. Full-time enrollment during the summer is defined as three credit hours in any combination of summer terms, and enrollment at the level of two credit hours is considered half-time. A student must be registered in the semester during which he or she intends to graduate. After having achieved candidacy, a student may be eligible for one semester (M.S. students) or two semesters (Ph.D. students) of [Research Graduate Status](#), depending on availability of funds and approval of the Associate Dean of Academic Studies.

Note: Only full-time students are eligible for the college-endorsed Student Health Plan (see [www.wm.edu/offices/healthcenter/studentinsurance](http://www.wm.edu/offices/healthcenter/studentinsurance)). Full-time students are eligible to access services at the health center during the fall and spring semester. The Student Health Center fee for the summer sessions is optional; you must pay it separately to use the health center over the summer (see [www.wm.edu/offices/healthcenter/fees-and-charges](http://www.wm.edu/offices/healthcenter/fees-and-charges)).

**Off-site students:** Off-site degree-seeking students are defined as those who do not receive any funding (assistantship, fellowship, workship) or make use of on-site resources of VIMS or SMS. Students who have achieved candidacy and completed course and research requirements are allowed to finish their degree programs in a special part-time registration status. An off-site student pays for one credit at the out-of-state rate or three credits at the in-state rate during fall and spring semesters, based on his/her domicile status. Students enrolled for the summer are required to register for a minimum of two credit hours during the summer session. Students who leave VIMS to take outside employment are required to meet milestones and complete all requirements for graduation within the same time limits as listed above for M.S and Ph.D. students. The same degree program milestones and SMS rules and regulations apply unless permission to change degree program milestones has been recommended by the Academic Status and Degrees Committee and approved by the Associate Dean of Academic Studies.

Changes in Registration

All changes in student schedules must be done in accordance with relevant deadlines as indicated in the [Academic Calendar](#). Any changes requested after the close of registration require approval of the instructor(s) involved and the Associate Dean of Academic Studies. Students may not add courses after the last day for changes in registration. If a student drops a course or courses before add/drop ends, the course or courses dropped will be removed from the student’s record. If the student drops a course or courses after the add/drop period ends through the last day of classes, the grade of “W” or “F” will be awarded by the instructor in the course depending upon whether or not the student was passing at the time the course was dropped. A student may not drop a course after the last day of classes. If a student does not complete a course, the grade of “W” or “F” will be awarded by the instructor in the course, and with the approval of the Associate Dean of Academic Studies and the appropriate authorities at the College, depending upon whether or not the student was passing at the time the course ended.

A student wishing to withdraw from a course (or courses) because of medical reasons after the add/drop period ends may apply to the Associate Dean of Academic Studies for approval. If approved, a grade of “W” will appear on the transcript for each course.

Withdrawal from the Program

Withdrawal from the program constitutes termination of the student’s program of study in the School of Marine Science.
Withdrawal may be voluntary on the part of the student or be imposed by the SMS for reasons of academic deficiency, failure to make satisfactory progress in research, or other reasons pursuant to the W&M Student Handbook and the W&M Honor Code (see section General Statements of Policy above). The Associate Dean of Academic Studies will place a student on a leave of absence for one semester if they fail to register for a regular semester (Fall or Spring) and have not requested a leave of absence or permission to withdraw. If the student has not applied for a leave of absence prior to the end of registration for the next regular semester, or if the Associate Dean of Academic Studies is not able to justify continuing the leave of absence, the student’s record will be marked “withdrawn unofficially.”

A student who withdraws from the College after the add/drop period, will be awarded a “W” or “F” by the faculty member teaching each course in progress at the time of withdrawal.

A student who withdraws from the program after the beginning of the school year should obtain appropriate faculty signatures on a Change in Graduate Student’s Registration form, a Withdrawal form and a Student Check-out Sheet. All forms should be returned to the Associate Dean of Academic Studies.

Reinstatement after Withdrawal

A student wishing to be considered for reinstatement after withdrawal must reapply to the School of Marine Science under the procedures in effect at the time of reapplication.
College of William & Mary

The College: Academic & General Policies

Statement of Purpose

The College of William and Mary, a public university in Williamsburg, Virginia, is the second-oldest institution of higher learning in the United States. Established in 1693 by British royal charter, William and Mary is proud of its role as the Alma Mater of generations of American patriots, leaders and public servants. Now, in its fourth century, it continues this tradition of excellence by combining the best features of an undergraduate college with the opportunities offered by a modern research university. Its moderate size, dedicated faculty, and distinctive history give William and Mary a unique character among public institutions, and create a learning environment that fosters close interaction among students and teachers.

The university’s predominantly residential undergraduate program provides a broad liberal education in a stimulating academic environment enhanced by a talented and diverse student body. This nationally acclaimed undergraduate program is integrated with selected graduate and professional programs in five faculties—Arts and Sciences, Business, Education, Law, and Marine Science. Master's and doctoral programs in the humanities, the sciences, the social sciences, business, education, and law provide a wide variety of intellectual opportunities for students at both graduate and undergraduate levels.

At William and Mary, teaching, research, and public service are linked through programs designed to preserve, transmit, and expand knowledge. Effective teaching imparts knowledge and encourages the intellectual development of both student and teacher. Quality research supports the educational program by introducing students to the challenge and excitement of original discovery, and is a source of the knowledge and understanding needed for a better society. The university recognizes its special responsibility to the citizens of Virginia through public and community service to the Commonwealth as well as to national and international communities. Teaching, research, and public service are all integral parts of the mission of William and Mary.

Equal Employment Opportunity

Within the limits of its facilities and obligations as a state university, The College of William and Mary extends the
possibility of admission to all qualified students without regard to sex, race, color, age, religion, national origin, sexual orientation, or disability. The facilities and services of the College are open to all enrolled students on the same basis, and all standards and policies of the institution, including those governing employment, are applied accordingly. The College of William and Mary does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies in the Office of Equal Opportunity and Affirmative Action:

   Director of EO/AA
   Hornsby House
   The College of William and Mary
   P.O. Box 8795
   Williamsburg, VA 23187-8795
   (757) 221-2615 (Voice), (757) 221-2613 (TDD)
   (757) 221-2614 (FAX), (800) 343-6866 (Toll Free)

Being an equal opportunity/affirmative action employer, The College of William and Mary strongly encourages admission applications from members of underrepresented groups, including people of color, people with disabilities, Vietnam veterans, and women.

Student Right to Know


Student Records Privacy Policy and Notification of Rights under FERPA

I. Scope

This policy applies to all students in attendance at the College of William & Mary, including the Virginia Institute of Marine Science (the university).

II. Policy

The university protects the privacy of student records in accordance with the Family Educational Rights and Privacy Act (FERPA) and the Virginia Health Records Privacy Act, and provides students with access to their own records in accordance with FERPA.

A. Student Records Rights.

FERPA affords students certain rights with respect to their education records, and defines situations in which the university can release information from student records with student consent. Education records, under FERPA, are documents, files, and other materials that contain information directly related to a student and are maintained by the university or a university agent. Student rights include:
1. The right to inspect and review the student’s education records within 45 days after the day the university receives a request for access. A student should submit to the University Registrar’s Office a written request that identifies the record(s) the student wishes to inspect. The school official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the school official to whom the request was submitted, that official shall advise the student of the correct official to whom the request should be addressed.

Students who are citizens of Virginia also have rights to their records under the Virginia Freedom of Information Act. Information about the process for requesting records under the Act, and the university’s obligations, is provided in the university’s Freedom of Information Act Policy.

2. The right to request the amendment of an element of the student’s education records that the student believes is inaccurate, misleading, or otherwise in violation of the student’s privacy rights under FERPA.

A student who wishes to request an amendment should write the university official responsible for the record, clearly identify the part of the record the student wants changed, and specify why it should be changed.

If the university decides not to amend the record as requested, the student will be notified in writing of the decision and of the student’s right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.

3. The right to provide written consent before the university discloses personally identifiable information (PII) from the student’s education records, except to the extent that FERPA authorizes disclosure without consent. The types of disclosures permitted without student consent are described in Section B, below.

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by the university to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:

Family Policy Compliance Office
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202

See also Section C, below, for a discussion of other university policies relating to student records.

B. Disclosures Permitted Without Student Consent.*

FERPA permits the disclosure of PII from a students’ education records, without consent of the student, if the disclosure meets certain conditions found in §99.31 of the FERPA regulations. Except for disclosures to school officials (item 1 below), disclosures related to some judicial orders or lawfully issued subpoenas (item 8 below), disclosures of directory information, and disclosures to the student, §99.32 of FERPA regulations requires the institution to record the disclosure. Eligible students have a right to inspect and review the record of disclosures.

William & Mary may disclose PII from a student’s education records without obtaining prior written consent of the student

1. To other school officials whom the school has determined to have legitimate educational interests. A school official is a person employed by the university in an administrative, supervisory, academic, research, or support staff position
(including law enforcement unit personnel and health staff); a person serving on the board of visitors; or a student serving on an official committee, such as the Honor Council. A school official also may include a volunteer or contractor outside of the university who performs an institutional service or function for which the university would otherwise use its own employees and who is under the direct control of the university with respect to the use and maintenance of personally identifiable information from education records, such as an attorney, auditor, or collection agent or a student volunteering to assist another school official in performing his or her tasks.

A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibilities for the university. (§99.31(a)(1))

2. To officials of another school where the student seeks or intends to enroll, or where the student is already enrolled if the disclosure is for purposes related to the student’s enrollment or transfer, subject to the requirements of §99.34. (§99.31(a)(2))

3. To authorized representatives of the U. S. Comptroller General, the U. S. Attorney General, the U.S. Secretary of Education, or State and local educational authorities, such as a State postsecondary authority that is responsible for supervising the university’s State-supported education programs. Disclosures under this provision may be made, subject to the requirements of §99.35, in connection with an audit or evaluation of Federal or State-supported education programs, or for the enforcement of or compliance with Federal legal requirements that relate to those programs. These entities may make further disclosures of PII to outside entities that are designated by them as their authorized representatives to conduct any audit, evaluation, or enforcement or compliance activity on their behalf.* (§§99.31(a)(3) and 99.35)

4. In connection with financial aid for which the student has applied or which the student has received, if the information is necessary to determine eligibility for the aid, determine the amount of the aid, determine the conditions of the aid, or enforce the terms and conditions of the aid. (§99.31(a)(4))

5. To organizations conducting studies for, or on behalf of, the university, in order to: (a) develop, validate, or administer predictive tests; (b) administer student aid programs; or (c) improve instruction. (§99.31(a)(6))

6. To accrediting organizations to carry out their accrediting functions. (§99.31(a)(7))

7. To parents of an eligible student if the student is a dependent for IRS tax purposes. (§99.31(a)(8)). Pursuant to Virginia law, the university will disclose such information, if certain conditions are satisfied, as described under Section C(2) below.

8. To comply with a judicial order or lawfully issued subpoena. (§99.31(a)(9))

9. To appropriate officials in connection with a health or safety emergency, subject to §99.36. Under this exception, William & Mary may disclose PII if the university determines that the person to whom the PII is to be disclosed needs the information to protect the student or other individual(s) from an articulable and significant threat to their health or safety (§99.31(a)(10))

10. To a victim of an alleged perpetrator of a crime of violence or a non-forcible sex offense, subject to the requirements of §99.39. The disclosure may only include the final results of the disciplinary proceeding with respect to that alleged crime or offense, regardless of the finding. (§99.31(a)(13))

11. To the general public, the final results of a disciplinary proceeding, subject to the requirements of §99.39, if the university determines the student is an alleged perpetrator of a crime of violence or non-forcible sex offense and the student has committed a violation of the university’s rules or policies with respect to the allegation made against him or her. (§99.31(a)(14))

12. To parents of a student regarding the student’s violation of any Federal, State, or local law, or of any rule or policy of the university, governing the use or possession of alcohol or a controlled substance if the university determines the student committed a disciplinary violation and the student is under the age of 21. (§99.31(a)(15))
In addition, recent federal guidelines permit release of student information for the purpose of data collection and analysis. In addition, FERPA permits the disclosure of information deemed by the university to be “Directory Information” without written consent. (§99.31(a)(11)) This information includes:

- Student name
- Current classification
- Address (permanent, local, and email)
- Previous schools attended and degrees awarded
- Telephone numbers
- Dates of attendance
- Current enrollment status
- Degree(s) earned and dates awarded
- Major(s), Minor
- Honors or special recognition
- Height, weight, and birth date of members of athletic teams
- Photograph

Students may prohibit the release of Directory Information by completing a “Request for Confidentiality” form, located on the University Registrar’s website at www.wm.edu/registrar/forms. This request must be submitted in person to the Office of the University Registrar and will remain on file indefinitely until written notice is submitted by the student to remove it.

C. Additional University Policies and Practices Relating to Student Records.

1. Medical/Health Records. Medical information in students records generally is not subject to additional protections, except for records of the Student Health Center and the Counseling Center that are protected by the Virginia Health Records Privacy Act.

The Act generally prohibits the disclosure of a student’s health information without the student’s consent, unless an exception applies. The Health Records Privacy Act does not have a provision that permits sharing of health records within the institution similar to the “school officials” FERPA exception, but it does allow disclosure of records (other than psychotherapy notes) by the Student Health Center and Counseling Center to the university’s Campus Assessment and Intervention Team. The Act also contains numerous other exceptions, including disclosures in response to a subpoena satisfying specific statutory requirements.

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) does not apply to education records, even if these records contain medical information; HIPAA exempts education records from its privacy regulations, because these records are protected by FERPA.

2. Other Policies. For additional information regarding students’ rights related to the release of personally identifiable information, see the University Registrar’s website at http://www.wm.edu/registrar or the section entitled ‘Statement of Rights and Responsibilities’ in the Student Handbook. Additional university policies include the following:

- **Release of Academic, Student Conduct, and Financial Information to Parents:** Students who wish their parents, guardians, and/or spouse to have access to academic, financial or student conduct information protected by FERPA may provide consent by completing the appropriate form in the Office of the Dean of
Students. Students have the right to revoke this consent at any time. Parents of dependent students have the right to information about their children; however, they must provide tax documents if there is no release already on file with the university.

- **Student Assessment:** William & Mary conducts periodic reviews of its curricular and co-curricular programs as part of the university’s state-mandated responsibility to monitor student outcomes and assure the continuing quality of a William & Mary degree. Surveys, course portfolios (including examples of student writing), and other procedures are used to gather information about student achievement and experiences. Information collected as part of the assessment program will not be used to evaluate individual performance and will not be released in a form that is personally identifiable. Students who do not want their work to be used in institutional or program assessments must submit a letter indicating that reference to the Dean of Undergraduate Studies.

1. First, the U.S. Comptroller General, the U.S. Attorney General, the U.S. Secretary of Education, or state and local education authorities (Federal and State Authorities) may allow access to your records and private information without your consent to any third party designated by a Federal or State Authority to evaluate a federal- or state-supported education program. The evaluation may relate to any program that is principally engaged in the provision of education, such as early childhood education and job training, as well as any program that is administered by an education agency or institution.

2. Second, Federal and State Authorities may allow access to your education records and private information without your consent to researchers performing certain types of studies, such as Statewide Longitudinal Data Systems, in certain cases even when the university objects to or does not request such research.

### Religious Accommodations

The College of William and Mary urges its administrators, faculty members, and staff to be sensitive to the religious holidays of organized religions. All persons should be able to participate in the essential practices of their faith without conflict with academic requirements as long as such practices are in accordance with state and federal regulations and consistent with the safety regulations of the College. The College offers the following guidelines.

1. As soon as possible and no later than the end of the drop/add period, each student has the responsibility to inform his or her instructor of religious observances that are likely to conflict directly with classes and other required academic activities. Each student has the responsibility to arrange his or her course schedule to minimize conflicts. It is understood that when scheduling options exist for religious observances, the student has the responsibility to minimize conflicts.

2. Based upon prior agreement between the instructor and student, a student who misses a class meeting because of a scheduling conflict with religious observances should be allowed, whenever possible, to complete without penalty the work missed because of such absences. A student who is absent from a test or presentation because of the observance of a religious holiday should be able to reschedule it without penalty. Absence from a final examination requires that the examination be rescheduled through the established process for rescheduling of final examinations by the Associate Dean for Academic Programs.

3. If a scheduling conflict with a student’s planned absence cannot be resolved between the instructor and the student, graduate students should contact the Dean.

4. Faculty members and administrators in charge of scheduling campus wide events should avoid conflicts with religious holidays as much as possible.

### The Honor System
Among the most significant traditions of the College of Williams and Mary is its student administered Honor System. The spirit and essence of the Honor System have existed at the College for more than 200 years and are embodied in the Honor Code. It asserts that honor and personal integrity are fundamental attributes essential of the climate of trust which must exist in a community of scholars. The Code is an agreement, accepted by each student who enrolls, not to lie, cheat or steal or to tolerate such behavior in others. Self-administered by elected peers, the Honor System is supported strongly by the Faculty and the Administration. Detailed information about the Honor System may be found in the College of William & Mary Student Handbook.
Domicile

A student domiciled in Virginia is eligible for in-state tuition rates. To obtain the in-state rates, a complete Application for Virginia In-State Tuition Privileges form must be submitted by the first day of classes of the semester for which in-state eligibility is sought.

For more information on establishing domicile, refer to the catalog section Eligibility for In-State Tuition Rate. All questions about eligibility for domiciliary status should be addressed to the Office of the University Registrar, (757) 221-2808.

A full-time, degree-seeking graduate student of the School of Marine Science may be eligible for a waiver of the out-of-state (non-resident) tuition rate to the in-state (resident) rate, but out-of-state domicile status is not changed.

Graduate Tuition

The College reserves the right to make changes in its charges for any and all programs at any time, after approval by the Board of Visitors.

<table>
<thead>
<tr>
<th>SMS Tuition &amp; General Fees</th>
<th>Academic Year 2013-14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full-time (per semester)</strong></td>
<td></td>
</tr>
<tr>
<td>In-State (Resident)</td>
<td>$5,942</td>
</tr>
<tr>
<td>Out-of-State</td>
<td>$13,480</td>
</tr>
<tr>
<td><strong>Part-time or Summer (per credit hour)</strong></td>
<td></td>
</tr>
</tbody>
</table>
In-state (Resident) $405
Out-of-State $1,050

SMS students are required to register for a minimum of 2 credit hours over the summer sessions (see below). A $25 registration fee and $50 comprehensive fee is also required for the summer session.

Full-time degree-seeking students of the School of Marine Science must register for 9 credit hours or more during the Fall and Spring semesters. Any student registered for nine hours or more per semester for any course level (graduate or undergraduate courses) is considered to be a full-time student and will be charged the full-time rates unless qualified for Research Graduate Student status. The tuition charged will be based on a student’s established domiciliary status.

Note: Most full-time non-resident degree-seeking graduate students who are employed as teaching assistants, research assistants, or graduate assistants of SMS qualify for in-state tuition (see below).

Degree-seeking graduate students will be charged the part-time rates for part-time enrollment (eight hours or less per semester) based on their established domiciliary status. For the School of Marine Science, part-time enrollment by degree-seeking students must be approved by the Associate Dean of Academic Studies.

All degree-seeking students of SMS must register for a minimum of 2 credits during the summer sessions and will be charged based on their established domiciliary status unless they otherwise qualify for in-state tuition (see below). Full-time enrollment in the summer is defined as a total of 3 credit hours or more in one summer session or in any combination of summer sessions, and half-time enrollment is defined as 2 credit hours in one summer session or in any combination of summer sessions.

Note: Enrollment for a minimum of 3 credit hours during the summer sessions is required to maintain eligibility for the college-endorsed Student Health Insurance Plan.

Part-time students who are not degree-seeking students (non-degree seeking post-baccalaureate students), must complete the Application for Virginia In-State Tuition Privileges to determine eligibility for in-state tuition. Students determined to be domiciled outside of Virginia will pay out-of-state rates. Those determined to be residents will pay according to the in-state rates.

Off-site students will be charged tuition per credit hour based on their established domiciliary status.

Auditing fees are the same as those specified for part-time students, unless the auditor is a full-time student. A student must register for the course and permission to audit must be obtained from the instructor prior to registration.

For more information on tuition and domicile, please see W&M’s statement regarding Eligibility for In-State Tuition Rate. Please contact the SMS Registrar for additional information.

Senior citizens of Virginia who wish to attend School of Marine Sciences courses are invited to contact the Associate Dean of Academic Studies for full details.

**Tuition Bills for SMS Students**

A SMS student who has a commitment of tuition support from the Office of Academic Studies or the major professor will receive a tuition eBill from the W&M Bursar for each semester and for summer sessions. It is the student’s responsibility to forward tuition bills to the department business manager for payment. Please read W&M’s billing and account payment.
policies, including the policy on financial penalties such as late fees. Failure to receive a bill does not waive the requirement for payment when due and will not prevent the application of a late fee. In addition, when a student is prevented from registering (hold on account) for failure to pay a campus parking ticket or due to other outstanding balances that are the student’s responsibility, the student will be responsible for any financial penalties.

Eligibility for In-State Tuition for Graduate Assistants (Waiver of Out-of-Station Tuition Rate)

Full-time non-resident degree-seeking graduate students of SMS who are employed as teaching assistants, research assistants, or graduate assistants may qualify for in-state tuition if they receive at least $4,000 of stipend during the academic year. Eligibility will be determined by the Associate Dean of Academic Studies and submitted to the Provost for final approval.

Research Graduate Student Status

Upon the recommendation of the major professor, a student who has achieved candidacy may apply to the Associate Dean of Academic Studies for either a single semester (M.S. students) or two semesters (Ph.D.) of Research Graduate status. During this period the student registers for at least 9 credit hours, but will be charged reduced tuition (3 credit hours). Awarding of Research Graduate status is contingent on the availability of funds. The following conditions must be met:

1. The student has completed all SMS and departmental required coursework.
2. The student has passed the Qualifying Examination and the prospectus has been approved.
3. A Ph.D. student has passed the Comprehensive Examination
4. The student is not employed significantly in any activity other than research and writing in fulfillment of degree requirements.
5. The student is present on campus or is engaged in approved fieldwork related to his/her thesis or dissertation.

Research Graduate status enables a student to register for a maximum of 12 credit hours of thesis or dissertation credit for fall or spring semester upon payment of the part-time rate (3 credit hours). The student may elect to utilize up to two (2) of the three paid credit hours for formal coursework and may register for additional coursework only upon payment of the generally applicable additional part-time tuition. The student who is approved for Research Graduate Status should check with the SMS Registrar about proper registration procedures.

A student with Research Graduate status is eligible for services (e.g., student health and athletic events) only if required fees are paid.

Graduate Assistantships and Fellowships

Financial aid in the form of graduate research assistantships, teaching assistantships and fellowships is available to full-time students in degree programs of the School of Marine Science. Most full-time graduate students in the School of Marine Science receive full financial support, which includes an assistantship or fellowship and tuition. The assistantship or fellowship includes an allowance for health insurance. Continuity of student funding is accomplished through a combination of grants and contracts to individual faculty, teaching assistantships, external fellowships, and institutional general and endowment funds, as available.

To receive available funding, a student must remain in good academic standing and demonstrate satisfactory progress as defined by College degree requirements and regulations of the School of Marine Science. This includes meeting the
milestones for normative progress in the degree program. The student may not hold any other employment or appointment of a remunerative nature without approval of the Associate Dean of Academic Studies.

The School of Marine Science places strong emphasis on student involvement in research activities. All students who receive financial aid through SMS are expected to participate an average of twenty hours per week in their advisor’s group activities and in a research project or program as determined jointly with their faculty advisor. For graduate research assistants, every effort will be made to ensure that assistantship duties are relevant to the student’s course of study and research program.

More information regarding funding for SMS graduate students is available below and on the website:  
[www.vims.edu/education/graduate/funding/](http://www.vims.edu/education/graduate/funding/)

### Fellowships

The School of Marine Science, with funding from the VIMS Foundation and the Office of Academic Studies, awards fellowships to approximately 25% of SMS students each year.

### Teaching Assistantships

Teaching assistantships support student professional development and the classroom or laboratory activities of SMS faculty. The time commitment for all assistantships is approximately the same (i.e., twenty hours per week). All students on teaching assistantships are eligible for consideration for in-state tuition rates.

### Graduate Workshops

Graduate workshops allow SMS students to expand the breadth and depth of training while supporting the operational needs of the Virginia Institute of Marine Science. A particular workshop assignment may be recurring, but is generally considered to be short-term in duration.

With the approval of advisors, students typically work up to 100 workshop hours per fiscal year. No student may work more than 29 hours each week, averaged over an annual period.

### Student Health Insurance Requirement

The College of William & Mary requires all full-time undergraduate, graduate and all F-1 & J-1 international students to have adequate health insurance coverage throughout the school year. An allowance sufficient to cover the cost of the College-endorsed Student Health Insurance plan is included in the stipend of full-time degree-seeking students of SMS who receive a full support package that is administered through VIMS or W&M.

Note: Only full-time students are eligible for the college-endorsed Student Health Plan (see [www.wm.edu/offices/healthcenter/studentinsurance](http://www.wm.edu/offices/healthcenter/studentinsurance)). Full-time students are also eligible to access services at the health center during the fall and spring semester. The Student Health Center fee for the summer sessions is optional; a student must pay it separately to use the health center over the summer (see [www.wm.edu/offices/healthcenter/fees-and-charges](http://www.wm.edu/offices/healthcenter/fees-and-charges)).

Students who already have health insurance must submit a waiver request by the posted deadline each academic year. The waiver must be approved to avoid being enrolled in and billed for the College-endorsed plan. Visit
www.wm.edu/health/insurance for more information about the insurance requirement or the College-endorsed insurance plan. If you have any questions, please email the Student Insurance Coordinator at student.insurance@wm.edu or call (757) 221-2978.

For additional information on the Student Health Center and health insurance requirement, please refer to W&M: Student Services.
THE COLLEGE RESERVES THE RIGHT TO MAKE CHANGES IN ITS CHARGES FOR ANY AND ALL PROGRAMS AT ANY TIME, AFTER APPROVAL BY THE BOARD OF VISITORS.

Tuition and General Fees (per semester)
Information on tuition and fees can be found in the individual school or faculty section of this catalog, using the links on the left.

Billing
The Bursar’s Office generates eBills each month for any account with a previous balance or with new activity. Payment is due in full by the due date on the statement. Exception: billing for the Executive MBA (EMBA) Program is handled directly by the Mason School of Business.

Included on the eBill are charges for tuition and fees, room, meal plans, and other miscellaneous charges such as printing, lab fees, music fees, tutoring fees, orientation fees, etc. Student account charges are due by the established payment deadlines. Failure to pay the balance due and/or to provide the required information for pending financial aid by the established payment deadlines may result in the assessment of a late fee, the loss of financial aid and/or a restrictive hold being placed on the student’s account.

For currently enrolled students, the eBill is generated electronically. No paper bills are issued to students or parents.

An email is sent to the student’s W&M email address and to the authorized payer’s email address (provided in eServices) when a bill has been generated and is ready for viewing. As a reminder, it is a violation of the College’s Acceptable Use Policy to provide your password to a third party under any circumstances. Third parties may be set up as authorized users in Banner Self Service/eServices.

Due dates for tuition plan participants are established at the time of enrollment in the tuition payment plan.
Visiting www.wm.edu/offices/financialoperations/sa/index.php for more information

**Payments**

**Payment of Student Account**
Charges for tuition and fees, residence hall, meal plan and miscellaneous fees are payable by the due date each semester. Registration is not final until all fees are paid and may be canceled if a student’s account is not paid in full by the due date, as established by the Office of the Bursar. Accounts not paid in full by the established due date will be assessed a late payment fee of 10% of the outstanding balance up to a maximum of $100.00.

**Payment Methods**
Payment may be made in U.S. dollars only by cash; check, money order or cashier’s check made payable to The College of William & Mary. Payments by cash or check are accepted at the Cashiers Office in Blow Hall. Payment by check may also be made via the U.S. Postal Service. A check returned by the bank for any reason will constitute nonpayment and may result in late fees or collections. Payment online via credit card-American Express, Discover, VISA and MasterCard-is also available in eServices. Credit cards are accepted for online payments only. The College does not accept credit cards for ‘in-person’ payments or over the phone. A convenience fee is charged for payments made via credit card. Payment may also be made online via an electronic (web) check. There is no fee for paying online via electronic (web) check. Additional information may be obtained from the Bursar’s Office website at [http://www.wm.edu/offices/financialoperations/sa/index.php](http://www.wm.edu/offices/financialoperations/sa/index.php)

Any past due debt owed the College, (telecommunications, emergency loans, parking, health services, library fines, etc.), may result in late fees or collections, withholding of transcripts and diplomas, and non-conferral of degree. In the event a past due account is referred for collection, the student will be charged all collection and litigation costs, as well as, the College’s late payment fee.

**Tuition Payment Plans**
To assist with the payment of educational costs, the College offers the option of an Interest-Free Monthly Payment Plan for the fall and/or spring semesters of the academic year. This monthly payment plan allows you to spread your expenses for tuition, room and board, and other miscellaneous expenses charged on the student account into 4 monthly scheduled bank debits from a checking account per semester. A non-refundable application fee in the amount of $50.00 per semester is charged during the enrollment process for the payment plan. Additional information, including plan highlights and FAQs, may be found on the Bursar’s Office website at [www.wm.edu/eservices](http://www.wm.edu/eservices) under the “Tuition Payment Plan” link.

**Credit for Scholarships**
Students who have been awarded financial aid are required to pay any amount not covered by the award by the established semester payment due date to avoid being charged a late payment fee. The Office of the Bursar must receive written notification of any outside scholarship from the organization before the credit can be given towards tuition and fees.

**Student Financial Aid**
The Office of Student Financial Aid administers all financial awards to undergraduates. Most assistance is based on financial need, with a limited number of academic and talent scholarships. All correspondence regarding financial awards, except those made by ROTC, should be addressed to:

Director of Student Financial Aid
The College of William and Mary
P.O. Box 8795
Williamsburg, Virginia 23187-8795

The Department of Military Science provides scholarships and other financial assistance for students enrolled in the College’s Army ROTC Program. Requests for information should be directed to:
- Department of Military Science
- The College of William and Mary
- P.O. Box 8795
- Williamsburg, Virginia 23187-8795

Financial Assistance

Financial assistance is available to undergraduates who need additional resources to meet the costs of education at the College. Demonstrated need is established through the analysis of the Free Application for Federal Student Aid (FAFSA). Entering freshmen and transfer applicants also need to submit the College Scholarship Service’s (CSS) Profile. In most cases, Virginia undergraduates may expect sufficient support to enable them to attend the College for four years, while out-of-state undergraduates may in many cases expect partial support, with the level depending upon financial need and the availability of funds.

Assistance is offered for one year only, but it may be renewed for each succeeding year if need continues and the student otherwise qualifies. Renewal requires the completion of the FAFSA for each succeeding year. The College’s standard of satisfactory academic progress, which is generally the same as that required for continuance in the College, is outlined in the Guide to Financial Aid, available from the Office of Student Financial Aid at http://www.wm.edu/admission/financialaid/documents/1314FAGuide.pdf.

Entering students include early decision, regular decision and transfers. Early Decision applicants wanting a tentative determination of aid eligibility should submit the CSS Profile. ALL entering students should file the FAFSA by March 1. Returning students should file by March 15. Apply on time, as late applications may not receive full grant consideration.

The Financial Assistance Package

The financial assistance offer may include a grant, loan and/or Federal Work-Study. A grant is gift assistance and does not need to be earned or repaid. The Perkins Loan and Direct Loans must be repaid following graduation, while Federal Work-Study provides earnings during the academic session.

Financial Assistance for Students

Primary Assistance Sources
Federally funded programs include the Pell Grant, the Perkins Loan, Federal Direct Loans, the Supplemental Educational Opportunity Grant, and the Federal Work-Study Program. The State Student Incentive Grant is jointly funded by the Federal and State Governments. In Virginia, the program is known as the College Scholarship Assistance Program (CSAP). Endowed scholarship funds made possible through the generosity of friends and alumni of the College provide need-based grants.

Special Scholarships and Programs
Grant funds controlled by the Office of Financial Aid are based on demonstrated need. However, some merit or achievement based grants are offered by various departments such as Admission and Athletics. The Alumni group Order of the White Jacket awards scholarships to students working in food service.

**Studying Abroad**

Students studying off campus will be eligible for financial assistance. Please read the information available on our website (http://www.wm.edu/admission/financialaid/howtoapply/studyaway/index.php) before applying for a study abroad program.

**Financial Benefits for Veterans**

Programs for Federal and State beneficiaries are available to eligible students who attend the College. The Department of Veterans Affairs offers several programs to help veterans, active duty and dependents pay for their education including the Post 9-11 and Montgomery GI Bills as well as the Virginia Military Survivors and Dependents Education Program. It is the student’s responsibility to decide which benefit is most appropriate for him/her based on individual circumstances and then apply to VA to use benefits through their website at www.gibill.va.gov. Students who receive educational benefits from the Department of Veterans Affairs are ultimately responsible for all charges assessed by the College of William and Mary.

Questions about VA programs and the benefits process at W&M can be addressed to the Office of the University Registrar (757-221-2800 or vabenefits@wm.edu).

**Withdrawal Schedule and Refunds**

**Full-time Students Who Withdraw from the College Fall/Spring Semesters**

Full-time students who withdraw from the College are charged a percentage of the tuition and fees based on the school week within which the withdrawal occurs. A school week is defined as the period beginning on Monday and ending on the succeeding Sunday. The first school week of a semester is defined as that week within which classes begin. Full-time students who withdraw from the College within the first school week of the semester are eligible for a refund of all payments for tuition and fees less the required enrollment deposit for entering students or a $50.00 administrative fee for continuing students. After week 1 of the semester, the amount of the tuition and fees charged / refunded will be determined based on the following schedule:

<table>
<thead>
<tr>
<th>Week</th>
<th>Percentage Charged</th>
<th>Percentage Refunded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0%</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>3</td>
<td>30%</td>
<td>70%</td>
</tr>
<tr>
<td>4</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>5</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>6</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>After Week 6</td>
<td>100%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Students will not be eligible for any refund of tuition and general fees if required to withdraw by the College.

Please visit Registration and Withdrawal, Withdrawal from the College for instructions on the withdrawal process.
Refund of the room rent will be prorated based on the date the resident officially checks out of the room with required paperwork completed by a Residence Life staff member. The Freedom, Gold 19, Gold 14 and Tribe10 meal plan adjustments will be prorated on the daily rate given the last day of usage. The Block meal plan adjustments will be based on actual meal and flex point usage. The cut-off date for receiving a refund for a meal plan follows the full-time withdrawal schedule.

Overpayments on the student account created by federal loans or grants will be automatically refunded following federal guidelines. (Within 2 weeks after fund disbursement)

Overpayments created by Parent Plus Loans will be refunded to the parent unless the parent designates the student as the recipient during the loan application process.

If an overpayment shows on a student’s account and it is not created by federal financial aid, the student is required to request a refund (https://forms.wm.edu/516/) from the Bursar’s Office. If a request is not filed, the overpayment will remain on the student’s account as a credit for the next semester or to offset additional charges which the student incurs.

Refunds for overpayments are issued as:
1 Direct deposit to your bank account if you have signed up for eRefund via eServices
2. A paper check mailed in the following address priority:
   - CSU or GSH Box
   - Local Address
   - Permanent Mailing Address

Paper checks are issued to the most current address in Banner. It is the responsibility of the student to update their addresses by logging into Banner self-service.

For students paying through the tuition payment plan, all refunds will be determined by comparing the amount eligible for refunding to the total monthly payments made to date. Any outstanding amounts owed the College for tuition, general fees, dormitory fees or meal plan charges after deducting the eligible refund will be due immediately upon withdrawal.

It is College policy to hold the enrolled student liable for charges incurred, therefore in the case of refunding any overpayment, refund checks will be issued in the name of the student. Students who have received financial aid may be responsible for repaying those funds (see Withdrawal Schedule for repayment schedule).

**Summer Sessions**
Please contact student accounts at bursar@wm.edu or 757-221-1220 for withdrawal refund information for your summer session(s).

**Special Fees Refunds**
Fees for special courses are determined by the demand and arrangements, which are necessary to support such courses. Classes carrying fees have a notation in Banner Self-Service, “Additional Fees” and the amount of the fee can be seen in the Class Detail screen for each section.
Special fees are non-refundable.

**Withdrawal and Refunds for Students Called to Active Duty:** The Office of the Dean of Students assists students called to active duty during or between semesters, or prior to matriculation at the college. A description of the options available and the tuition refund policy can be found at www.wm.edu/deanofstudents in the “Academic Policies” section.
Financial Aid Repayment Schedule

The return of Title IV funds for students with Title IV Federal Aid (Federal PELL, Direct Federal Subsidized and Unsubsidized Loans, Federal SEOG, Federal Work Study, Federal Perkins, Direct Federal PLUS, and Grad PLUS) who withdraw from school will be calculated in compliance with Federal regulations. A statutory schedule is used to determine the amount of Title IV funds a student has earned as of the date the student withdraws or ceases attendance. Please be advised that the Federal return of funds calculation has a different percent of attendance schedule than the College’s withdrawal policy.

If a student withdraws from college prior to completing 60% of a semester, the Financial Aid Office must recalculate the students eligibility for all funds received, including Title IV funds. Recalculation is based on a percent of earned aid using the following Federal Return of Title IV funds formula:

Percent of aid earned = the number of days completed up to the withdrawal date, divided by the total days in the semester.

(Any break of five days or more is not counted as part of the days in the semester.)

For Title IV purposes, the withdrawal date will be the date of notification of intent to withdraw, which may be earlier than the withdrawal date for the purpose of tuition reimbursement. If a student does not formally withdraw but ceases to attend classes, the withdrawal date under Title IV will be the mid-point of the semester.

Funds are returned to the appropriate federal program based on the percent of unearned aid using the following formula:

Aid to be returned = (100% minus the percent earned) multiplied by the amount of aid disbursed toward institutional charges.

Keep in mind that, when funds are returned, the student borrower may owe a balance to the College. If that is the case, the student should contact the Student Accounts/Bursars Office to make payment arrangements.

Examples of Return of Funds Calculation

Example 1: Virginia undergraduate who lives on campus

Institutional Charges
- Tuition $6935
- Housing $2838

Financial Aid Package
- Pell Grant $1500
- Direct Subsidized Loan $1887
- State Grant $3086

The student withdraws on 10/20, which is day 57 out of 116 in the semester (57/116=49.1% of Title IV funds earned by the student). Title IV funds = $3387 ($1500 Pell + $1887 Sub Stafford). $3387 X 49.1% = $1663.02 of earned Title IV funds. The remainder of funds unearned $3387-$1663.02 = $1723.98 will be returned to Federal programs. The state grant will be reduced using the same formula; $3086 X 41.1% = $1268.35 earned and $1817.65 of the state grant.

Example 2: Out of state student not living on campus

Institutional Charges
- Tuition $19220

Financial Aid Payments
- Direct Subsidized Loan $807
Direct Unsubsidized Loan $1860
Perkins Loan $750
FA Grant $9076

The student withdraws on 10/27, which is day 64 out of 116 in the semester (64/116=55.2% of Title IV funds earned by the student). Title IV funds = $3,417 ($807 Sub Stafford + $1860 UnSub Stafford + $750 Perkins Loan). $3,417 X 55.2% = $1886.18 of earned Title IV funds. The remainder of funds unearned $3,417 - $1886.18 = $1530.82 will be returned to Federal programs. The FA grant will be reduced using the same formula; $9076 X 55.2% = $5009.95 earned and $4066.05 unearned. William and Mary must return $1531 to the Direct Unsubsidized Loan and $4066.05 of the FA grant.

Eligibility for In-State Tuition Rate

To be eligible for in-state tuition, a student must meet the statutory test for domicile as set forth in Section 23-7.4 of the Code of Virginia. Domicile is a technical legal concept. In general, to establish domicile, students must be able to prove permanent residency in Virginia for at least one continuous year immediately the first official day of classes, and intend to remain in Virginia indefinitely after graduation. Residence in Virginia for the primary purpose of attending college does not provide eligibility for in-state tuition. Applicants seeking in-state status must complete and submit the “Application for Virginia In-State Tuition Privileges” by the first day of classes of the semester for which In-state eligibility is sought. The application is evaluated and the student is notified in writing if the request for in-state tuition is denied.

Under Virginia law, students under age 24 are rebuttably presumed to be dependent on a parent/guardian, and, unless an exception is identified, the parent/guardian’s domicile status determines the student’s tuition rate.

Special rules apply to non-U.S. citizens; contact the Registrar’s Office for details or visit www.wm.edu/registrar.

A matriculating student whose domicile has changed may request reclassification from out-of-state to in-state. Students seeking reclassification must complete and submit the “Application for Virginia In-State Tuition Privileges” to the Office of the University Registrar. The Office of the University Registrar evaluates the application and notifies the student only if the request for in-state tuition is denied. Any student may submit in writing an appeal to the decision made, however, a change in classification will only be made when justified by clear and convincing evidence. All questions about eligibility for domiciliary status should be addressed to the Office of the University Registrar, (757) 221-2808.

In determining domicile the school will consider the following factors for the student and parent/guardian/spouse:
- Citizenship status
- Residence during the year prior to the first official day of classes
- Employment
- Property ownership
- Sources of financial support
- State to which income taxes are filed or paid
- Location of checking or passbook savings
- Social or economic ties with Virginia
- Driver’s license
- Motor vehicle registration Voter registration
Credit hour surcharge: Students who qualify for in-state tuition privileges must pay a surcharge (generally calculated at out-of-state tuition rates) for courses taken after completion of 125% of the credit hours required for the degree. For example, for a bachelor’s degree requiring 120 credit hours, this would mean that any credits taken beyond 150 (or 125% of 120) would be charged at the out-of-state rate. Certain exceptions apply, including AP/IB credits; see Section 23-7.4:F of the Code of Virginia for more information.

Additional information may be obtained from the William and Mary website at http://www.wm.edu/registrar or directly from the State Council of Higher Education for Virginia (SCHEV) at http://www.schev.edu.

Auxiliary Services

Meal Plans

William and Mary Dining Services provide a comprehensive dining program featuring a variety of meal plan options to meet the needs of each student. There are three full-service dining facilities on campus: The Fresh Food Company at the Commons and RFoC Center Court in the Sadler Center provide all-you-care-to-eat style dining while the Marketplace Café in the Campus Center features an à la carte food court. There are also several “grab-n’-go” locations across campus including Einstein Bros. Bagels and the Students’ X-change, our on-campus convenience store, at the Sadler Center; Dodge Room in Phi Beta Kappa Hall; Greenberry’s Coffee Co. at Swem Library; Freshens Smoothie Bar at the Student Recreation Center; Boehly Café and Java City at the School of Business; Greenberry’s Coffee Co. at the Law School; and Greenberry’s Coffee Co. at the School of Education.

William and Mary Dining Services offers students a total of eight meal plans to choose from. The Freedom Plan, an unlimited meal plan, Gold 19, Gold 14 and the Tribe 10 plans provide a guaranteed number of meals per week. Block meal plans, Block 125, Block 100 and Block 50, provide a guaranteed number of meals per semester. A commuter 3 plan is also available to students commuting to campus and provides 3 meals per week. All meal plans include Dining Dollars, additional, non-taxable dollars to provide flexibility and convenience. The amount of Dining Dollars varies according to the meal plan selected. Additional Dining Dollars may be purchased in increments of $10 and added to your meal plan at any time during the semester.

The College requires that all students admitted fall 2011 or after purchase a meal plan if they are living in one of the College’s residence halls. Beginning with Academic Year 2011-12, Freshmen are required to purchase the Freedom, Gold 19, or Gold 14 plan. Sophomores are required to purchase the Freedom, Gold 19, Gold 14, or the Tribe 10 plan. Juniors are required to purchase the Freedom, Gold 19, Gold 14, Tribe 10, Block 125, Block 100 or Block 50. If a meal plan is not selected by June 24, Freshmen will be defaulted to the Gold 19 plan, Sophomores will be defaulted to the Tribe 10 plan and Juniors will be defaulted to a Block 50 plan. For meal plan purposes a freshman is defined as any student who has not yet completed two semesters of full time study and is in his or her first year of residence at the College. For meal plan purposes a sophomore is defined as any student who has completed two semesters of full time study and is in his or her second year of residence at the College. For meal plan purposes, a junior is defined as any student who has completed four semesters of full-time study and is in his or her third year of residence at the College. To select a meal plan prior to the official add/drop period, visit www.wm.edu/dining or visit the Student Advocacy Office in the Commons. Meal plans selected in the fall automatically roll over to the spring semester. Students may change or cancel their meal plan through the official add/drop period at the beginning of each semester. During the add/drop period, one change is permitted free of charge, additional
changes will result in a $25.00 fee per change. Changes and/or cancellations after the add/drop period must be approved by the Dean of Students Office. You can purchase a prorated meal plan and/or additional Dining Dollars at any time during the semester. If you purchase a prorated meal plan, you will not be permitted to cancel or make any changes to the meal plan for the remainder of the semester. Refunds or charges for adding, changing or canceling a meal plan are prorated weekly. Refunds are not permitted on additional Dining Dollar purchases. Additional Dining Dollars may be purchased online at www.wm.edu/dining, or at the Students’ X-change located in the Sadler Center. All meal plans are non-transferable and intended for individual use only.

William & Mary Bookstore

The William and Mary Bookstore, operated by Barnes & Noble College Booksellers, offers new, used, digital and rental textbooks for all William and Mary courses. In addition to required textbooks, the bookstore has school and dorm room supplies as well as a new Technology Store featuring computer, phone and PC accessories. The Bookstore is also the official source for W&M clothing, gifts, class rings, graduation regalia and commencement announcements. The College Café located on the second floor of the bookstore, proudly serves Starbucks coffee and offers a varied assortment of baked goods, sandwiches, salads and other lunch and dinner options. A variety of author appearances, readings, children’s occasions, and other special events are held throughout the year. Students receive a 20% discount on W&M clothing purchases with a valid W&M ID card. The Bookstore accepts cash, the W&M Express card, all major credit cards and Barnes & Noble gift Cards.

William & Mary Student ID Card

The William and Mary student identification card is the College’s official form of identification prepared by the ID Office for each student. It functions as a campus meal card, library card, an entry or access card to residence halls, recreational facilities, academic buildings, and the Student Health Center. Student ID cards are not transferable and are intended for the sole use of the student to whom it is issued. An ID used by anyone other than its owner will be confiscated and the person using the ID may be subject to disciplinary action. Because cards provide access to secured buildings and financial accounts, lost cards should be reported immediately to the ID Office during business hours, and to Campus Police evenings and weekends. This process also ensures that misplaced cards cannot be used by others. A $23 charge is assessed for lost, stolen or damaged cards Undergraduates who withdraw from school must return their ID cards to the Office of the Dean of Students. For more information, please call (757)221-2105 or visit our website at www.wm.edu/idoffice. The ID Office is located in Room 169 in the Campus Center.

William & Mary Express Account

The William and Mary Express Account is a debit account linked to the student’s ID card. When deposits are made to the account, students can use their ID cards to purchase a variety of goods and services both on and off campus. Deposits to the Express account may be made online, at the ID Office and at the Value Transfer Station (VTS) machine located in Greenberry’s Coffee Co. at Swem Library. There is a $3 service fee per transaction for online credit card deposits. The W&M Express account provides a secure method of handling transactions without the concerns associated with carrying cash. The cards can be used to make purchases at the Bookstore, the Students’ X-Change, the Candy Counter in the Campus Center, Dining Services, the Student Recreation Center, and to make payments at Swem Library, Parking Services and over 30 off-campus merchants. No cash withdrawals may be made. Balances are shown on receipts and/or the reader display. Funds in
the W&M Express account automatically carry over from one semester to the next. Accounts will terminate upon withdrawal or graduation from the College. Balances of $25.00 and under at the termination of this agreement shall revert to the College. Refunds are made by mail only after a written request is received in the ID Office within 60 days of leaving the College. Any outstanding accounts with a balance of $25.01 or more that remain inactive for one (1) calendar year will be assessed an annual maintenance fee of $25 until the account reaches a zero balance, upon which the account will be closed.

**Parking**

All motor vehicles operated or parked on College property, including motorcycles, motor scooters, moped, and vehicles with handicapped plates or hangtags, must be registered with the Parking Services Office. A decal is required to park on College property at all times beginning Monday, 7:30 a.m. through Friday, 5:00 p.m., except in metered or timed spaces as posted. Only under special circumstances and with prior written approval are freshmen and sophomores allowed to have cars on campus. Parking Services office hours are 7:45 a.m. - 6:00 p.m. Monday through Thursday and 7:45 a.m. - 4:30 p.m. on Friday, closed weekends unless otherwise advertised. The Motorist Assistance Program (MAP) offers assistance to stranded motorists on College property 8:00 a.m.-4:00 p.m. Monday through Friday. For more information, please contact (757) 221-4764 or visit our website at [www.wm.edu/parking](http://www.wm.edu/parking). The Parking Services office is located at 201 Ukrop Way, attached to the campus parking garage.

**Residence Hall Fees**

Residence Hall fees vary depending on the specific building to which a student is assigned; the average cost per semester fee is $2838.00. Freshman students are required to live in on-campus housing, although students who want to live with their families within a 30 mile radius of campus may apply to Residence Life for an exception. After their freshman year, students may choose to live off campus. Residence Hall fees will be prorated on a daily basis for students acquiring on-campus housing more than two weeks after the first day of occupancy for the residence halls. Students who move out of campus housing and remain enrolled at the College will not be eligible for residence hall fee refunds unless granted a contract release by the Contract Release Committee.

**Housing Cancellation Policy** Students who select housing either through a manual process or an on-line process have 24-hours from the time of their selection or acceptance of housing to cancel their housing assignment without penalty. Cancelling a housing selection during any part of the Room Selection Process removes the student from the Room Selection Process for that year. The cancellation policy does not apply to members of a Fraternity or Sorority organization who have committed to their chapter houses and it does not apply to freshman housing assignments.

After the 24-hour cancellation period and prior to August 1 the following cancellation schedule and fees apply:

**Prior to April 30**: If a request for cancellation is received on or before this date the student may cancel their contract but the $200 room reservation deposit is forfeited and the student is charged a $100 cancellation fee.

**May 1 to May 31**: If a request for cancellation is received between these dates the student may cancel their contract but the $200 room reservation deposit if forfeited and the student is charged a $250 cancellation fee.

**June 1 to June 30**: If a request for cancellation is received between these dates the student may cancel their contract but the $200 room reservation deposit is forfeited and the student is charged a $400 cancellation fee.

**July 1 to July 31**: If a request for cancellation is received between these dates the student may cancel their contract but the $200 room reservation deposit is forfeited and the student is charged a $500 cancellation fee.
Cancellation requests should be emailed from the student’s William and Mary email account to living@wm.edu and include student name, student ID number, space selected and a statement requesting cancellation. Beginning August 1 students seeking to be released from their on-campus housing contract must petition the Contract Release Committee. A release may be granted only to students who can demonstrate through the written petition and supporting documentation that their situation is extraordinary and cannot be resolved in campus housing. Petitions are considered on a case by case basis and release is not guaranteed.

**Incidental Expenses** - The cost of clothing, travel and incidental expenses varies according to the habits of the individual. The cost of books depends on the courses taken. Books must be paid for at time of purchase. Checks for books should be payable to The William and Mary Bookstore.

### Deposits and Miscellaneous Fees

<table>
<thead>
<tr>
<th>Fee</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application fee - Undergraduate</td>
<td>$70.00</td>
</tr>
<tr>
<td>Application fee - Graduate Arts &amp; Sciences</td>
<td>$45.00</td>
</tr>
<tr>
<td>Application fee - School of Education</td>
<td>$50.00</td>
</tr>
<tr>
<td>Enrollment deposit - Undergraduate</td>
<td>$150.00</td>
</tr>
<tr>
<td>Enrollment deposit - School of Education</td>
<td>$350.00</td>
</tr>
<tr>
<td>Undergraduate Orientation fee</td>
<td>$242.00</td>
</tr>
<tr>
<td>Room deposit</td>
<td>$200.00</td>
</tr>
<tr>
<td>Room change penalty fee</td>
<td>$25.00</td>
</tr>
<tr>
<td>Room damage deposit</td>
<td>$75.00</td>
</tr>
<tr>
<td>Transcript fee - Official</td>
<td>$7.00</td>
</tr>
<tr>
<td>Graduation fee</td>
<td>$75.00</td>
</tr>
</tbody>
</table>

**Application Fee** - A non-refundable processing fee is required with an application for admission to most programs of the College. If the student attends the College, this fee is not applied as credit toward their tuition and fees charges.

**Enrollment Deposit** - Upon acceptance for enrollment by the College, a non-refundable deposit is required to confirm the student’s intent to enroll. The deposit is applied as a credit toward tuition and fees charges.

**Room Deposit** - For returning students, a non-refundable deposit of $200 is required by the College to request a room. This payment is made to the cashier’s window and is applied as credit toward tuition, room and board charges. Although payment of this deposit does not guarantee a place on campus, the College makes every effort to accommodate all undergraduate students who desire College housing. Students already enrolled may make this deposit at any time after December 1 of the Fall semester, but it must be paid before the designated date as established by Residence Life. No rooms will be reserved for students who have not paid a room deposit by the specified date. Entering freshmen are not required to make a room reservation deposit until they have been notified of admission to the College. Transfer and former students are required to pay the deposit upon assignment to College housing.

**Room Change Penalty Fee** - Students who change rooms without the approval of Residence Life will be charged a $25 fee and will be required to move back into the original assignment.

**Graduation Fee** - A non-refundable graduation fee of $75.00 (per degree) will be charged to all students after they have filed their “Notice of Candidacy for Graduation”. The student will be billed for the fee along with the other tuition and fees obligations.
Transcript Fee - Official transcripts cost $7 per transcript. Payment is due at the time the order is placed. Payment must be made in U.S. dollars only by cash or check made payable to The College of William and Mary. Transcripts must be requested in writing with a student’s signature or online through the National Student Clearinghouse. Request forms are available in the Office of the University Registrar, Blow Memorial Hall, online at [www.wm.edu/registrar/forms/index.html](http://www.wm.edu/registrar/forms/index.html), or written requests may be mailed to: The College of William and Mary, Office of the University Registrar, P.O. Box 8795, Williamsburg, VA 23187-8795, Attention: Transcripts. No transcript will be released until all financial obligations to the College are satisfied. Current and former students enrolled since 2007 may access an unofficial transcript through Banner self-service at my.wm.edu. One unofficial transcript will be generated free-of-charge upon request to the University Registrar’s office per year; subsequent copies carry a $7 fee.

Financial Penalties

Failure to pay in full by the established due date(s) may result in the assessment of late fees/penalties in an amount up to 10% of the outstanding account balance. Semester payment due dates are established by the Office of the Bursar. For students electing to pay tuition and fees through the tuition payment plan, the payment due date is the first of each month beginning in August for the fall semester and January for the spring semester as detailed in the payment plan enrollment information. Failure to pay by the established due date(s) may result in late fees, referral to University Collections and Receivables, and/or referral to an outside collection agency.

Late Registration Fee

$50 for full-time students
$25 for Flex Track/part time students

A student must petition the Office of the Dean of Students (undergraduate) or to the graduate dean to register late or register again after cancellation. If approved, payment is due in full for all debts owed the College, including a late registration fee and late payment fee.

Delinquent Accounts

An account is considered delinquent when payment has not been received by the payment due date. Once your account is considered delinquent (more than 59 days past due) with the College, we are required by the Commonwealth of Virginia to send your account to either a private Collection Agency or the Office of the Attorney General depending on the dollar amount past due.

If your account has been sent to a Collection Agency (all accounts receivable under $3,000.00 and more than 59 days past due), the following events will occur until you have paid the Collection Agency in full:

- Addition of 23% collection costs;
- Submission of your account to the Department of Taxation pursuant to the Setoff Debt Collection Act;
- Reporting of your account to all Major Credit Bureaus; and
- Placement of a hold on your William & Mary account making you ineligible for any services from the College such as registration for classes, official transcripts, or a diploma.

If your account has been sent to the Office of the Attorney General (all accounts receivable $3,000.00 and greater and more than 59 days past due), the following events will occur until you have paid the Office of the Attorney General in full:

- Imposition of interest accrual at six percent per annum from (date of initial pre-delinquency invoice or demand letter);
- Addition of 30% attorney’s fees to your account balance;
- Submission of your account to the Department of Taxation pursuant to the Setoff Debt Collection Act; and
• Placement of a hold on your William & Mary account making you ineligible for any services from the College such as registration for classes, official transcripts, or a diploma.

Returned Check Fee

The return of a check issued to the College of William & Mary will result in a $50.00 returned check fee being placed on the account of the student on whose behalf the check was presented for each returned check no matter the reason. Each account will be allowed two (2) returned checks after which payment by check will not be accepted. Written notification/email on how to resolve the returned check(s) will be sent to the person whose account was affected and/or the maker of the check. A hold will be placed on the account affected, until the returned check has been redeemed (made good). If the returned check(s) have not been redeemed by the deadline, an additional 10% (up to $250.00) late fee will be levied, and the College will begin its collection proceedings as stated within the guidelines of the Department of Accounts, Commonwealth of Virginia.

Important Note: A returned check may automatically result in a hold on the account affected, which may preclude participation in any or all of the following activities: further check writing privileges, class registration, receipt of grades, issuing transcripts, and/or diplomas.

Returned Electronic Payment Policy

Payments made online through eServices by credit card and/or echeck which are returned for any reason will result in a $50.00 returned payment charge being assessed on the student’s account at the College.

A hold will be placed on the account affected, until the returned check has been redeemed (made good). If the returned check(s) have not been redeemed by the deadline, an additional 10% (up to $250.00) late fee will be levied, and the College will begin its collection proceedings as stated within the guidelines of the Department of Accounts, Commonwealth of Virginia.

Returned Check Payment Methods

Cash - Pay in person at the Bursar’s Office. Obtain a cash register receipt for your records. DO NOT MAIL CASH.

Certified Funds - Make cashier’s check, money order, or other certified funds payable to the College of William & Mary. Include your name, ID#, current address, and phone number on the face of the check.

Deliver in person or mail certified funds to the following address:

The College of William & Mary
Attn: Bursar’s Office / Renee Schofield
P.O. Box 8795
Williamsburg, VA 23187-8795
College of William & Mary

SMS: Administration & Faculty

2013 - 2014 Graduate Catalog

SMS: Administration & Faculty

- William and Mary Board of Visitors
- William and Mary Chancellor of the College
- Administrative Officers - College of William & Mary
- Administrative Officers - VIMS/SMS
- VIMS/SMS Current Faculty
- VIMS/SMS Emeritus Faculty

Administrative Officers - College of William & Mary

W. Taylor Reveley, III  
President

Michael R. Halleran  
Provost

Anna B. Martin  
Vice President for Administration

Samuel E. Jones  
Vice President for Finance

James R. Golden  
Vice President for Strategic Initiatives

Virginia M. Ambler  
Vice President for Student Affairs

Matthew T. Lambert  
Vice President for University Development

Terry Driscoll  
Director of Athletics

Administrative Officers - VIMS/SMS

John T. Wells  
Dean and Director

Linda C. Schaffner  
Associate Dean, Academic Studies

Mark W. Luckenbach  
Associate Dean, Research and Advisory Services

Jennifer B. Latour  
Chief Financial & Administrative Officer

Joseph Martinez  
Chief Operations Officer

Anne A. Marshall  
Director of Development

Office of Academic Studies

Jennifer C. Hay  
SMS Graduate Registrar and Assistant to the Associate Dean

Contact the Office of Academic Studies

VIMS/SMS Current Faculty
For a complete directory of current faculty, information on their research programs, publications and education activities, click here.

For faculty, by department:

- **Biological Sciences**
- **Environmental and Aquatic Animal Health**
- **Fisheries Science**
- **Physical Sciences**

---

**Standish K. Allen, Jr.**, Professor of Marine Science. B.A., Franklin and Marshall College; M.S., University of Maine; Ph.D., University of Washington. Fisheries Science. ska@vims.edu

**Iris C. Anderson**, Professor of Marine Science. B.S., Colby College; S.M., Massachusetts Institute of Technology; Ph.D., Medical College of Virginia, Virginia Commonwealth University. Biological Sciences. iris@vims.edu

**Aaron J. Beck**, Assistant Professor of Marine Science. B.S. Coastal Carolina University; Ph.D., Stony Brook University. Physical Sciences. abeck@vims.edu

**Donna M. Bilkovic**, Research Assistant Professor of Marine Science. B.S. & M.S., University of Michigan; Ph.D., College of William & Mary. donnab@vims.edu

**Richard W. Brill**, Affiliate Faculty and Director of CMER. B.A. Lafayette College; M.S. Northeastern University; Ph.D., University of Hawaii. Fisheries Science. rbrill@vims.edu

**Deborah A. Bronk**, Professor of Marine Science. B.S., University of Miami; Ph.D., University of Maryland. Physical Sciences. bronk@vims.edu

**John M. Brubaker**, Associate Professor of Marine Science. A.B., Miami University; Ph.D., Oregon State University. Physical Sciences. brubaker@vims.edu

**Mark J. Brush**, Associate Professor of Marine Science. B.S., Cornell University; Ph.D., University of Rhode Island. Biological Sciences. brush@vims.edu

**Elizabeth A. Canuel**, Professor of Marine Science. B.S., Stonehill College; Ph.D., University of North Carolina. Physical Sciences. ecanuel@vims.edu

**Ryan B. Carnegie**, Research Associate Professor of Marine Science. B.A., Rutgers University; M.A., College of William and Mary; Ph.D., University of Maine. Environmental and Aquatic Animal Health. carnegie@vims.edu

**J. Emmett Duffy**, Loretta & Lewis Glucksman Professor of Marine Science. B.S., Spring Hill College; M.S., University of Maine; Ph.D., University of North Carolina at Chapel Hill. Biological Sciences. jeduffy@vims.edu

**Mary C. Fabrizio**, Moses D. Nunnally Distinguished Associate Professor of Marine Science. B.S., Fordham University; Ph.D., University of Rhode Island. Fisheries Science. mfabrizio@vims.edu

**Carl T. Friedrichs**, Professor of Marine Science. B.A., Amherst College; Ph.D., Massachusetts Institute of Technology/Woods Hole Oceanographic Institution. Physical Sciences. cfried@vims.edu

**Marjorie A. M. Friedrichs**, Research Associate Professor of Marine Science. B.A., Middlebury College; M.S., M.I.T./Woods
Hole Oceanographic Institution Joint Program; Ph.D., Old Dominion University. Biological Sciences. marjy@vims.edu

Donglai Gong, Assistant Professor of Marine Science, B.A./B.S., Rutgers University; M.S., Massachusetts Institute of Technology; Ph.D., Rutgers University. Physical Sciences.

John E. Graves, Chancellor Professor of Marine Science. B.A., Revelle College, University of California, San Diego; Ph.D., Scripps Institution of Oceanography, University of California, San Diego. Fisheries Science. graves@vims.edu

Robert C. Hale, Professor of Marine Science. B.S., B.A., Wayne State University; Ph.D., College of William and Mary. Environmental and Aquatic Animal Health. hale@vims.edu

Courtney K. Harris, Associate Professor of Marine Science. B.S., University of Virginia; M.S., University of California, Berkeley; M.S., Ph.D., University of Virginia. Physical Sciences. ckharris@vims.edu

Troy W. Hartley, Research Associate Professor of Marine Science and Director, Virginia Sea Grant. B.S., University of Vermont; M.A., George Mason University; Ph.D., University of Michigan. thartley@vims.edu

Christopher J. Hein, Assistant Professor of Marine Science. B.S., Cornell University; Ph.D., Boston University. Physical Sciences. hein@vims.edu

Carl H. Hershner, Professor of Marine Science. B.S., Bucknell University; Ph.D., University of Virginia. Biological Sciences. carl@vims.edu

Eric J. Hilton, Cornelia Brackenridge Talbot Term Distinguished Associate Professor of Marine Science. B.S., M.S., Ph.D., University of Massachusetts, Amherst. Fisheries Science. ehilton@vims.edu

John M. Hoenig, Professor of Marine Science. B.S., Cornell University; M.S., Ph.D., University of Rhode Island. Fisheries Science. hoenig@vims.edu

Sarah Huber, Research Assistant Professor of Marine Science, B.S., Duke University, Ph.D., University of Massachusetts. Fisheries Science. skhuber@vims.edu

Stephen L. Kaattari, CSX Professor of Marine Science. B.S., Ph.D., University of California, Davis. Environmental and Aquatic Animal Health. kaattari@vims.edu

Matthew L. Kirwan, Assistant Professor of Marine Science. B.S., College of William and Mary; Ph.D., Duke University. Physical Sciences. kirwan@vims.edu

Steven A. Kuehl, Professor of Marine Science. B.A., Lafayette College; M.S., Ph.D., North Carolina State University. Physical Sciences. kuehl@vims.edu

Robert J. Latour, Professor of Marine Science. B.A., Western New England College; M.BMA, Ph.D., North Carolina State University. Fisheries Science. latour@vims.edu

Romuald N. Lepcius, Professor of Marine Science. B.S., University of Rhode Island; Ph.D., Florida State University. Fisheries Science. rom@vims.edu

Mark W. Luckenbach, Professor of Marine Science and Associate Dean, Research & Advisory Services. B.S., University of North Carolina; Ph.D., University of South Carolina. Biological Science. luck@vims.edu

Jerome P.-Y. Maa, Professor of Marine Science. B.S. and M.S., National Cheng-Kung University; Ph.D., University of Florida. Physical Sciences. maa@vims.edu
Roger L. Mann, Professor of Marine Science. B.S., University of East Anglia; Ph.D., University of Wales. Fisheries Science. rmann@vims.edu

Jan R. McDowell, Research Assistant Professor of Marine Science. B.A., University of Iowa; Ph.D., College of William & Mary. Fisheries Science. mcdowell@vims.edu

Kenneth A. Moore, Professor of Marine Science. B.S., Pennsylvania State University; M.S., University of Virginia; Ph.D., University of Maryland. Biological Sciences. moore@vims.edu

Michael C. Newman, A Marshall Acuff Jr., Professor of Marine Science. B.A., M.S, University of Connecticut; Ph.D., Rutgers University. Environmental and Aquatic Animal Health. newman@vims.edu

Robert J. Orth, Professor of Marine Science. B.A., Rutgers University; M.A., University of Virginia; Ph.D., University of Maryland. Biological Sciences. jjorth@vims.edu

Susan Park, Research Assistant Professor of Marine Science. B.A., University of Pennsylvania; M.A., University of Delaware. Fisheries Science. spark@vims.edu

James E. Perry, III, Professor of Marine Science. B.S., Murray State University; Ph.D., College of William and Mary. Biological Sciences. jperry@vims.edu

William G. Reay, Research Associate Professor of Marine Science. B.S., George Mason University; M.A., College of William and Mary; Ph.D., Virginia Polytechnic Institute and State University. Physical Sciences. wreay@vims.edu

Kimberly S. Reece, Professor of Marine Science. B.S., University of Rochester; Ph.D., Cornell University. Environmental and Aquatic Animal Health. kreece@vims.edu

Linda C. Schaffner, Professor of Marine Science and Associate Dean of Academic Studies. B.A., Drew University; M.A., Ph.D., College of William and Mary. Biological Sciences. linda@vims.edu

Rochelle D. Seitz, Research Associate Professor of Marine Science. B.A., Colgate University; M.A., Ph.D., College of William & Mary. Biological Sciences. seitz@vims.edu

Jian Shen, Research Associate Professor of Marine Science. B.S., Shanghai Teacher's University, M.A., Ph.D., College of William and Mary. Physical Sciences. shen@vims.edu

Jeffrey D. Shields, Professor of Marine Science. B.A., University of California, Santa Barbara; M.S., University of California, Berkeley; Ph.D., University of California, Santa Barbara. Environmental and Aquatic Animal Health. jeff@vims.edu

Walker O. Smith, Jr., Professor of Marine Science. B.S., University of Rochester; Ph.D, Duke University. Biological Sciences. wos@vims.edu

Bongkeun Song, Assistant Professor of Marine Science. B.S., Dongguk University, Korea; M.S., Ph.D., Rutgers University. Biological Sciences. songb@vims.edu

Deborah K. Steinberg, Professor of Marine Science. B.A., University of California, Santa Barbara; Ph.D., University of California, Santa Cruz. Biological Sciences. debbies@vims.edu

Kam W. Tang, Professor of Marine Science. B.S., M.S., The Chinese University of Hong Kong, Hong Kong; Ph.D., University of Connecticut. Biological Sciences. kamtang@vims.edu

Michael A. Unger, Associate Professor of Marine Science. B.S., Michigan State University; M.S., Ph.D., College of William and Mary. Environmental and Aquatic Animal Health. munger@vims.edu
Peter A. Van Veld, Associate Professor of Marine Science. B.S., University of North Carolina, Chapel Hill; M.A., College of William and Mary; Ph.D., University of Georgia. Environmental and Aquatic Animal Health. vanveld@vims.edu

Wolfgang Vogelbein, Professor of Marine Science. B.S., Southampton College; M.S., California State University; Ph.D., Louisiana State University. Environmental and Aquatic Animal Health. wolf@vims.edu

Harry Wang, Professor of Marine Science. B.S., National Taiwan University; Ph.D., Johns Hopkins University. Physical Sciences. wang@vims.edu

Andrew R. Wargo, Assistant Professor of Marine Science. B.A., University of Vermont; Ph.D., University of Edinburgh. Environmental & Aquatic Animal Health. arwargo@vims.edu

John T. Wells, Professor of Marine Science and Dean and Director. B.S., Virginia Polytechnic Institute; M.S., Old Dominion University; Ph.D., Louisiana State University. Physical Sciences. wells@vims.edu

Yinglong Joseph Zhang, Research Associate Professor; B.S., Peking University, China; M.S./Ph.D. The University of Wollongong, Australia. Physical Sciences. yjzhang@vims.edu

VIMS/SMS Emeritus Faculty

Henry Aceto, Jr., Professor Emeritus of Biology and Marine Science. B.S., State University of New York, Albany; M.S., University of California, Berkeley; Ph.D., University of Texas.

Herbert M. Austin, Professor Emeritus of Marine Science. B.S., Grove City College; M.S., University of Puerto Rico; Ph.D., Florida State University.

Thomas A. Barnard, Jr., Assistant Professor Emeritus of Marine Science. B.A., Milligan College; M.A., College of William and Mary.

Rudolf H. Bieri, Professor Emeritus of Marine Science. Dr.rer.nat. Johann Gutenberg University.

John D. Boon, III, Professor Emeritus of Marine Science. B.A., Rice University; M.A., Ph.D., College of William and Mary.

Eugene M. Burreson, Chancellor Professor Emeritus of Marine Science. B.S., Eastern Oregon College; M.S., Ph.D., Oregon State University.

Robert J. Byrne, Professor Emeritus of Marine Science. M.S., Ph.D., University of Chicago.

Mark E. Chittenden, Jr., Professor Emeritus of Marine Science. B.A., Hobart College; M.S., Ph.D., Rutgers University.

Fu-Lin Chu, Professor Emeritus of Marine Science. B.S., The Chinese University of Hong Kong; M.S., University of Rochester; Ph.D., College of William and Mary.

Robert J. Diaz, Professor Emeritus of Marine Science. B.A., LaSalle College; M.S., Ph.D., University of Virginia; D.H.C., University of Gothenberg, Sweden. Biological Sciences. diaz@vims.edu

William D. DuPaul, Professor Emeritus of Marine Science. B.S., Bridgewater State College; M.A., Ph.D., College of William and Mary.

David A. Evans, Associate Professor Emeritus of Marine Science. B.A., M.A., Cambridge University; D.Phil., Oxford University.

Leonard W. Haas, Associate Professor Emeritus of Marine Science. A.B., Dartmouth College; M.S., University of Rhode

http://catalog.wm.edu/content.php?catoid=6&navoid=818&print
Island; Ph.D., College of William and Mary.

**Carl H. Hobbs**, III, Associate Professor Emeritus of Marine Science. B.S., Union College; M.S., University of Massachusetts; Ph.D., University of Mississippi. Physical Sciences. [hobbs@vims.edu](mailto:hobbs@vims.edu)

**Robert J. Huggett**, Professor Emeritus of Marine Science. M.S., Scripps Institution of Oceanography; Ph.D., College of William and Mary.

**Howard I. Kator**, Associate Professor Emeritus of Marine Science. B.S., Harpur College; Ph.D., Florida State University. Environmental and Aquatic Animal Health. [kator@vims.edu](mailto:kator@vims.edu)

**Albert Y. Kuo**, Professor Emeritus of Marine Science. B.S., National Taiwan University; M.S., University of Iowa; Ph.D., Johns Hopkins University.

**Maurice P. Lynch**, Professor Emeritus of Marine Science. A.B., Harvard University; M.A., Ph.D., College of William and Mary.

**William G. MacIntyre**, Professor Emeritus of Marine Science. B.S., M.S., Ph.D., Dalhousie University.

**John D. Milliman**, Chancellor Professor Emeritus of Marine Science. B.S. University of Rochester; M.S., University of Washington (Seattle); Ph.D., University of Miami. Physical Sciences. [milliman@vims.edu](mailto:milliman@vims.edu)


**Maynard M. Nichols**, Professor Emeritus of Marine Science. B.S., Columbia University; M.S., Scripps Institution of Oceanography; Ph.D., University of California at Los Angeles.

**Frank O. Perkins**, Professor Emeritus of Marine Science. B.A., University of Virginia; M.S., Ph.D., Florida State University.

**Evon P. Ruzecki**, Associate Professor Emeritus of Marine Science. A.B., Knox College; M.S., University of Wisconsin; Ph.D., University of Virginia.

**Gene M. Silberhorn**, Professor Emeritus of Marine Science. B.S., Eastern Michigan University; M.S., West Virginia University; Ph.D., Kent State University.

**Dennis L. Taylor**, Professor Emeritus of Marine Science. B.A., University of Pennsylvania; Ph.D., University of Wales.

**N. Bartlett Theberge, Jr.**, Professor Emeritus of Marine Science. B.S., J.D., College of William and Mary; LL.M., University of Miami.

**Kenneth L. Webb**, Chancellor Professor Emeritus of Marine Science. A.B., Antioch College; M.S., Ph.D., Ohio State University.

**Richard L. Wetzel**, Professor Emeritus of Marine Science. B.S., M.S., University of West Florida; Ph.D., University of Georgia.

**Frank J. Wojcik**, Assistant Professor Emeritus of Marine Science. B.S., University of Massachusetts; M.S., University of Alaska.

**L. Donelson Wright**, Chancellor Professor Emeritus of Marine Science. B.A., University of Miami; M.A., University of Sydney; Ph.D., Louisiana State University.
Most advanced coursework and research training for SMS students is offered at the departmental level. For information about the faculty, graduate courses, research programs, facilities and equipment of each department, please use the links below.

- [Department of Biological Sciences](#)
- [Department of Environmental and Aquatic Animal Health](#)
- [Department of Fisheries Science](#)
- [Department of Physical Sciences](#)
The faculty of the Department of Biological Sciences includes a diverse group of estuarine and coastal marine ecologists and biological oceanographers who work in a wide range of research areas, such as biogeochemical cycling; physiological, population, and community ecology; and whole ecosystem modeling, using state-of-the-art approaches. Scientists in the department study benthic, planktonic and nektonic organisms and the temporal and spatial patterns and processes that control their distribution, diversity and ecological functioning in estuarine, coastal and open ocean regimes.

Preparatory Studies

A strong background in modern biology and basic science is required. This should include college math through calculus, chemistry through organic, and physics. Courses in statistics may be helpful, but are not prerequisites. Students should have strong writing and verbal communication skills. Past research experience and training are highly desirable. Students are strongly encouraged to contact and discuss plans with prospective advisor(s) before applying to the graduate program.

Typical Course of Study

In addition to the core courses required of all SMS graduate students, Biological Sciences students are required to take MSCI 526 - Principles of Marine Ecology unless exemption is granted by instructor and approved by the Associate Dean of Academic Studies. Students are strongly encouraged to take MSCI 501D - Fundamentals of Marine Science, Biological Oceanography unless they can demonstrate to their advisory committee that they have successfully taken a similar course as part of earlier graduate studies. Students are required to enroll in MSCI 515A - Biological Sciences Seminar each spring semester. Additionally, appropriate courses related to the student’s area of specialization will be included, in consultation with the student’s advisory committee. These might include Plankton and Microbial Ecology for students specializing in plankton biology and Marine Benthos, Seagrass Ecology, or Secondary Production for those specializing in benthic systems. Theoretical Ecology, Ecological Modeling and computer applications are recommended for students whose research will rely on modeling or theoretical mathematical formulations.

Areas of Research

Marine and Benthic Ecology

Studies focus on the processes governing structure and functioning of communities and ecosystems. Current research
includes: experimental and observational studies of recruitment, growth, and production; role of benthic organisms and communities in the fate and transfer of nutrients, organic matter, energy and sediments; effects of natural and anthropogenic disturbances on benthic community structure and functioning; consumer-prey relationships and benthic support of higher trophic levels; systematics and biodiversity of benthic animals and evolutionary ecology. Faculty members employ diverse research approaches including field and mesocosm experimentation, biogeochemical analyses, remote sensing, molecular genetics and a range of modeling techniques. Most research focuses on benthic systems of the land-sea margins, including tidal freshwater, estuarine and coastal regions and coral reefs.

Ecosystem Modeling

The ecosystem modeling program develops and employs numerical simulation models as integrative and synthetic tools for ecosystem analysis to address basic science and applied management questions. Current efforts include modeling studies of coastal and watershed carbon and nutrient cycling, estuarine eutrophication, submerged aquatic vegetation, multispecies trophic interactions, regional ocean ecosystem models and climate-related ecosystem changes. Studies involving optimal methods for combining in situ and satellite-based biological data with numerical models are also ongoing. Working with hydrodynamic, fisheries, and water quality modelers, an over-arching goal of the program is to develop cross-disciplinary models that address both basic and applied ecological research questions.

Macrophyte Ecology

Studies in this program concentrate on submerged and emergent macrophyte species that dominate shallow subtidal and intertidal marine, brackish, and freshwater areas. Current research includes studies on plant distribution and abundance, restoration ecology, plant dispersal mechanisms, plant responses to environmental variability, plant growth and productivity, carbon and nitrogen cycling, plant-herbivore interactions and ecosystem simulation modeling. The program encourages multi-investigator and multi-institutional collaborative efforts.

Microbial Ecology and Nutrient Cycling

Studies focus on the role of microbes and microbially-mediated biogeochemical processes in estuarine, coastal and marine environments, the fate of nutrients in benthic and pelagic ecosystems, and the roles microbes and nutrients play in regulating aquatic food webs and primary and secondary production. Microbial ecology and microbially-mediated biogeochemistry are studied in habitats ranging from intertidal marshes and mudflats to shallow subtidal, littoral zone systems, coastal embayments, riverine systems, large estuaries such as Chesapeake Bay, and the coastal ocean including areas adjacent to Antarctica.

Biological Oceanography/Plankton Processes

Research is focused on biological populations and processes as integral components of the dynamic, interconnected marine biosphere that provides half the food and absorbs half the anthropogenic carbon dioxide on the planet. The emphasis is on lower trophic levels in estuarine, coastal and oceanic food webs, including bacteria, phytoplankton, micro-, meso- and gelatinous zooplankton, harmful algal blooms and marine snow. Processes studied in all ecological provinces of the global ocean include fluxes of carbon and nitrogen between the various organic and inorganic pools, nutrient limitation, organic matter (dissolved and particulate) cycling, and biogenic trace gas production and consumption. The biotic processes regulating these transformations, the physical mixing and circulation mechanisms affecting their transport and redistribution, and the linkages and feed backs between the water column and all its boundaries (benthos, atmosphere, land...
margins) are emphasized. Collaborative research aimed at understanding the links between plankton dynamics and recruitment of economically important fisheries populations is also pursued.

Antarctic Oceanography

The Antarctic continent and the Southern Ocean together regulate the Earth’s weather, and the Southern Ocean, a major component of the planetary carbon cycle, is a key engine of global climate change, a source of rich fisheries, and haven for marine birds and mammals. VIMS programs provide an opportunity for graduate and undergraduate students to live and work in the Antarctic and on icebreakers; and to carry out research on production, nutrient cycling, organic matter diagenesis and ecosystem change. VIMS researchers work primarily in the Ross Sea (McMurdo Station) and the West Antarctic Peninsula (Palmer, Antarctica Long Term Ecological Research site). These programs also emphasize public education and outreach as important components of our work.
Research within the Department of Environmental and Aquatic Animal Health emphasizes understanding the fates of contaminants and pathogens in estuarine and marine environments and their effects on important species as well as humans. A diverse faculty consisting of environmental chemists, toxicologists, ecotoxicologists, biochemists, immunologists, microbiologists, molecular geneticists, and pathobiologists collaborate to achieve these goals. A key mission of the department is to identify and detect toxicological, pathobiological and biochemical agents in the Chesapeake Bay and its watershed that affect the health of important aquatic organisms and surrounding human populations. Research questions are pursued at all levels of biological organization from the molecular and cellular to the organismal and population levels. Activities reflect a strong commitment to provide technical support to environmental managers and stakeholders who regulate and protect the waters and natural resources of the Commonwealth regional and federal management agencies, and marine-related industries.

Preparatory Studies

Successful Environmental and Aquatic Animal Health students typically possess a degree in a natural science and should have strong written and oral communication skills. Depending on research interests, advanced course work in biology (e.g., biochemistry, molecular biology, and genetics), chemistry (organic or inorganic), physics, calculus and statistics is expected. Students lacking these courses are strongly advised to complete them before matriculation rather than while in graduate school. Students are strongly encouraged to discuss academic background, research experience and career objectives with prospective mentors before applying.

Typical Course of Study

The program prepares students for careers as environmental scientists, educators and managers. Since departmental research and educational programs are interdisciplinary, incoming students are expected to have strong backgrounds in biology and chemistry. Following satisfactory completion of the SMS core curriculum, students may pursue courses and research in any of the major program areas (environmental chemistry, toxicology, environmental risk assessment, environmental microbiology or pathobiology). The department offers a number of relevant courses including MSCI 559 - Parasitology, MSCI 560 - Fundamentals of Ecotoxicology, MSCI 562 - Water Pollution, MSCI 563 - Environmental Chemistry, MSCI 564 - Aquatic Toxicology, MSCI 565 - Principles of Pathobiology, MSCI 566 - Diseases of Marine Organisms, MSCI 567 - Comparative Immunology, MSCI 573 - Environmental Microbiology, MSCI 583 - Molecular Genetic Data Analysis, Bioinformatics, MSCI 638 - Fish Histology and Histo-pathology, MSCI 640 - Quantitative Ecotoxicology.
Areas of Research

Environmental Chemistry

Research addresses the sources, transport, fate, bioavailability and impacts of contaminants in marine and estuarine systems. Some recent efforts include the behavior of anti-foulants, use of geographic information systems (GIS) for modeling spatial distributions of environmental data and development of environmentally friendly analytical procedures. Emerging contaminants are a particular interest. The faculty collaborates with international researchers, federal and state agencies (e.g., EPA, NOAA, DOE, and VA Dept. of Environmental Quality VA Dept. of Health) and private industry. Recent student research has examined the binding of pesticides to natural organic matter and subsequent impact on bioavailability and toxicity; bioremediation of tributyltin-contaminated sediment in a created wetland; factors influencing the degradation rate of crop protectants in natural waters; the utility of supercritical fluid extraction for the determination of flame retardants in fish.

Environmental Microbiology

This program studies indicator or pathogenic microorganisms in waters used for recreation, aquaculture, and shellfish industries. Research includes development and validation of new methods for detection of microorganisms of human health significance in marine environments, and studies to understand processes that contribute to eutrophication and microbial contamination of receiving waters. A particular strength of this program is multidisciplinary research on microorganisms that are pathogenic to fish.

Toxicology

Effects of toxic chemicals in water and sediment are measured at the molecular to population levels. Endpoints include 1) uptake and elimination of pollutants by individual organisms, 2) vital processes (mortality, growth, reproduction), and 3) mechanisms of internal distribution, biotransformation, and clearance of hazardous chemicals. Molecular, cellular, and whole organism responses are being evaluated as a basis for predicting population effects at sublethal concentrations.

Diseases of Marine Animals

Research in this field 1) focuses on infectious and noninfectious diseases of fish and shellfish, 2) determines the mechanism(s) by which pathogens cause disease in the host organisms, 3) examines pathological consequences of exposures of estuarine animals to contaminants, 4) studies etiology and epidemiology of pathogens in estuarine and marine organisms, 5) investigates host defense mechanisms in order to develop diagnostics, therapeutics and vaccines for use in aquaculture, and 6) seeks to understand the impact of toxic materials on disease processes. The pathobiology group has developed an Aquatic Animal Disease Diagnostic Laboratory using modern histological, microbiological, immunological, and molecular techniques to study diseases in shellfish and fish. Additional studies focus on marine genomics and disease mechanisms, molecular phylogenetics, population genetics and the development of molecular diagnostics for pathogens.
Molecular Genetics

Studies focus on genomic analyses of marine and estuarine animals and pathogenic organisms. Environmental water quality studies involve molecular detection, identification and examination of the effects of environmental parameters on harmful algal bloom (HAB) organisms and human pathogens. Phylogenetic, population genetic, and genomic research targets shellfish, finfish, as well as parasites and aquatic pathogens.

Environmental Risk Assessment

Risk assessment tools are applied to evaluate the risk associated with exposure to hazardous chemicals, pathogens, bacterial agents, both individually and collectively in complex mixtures. The goal is to provide a conceptual framework that will improve environmental management by allowing resource agencies to focus their limited resources on those issues of greatest importance.
Research within the Department of Fisheries Science is focused on understanding the population dynamics and biology of fish, crab, and mollusc species of commercial, recreational and ecological importance. Also included within the research framework of the department is the Aquaculture Genetics and Breeding Technology Center. Collaborative research and teaching efforts are common among department faculty. In addition to furthering knowledge through peer-reviewed publications, members of the department advise local, regional and national resource management agencies and involve students directly in fisheries management. The department also maintains an internationally recognized collection of alcohol-preserved and skeletal specimens of fishes that are available for student research.

Preparatory Studies

Students interested in graduate study in Fisheries Science should have substantial undergraduate coursework in biology including: physiology, biochemistry, comparative morphology or developmental biology, genetics, ecology and related topics, and evolutionary biology. College physics, chemistry (through organic) and math through calculus are required. Courses in statistics, marine biology and fishery biology may be helpful but are not prerequisites.

Typical Course of Study

In addition to the core courses required of all SMS graduate students, Fisheries students are required to take MSCI 528 - Marine Fisheries Science as the advanced (3 credit) course in their core course curriculum. Fisheries students are required to take an additional quantitative course, chosen from the following menu: MSCI 625 - Multivariate Analysis and Time Series, MSCI 667 - Experimental and Quantitative Ecology, MSCI 670 - Stock Assessment Methods, or MSCI 669 - Linear and Generalized Linear Models in Ecology. Fisheries students are required to enroll in MSCI 515C - Fisheries Science Seminar each spring semester. Other courses offered by the Fisheries faculty include MSCI 649 - Modeling Biological and Ecological Systems, MSCI 658 - Larval Ecology, MSCI 664 - Marine Conservation Biology, MSCI 666 - Ichthyology, MSCI 668 - Malacology, MSCI 671 - Fisheries Population Dynamics, MSCI 673 - Marine Molecular Genetics, MSCI 674 - Marine Molecular Genetics Laboratory and MSCI 698 - Special Topics in Marine Science.

Areas of Research

Anadromous Fishes Program:
Research and monitoring of the abundance, reproductive ecology, life history and exploitation of highly migratory marine species such as striped bass, Atlantic sturgeon, river herrings and American shad that spawns in fresh water. Studies include monitoring commercial and recreational landings, monitoring stock status with fishery-independent surveys, developing novel approaches to stock assessment, conducting surveys of juvenile abundance, mark/recapture and telemetry methods for estimation of fishing rates and description of migratory behavior.

**Aquaculture Genetics and Breeding Technology Center**

Research includes development of brood stocks in shellfish species of interest to Virginia and the region, including selective breeding (especially for disease resistance), chromosome set manipulation, and evaluation of non-native species.

**Molluscan Ecology**

Studies focus on ecology and stock assessment of estuarine and continental shelf molluscs. Broad program interests include ecology and behavior of molluscan larvae, life history and population dynamics, restoration culture for commercial purposes, and molluscs as indicators of climate and environmental change.

**Invasive Species Biology**

Research focuses on history and pathways of invasions, the characteristics of invasive species ecosystem impacts, and mechanisms of control, national and international policy relating to introductions, and evaluation and implementation of intentional introductions for ecological and economic purposes.

**Commercial Fisheries Development**

Research is focused on gear selectivity and bycatch as well as management and regulatory strategies for seafood production, processing and utilization.

**Crustacean Ecology**

Investigations address the ecology, population dynamics, and conservation of the blue crab in Chesapeake Bay and spiny lobster in the Caribbean.

**Fisheries Ecosystem Modeling and Assessment Program**

Areas of interest in this program include monitoring of the abundance, predator-prey, and competitive interactions among fish populations within Chesapeake Bay. Primary objectives of the program are the development of multispecies stock assessments for the purpose of understanding the joint impact of harvesting and biological interactions on these populations. Information derived from these assessments is designed to yield advice for ecosystem-based approaches to fisheries management.

**Fisheries Genetics**

This program examines the application of molecular genetic techniques to address problems in fisheries science. Studies focus on analysis of stock structure, use of molecular characters to identify early life history stages of marine organisms, and the evaluation of taxonomic and biogeographic hypotheses with molecular genetic information.
Marine Conservation Biology

Areas of interest include the ecology and conservation of the blue crab, diamondback terrapin, sea turtles (loggerhead and Kemp’s Ridley), Caribbean spiny lobster, queen conch, eastern oyster, and other marine bivalves. Emphasis is placed on metapopulation and source-sink dynamics, marine reserves and dispersal corridors, habitat fragmentation, degradation and loss effects on marine invertebrates, recruitment processes, and predator-prey interactions.

Marine Finfish Dynamics

Investigations focus on the recruitment dynamics of finfish in coastal ecosystems based on data from long-term bottom-trawl and beach seine surveys in Chesapeake Bay. A primary goal of these studies is to calculate recruitment indices to gauge the strength of the current year class and permit informed management of coastal fisheries. Another goal is to integrate observations from the surveys with field and laboratory research to understand large-scale patterns in the distribution and habitat use of coastal fishes. Such research may include individual-based behaviors as evidenced by acoustic tagging studies or physiological responses to habitat change.

Marine Resource Policy and Fisheries Management

Research is performed to support determination of socially optimal rates of exploitation and optimum allocation of marine resources among competing user groups. Studies emphasize assessment and estimation of net social benefits to society and the economic impacts of proposed management and regulatory options. Additional research focuses on numerous international aspects of marine resource management, including, but not limited to, reducing the capture of sea turtles and other undesirable outputs, enhancing technical and economic efficiency of fishing gear, designing capacity reduction programs, and promoting ecosystem-based management.

Marine Vertebrate Ecology

Research areas of interest include the comparative morphology, reproduction, and population dynamics of sharks; long term changes in the distribution, migration, abundance, ecology and energetics of sea turtles; and investigations of the life history and community structure of finfish taxa.

Stock Assessment Methodology

This program involves the systematic evaluation of stock assessment procedures and the development of new mathematical models and statistical methods for studying populations and their responses to exploitation. Tagging, survey, and landings data are used to estimate population size, mortality rates, components of mortality, yield, spawning potential, and effects of changes in fishery regulations. Applications include invertebrates and vertebrates in temperate and tropical sport and commercial fisheries.

Systematics and Taxonomy

Taxonomically diverse studies focus on the taxonomy, morphology, phylogenetic systematics, zoogeography and evolutionary biology of various vertebrate and invertebrate groups. The program promotes a total evidence approach to phylogenetic research, including molecular techniques and morphological studies of larval, juvenile and adult forms.
College of William & Mary

2013 - 2014 Graduate Catalog

Department of Physical Sciences

www.vims.edu/research/departments/physical

The objectives of the Department of Physical Sciences are to generate, communicate and apply knowledge concerning the physical, chemical and geological processes that operate in the coastal ocean and estuaries. The physical oceanography group studies and models the properties and movement of water and dissolved and suspended material in estuarine, coastal and continental shelf environments. Geological oceanography includes the study of the processes of sediment erosion, transport and accumulation as well as the resulting stratigraphy. Marine chemistry emphasizes the study of marine biogeochemical processes, and environmental fate and transport of natural and anthropogenic substances. Interdisciplinary studies are strongly emphasized in the Department of Physical Sciences.

Preparatory Studies

In all aspects of the Department of Physical Sciences’ education and research programs, there is a heavy reliance on quantitative skills. Our incoming students are expected to have a strong background in one or more areas of physical sciences and mathematics. Undergraduate majors providing preparation for graduate study in Physical Sciences include physics, applied mathematics, engineering, chemistry and geology. Biological Sciences majors interested in pursuing graduate work in Physical Sciences are encouraged to include introductory physics and calculus through ordinary differential equations in their backgrounds.

Typical Course of Study

Students in the Department of Physical Sciences specialize in Chemical, Geological or Physical Oceanography by following one of the tracks described below. In addition to the core courses required of all SMS students and a required departmental course in the area of specialization, each student is required to enroll in MSCI 515D - Physical Sciences Seminar each fall and spring semester.

Graduate students in chemical oceanography/marine geochemistry may specialize in any of the various aspects of marine and environmental chemistry. Students are required to take MSCI 524 - Principles of Chemical Oceanography; MSCI 630 - Advanced Aquatic Chemistry is recommended. Specialized course work in other aspects of marine and environmental chemistry can be selected through recommendation of the student’s advisory committee.

Students interested in geological oceanography may pursue tracks emphasizing sedimentary environments and stratigraphy, sediment geochemistry, or physical transport/morphodynamic processes. Courses include marine sedimentation, coastal morphodynamics, sediment transport, multivariate and time-series analysis, and isotope
geochronology. Geological Oceanography students are required to take MSCI 522 - Principles of Geological Oceanography. In addition, depending on a student's particular emphasis, geological students may be required to take advanced courses in physical, chemical or biological oceanography.

Students majoring in physical oceanography are required to take MSCI 520 - Principles of Coastal and Ocean Dynamics. Additional advanced courses address estuarine hydrodynamics and water quality, provide an in-depth focus on estuarine physics and its influence on biogeochemical processes, boundary layer processes, various topics in coastal ocean dynamics, and the application of three-dimensional numerical modeling to estuarine and coastal issues.

Areas of Research

Chemical Oceanography/Marine Geochemistry

This program includes a diverse faculty with numerous cross-disciplinary interests. Work is conducted across riverine, estuarine, continental margin and open ocean environments on a variety of projects intended to help better understand the cycling of organic and inorganic species from both natural and anthropogenic sources. Individual faculty and students in this program collaborate actively not only with other programs in Physical Sciences, but also with the departments of Biological and Fisheries Science. Examples of current and on-going projects within the Chemical Oceanography/Geochemistry group include: cycling and diagenesis of dissolved and particulate organic matter in estuaries and open ocean settings; carbon and nitrogen transport and cycling in rivers, estuaries, and the coastal ocean, environmental exchanges and transport of contaminants and use of natural and anthropogenic substances as tracers of ecological processes; and the chemical composition and biological availability of dissolved organic nitrogen in diverse systems from the open ocean to wastewater treatment plants.

Geological Oceanography

Encompasses local and international research on a variety of disciplinary and interdisciplinary topics. Research sites span the full range of marine/nearshore environments from coastal plain and river floodplains, through estuaries and across the margin to the base of the continental rise. Although much of our effort addresses questions in Chesapeake Bay and surrounding areas, federal funding supports research in many other areas in the U.S. and around the world (including New Zealand, China, and Taiwan) that generates knowledge about geological phenomena in the coastal ocean. Some of the major focal areas include: sediment transport and boundary layer processes; sediment flux and fate; seabed dynamics; shoreline erosion/sand resource issues; and Quaternary stratigraphic development. Interdisciplinary research efforts involve faculty from the departments of Biological Sciences and Environmental and Aquatic Animal Health, as well as colleagues from other institutions worldwide.

Physical Oceanography

Focuses on water motion in estuaries and on the continental shelf along with the associated transport of buoyancy, suspended particles, nutrients and pollutants. Physical Oceanography at VIMS is extremely interdisciplinary, with faculty who straddle fluid physics, material transport and water quality, and who have ongoing collaborations with chemists and geologists within our department, biologists and resource managers elsewhere at VIMS, and with scientists from various disciplines throughout the country and around the world. We have recent and/or ongoing field projects in the Chesapeake Bay and its tributaries as well as on the shelves of the east and west coasts of the U.S., and we are applying three-dimensional numerical models to study circulation and associated dissolved and particulate transport in estuarine and shelf
environments. Cooperative research projects are underway with scientists from countries including Korea, The Netherlands, Taiwan, and the U.K. Some of the major focal areas of scientists in our group include: wind- and buoyancy driven circulation on the inner shelf; bottom boundary layer processes; the dynamics of estuarine fronts; three-dimensional modeling of estuarine sediment transport and water quality; the association of characteristic density- and tidally-driven estuarine circulation patterns with the fate and transport of pollutants; wind wave evolution in estuaries and on shelves; and the physics governing sediment transport on shelves, in estuaries, and in the surf zone.
These descriptions provide basic information about the courses. Actual course content and format are updated regularly and may also be modified to meet students' specific needs. MSCI 693 to MSCI 695 are cross-listed courses taught by staff of the College of William and Mary’s School of Law on the Williamsburg campus.

School of Marine Science

Courses

- **MSCI 501A - Fundamentals of Marine Science, Physical Oceanography**

  *Fall (2) Brubaker*

  This course provides an introduction to the various types and scales of motion in the ocean, the global heat budget, major water masses, and processes controlling distributions of temperature and salinity. Discussions on phenomena associated with water motion will include global circulation, wind-driven circulation in ocean basins, tides, coastal upwelling, storm surge, waves, turbulence, and circulation in estuaries. Underlying dynamics governing water motion will be presented, elucidating the role of the rotation of the earth. The El Nino/La Nina oscillation will be examined as a key example of large-scale ocean-atmosphere interactions.

- **MSCI 501B - Fundamentals of Marine Science, Chemical Oceanography**

  *Fall (2) Beck*

  This course presents an overview of the chemistry of estuaries and the ocean including chemical processes that occur in marine sediments and at the air/sea interface. Discussion topics will include the chemical properties of seawater, chemical equilibrium and kinetics, the seawater carbonate system and ocean acidification, the global and oceanic carbon and nitrogen cycles, ion speciation, trace metals, and nutrients, sediment diagenesis, and fundamentals of radioisotope and stable isotope biogeochemistry. Interdisciplinary applications are emphasized.

- **MSCI 501C - Fundamentals of Marine Geology**
This course provides an introduction to the major topics of marine geology without expecting the student to have a background in geology. The course addresses the age and internal structure of the earth, the processes of plate tectonics including the formation of oceanic crust, seamounts, hydrothermal vents, the characteristics and classification of sediments and the distribution of sediments in the deep sea. Also addressed are the interrelationships among and importance of paleoceanography, climate change, and sea-level change, and the processes and characteristics of various marine, estuarine, and coastal sedimentary environments. The course includes discussion of various types of field equipment and logistics and of some economic and societal implications.

MSCI 501D - Fundamentals of Marine Science, Biological Oceanography

This course examines the biology and ecology of marine organisms and how they interact with their environment. Topics include the organisms and their behavior, distribution, and underlying physiology; effects of biology on elemental and nutrient cycles and visa versa; and ecosystem structure and ecological interactions. An interdisciplinary approach will be taken, as biology both depends on and influences ocean chemistry, physics, geology, and climate. The course will emphasize open ocean, pelagic systems, but will include many examples from coastal and estuarine systems, as well as shallow and deep-sea benthic ecosystems.

MSCI 501E - Fundamentals of Environmental Chemistry, Toxicology and Pathobiology

This course emphasizes ongoing and emerging environmental concerns in the Chesapeake Bay and world ocean. Lectures will address basic concepts and mechanisms of contaminant chemistry and toxicology, infectious and noninfectious diseases in aquatic organisms. Case histories will be used to illustrate sources, fate and effects of anthropogenic chemical contaminants, and the important role of environmental change on disease in marine and estuarine ecosystems.

MSCI 501F - Fundamentals of Marine Fisheries Science

This lecture course is intended for SMS students outside of the Department of Fisheries Science and will introduce the principles and techniques of fishery science. Lecture topics will include the theory and impacts of fishing, description and status of international, North American and regional fisheries, fisheries oceanography, recruitment processes, single-species and ecosystem-based approaches to stock assessment, and fisheries management, and the goals and
problems of sustaining an open-access common pool resource.

- **MSCI 503 - Interdisciplinary Research in Estuarine and Coastal Systems**

  *Spring (2) Brush*

  This is an interdisciplinary, field-based laboratory course applying concepts from MSCI 501 to a semester-long study of the estuarine and coastal environments of the lower Chesapeake Bay and Virginia’s Eastern Shore. The course is designed to expose students to today’s typical interdisciplinary research process from project conception through presentation of results. Students will organize into crossdisciplinary groups around a particular study site and research topic, and develop and implement a scientifically sound, hypothesis-driven research plan through a series of group cruises and instrument deployments. Particular emphasis will be placed on spatial and temporal patterns of biotic and abiotic processes and their interactions, along with sample design, collection, analysis, and interpretation of data. Students will also be exposed to utilizing historical and ongoing databases as well as synthesizing data from each group member to create an interdisciplinary story. The course culminates with oral presentations and a group poster.

- **MSCI 504 - Fundamentals of Statistical Methods and Data Analysis**

  *Spring (4) Newman*

  In this course, students are introduced to the fundamental statistical methods commonly used for analysis of biological and ecological data. Topics include describing data, probability distributions, statistical inference, hypothesis testing, elementary experimental design, analysis of variance, and regression and correlation. The introductory aspects of categorical data analysis and multivariate techniques will also be covered. Course content will be integrated with a weekly laboratory session using the statistical computing language R.

- **MSCI 506 - Scientific Communication Skills**

  *Spring (2) Hilton*

  The important elements of oral and written presentation skills for communicating scientific research will be reviewed in this course. The course addresses topics such as the critical evaluation of literature, development of scientific questions and rationale for research, and formulation of conceptual models for developing high-quality scientific research projects. Oral and written presentation skills are emphasized through written exercises and class presentations, with peer review.

- **MSCI 515A - Biological Sciences Seminar**

  *Spring (1) Staff Graded Pass/Fail*

  The departmental seminar course offers a multidisciplinary review of significant areas of marine science. Guest speakers
will present a variety of views, and course participants will organize and present talks related to the seminar theme. Students may repeat seminar registration as required by their respective departments; however, only two (2) credits will be applicable to an SMS degree.

* MSCI 515B - EAAH Dept Seminar

* MSCI 515C - Fisheries Science Seminar

* MSCI 515D - Physical Sciences Seminar

* MSCI 520 - Principles of Coastal and Ocean Dynamics
MSCI 522 - Principles of Geological Oceanography

Fall, even years (3) Milliman

A brief review of the tectonic history of the oceans will be presented in this course, followed by detailed study of the ocean margins, including sea-level history and near shore geological processes in the coastal zone and continental shelf regions. The geological effects of bottom currents on ocean sediments will be examined along with ocean basin sediment history and approaches to pale oceanography.

MSCI 524 - Principles of Chemical Oceanography

Spring (3) Beck, Canuel Prerequisite(s): Instructor’s consent

This course covers in a comprehensive and integrated manner the important factors controlling the chemical composition of seawater. Basic principles of chemical thermodynamics will be applied to the seawater medium and will serve to introduce contemporary, global-scale chemical processes such as the role of the oceans in global climate change. Selected topics include distributions of the bio limiting elements; chemistry of marine sediments; trace metal chemistry; marine organic chemistry; and ocean-atmosphere interactions.

MSCI 526 - Principles of Marine Ecology

Spring, odd years (3) Smith, Staff

The course covers the fundamental processes underlying structure and functioning of marine ecosystems, both pelagic and benthic, and application of those principles to understanding responses of marine ecosystems to anthropogenic and natural global change. Lectures, readings and discussion will emphasize physical processes supporting primary production, planktonic and benthic dynamics, distribution and functional importance of marine biodiversity, biotic interactions structuring communities, and food web structure. The course concludes with a survey of the major marine ecosystem types. A central part of the course involves design, writing, reviewing, and panel discussion of student research proposals.

MSCI 527 - Coastal Botany

Fall (3) Perry

A botanical and ecological survey of vascular plant communities of the mid-Atlantic coastal plain is presented in this course. Discussion topics include the common and important terrestrial, emergent and aquatic vascular plant species of the coastal plain tidal marshes, swamps, beaches, dunes, maritime forests and submerged aquatic communities of the mid-Atlantic coastal regions as well as their strategies for survival in these coastal habitats. The course consists of field trips as well as both laboratory and lectures sessions.
• **MSCI 528 - Marine Fisheries Science**

*Spring (3) Fabrizio, Graves*

This course focuses on the principles and techniques of marine fisheries science, including the theory of fishing, age and growth, definition of stocks, catch statistics, description of world fisheries, and goals and problems in managing a common property resource. Students will participate in lectures, laboratory exercises, and field trips.

• **MSCI 529 - Fish Physiology**

*Spring, odd years (3) Brill*

This course is intended for students interested in incorporating physiological principles and techniques into projects addressing questions in ecology, fishery biology and environmental assessment. It will emphasize basic concepts to make physiological jargon and the published literature understandable.

• **MSCI 545 - Marine Sedimentation**

*Spring, even years (3) Staff*

This course provides an introduction to continental margin sedimentary environments with emphasis on physical, biological and chemical controls on the development of sedimentary strata over a range of spatial and temporal scales. Case studies from modern settings will be used to illustrate concepts of strata formation. Laboratory exercises include petrographic, textural and mineralogical analysis.

• **MSCI 548 - Technical and Continuing Education in Marine Science**

*Fall, Spring and Summer (1-3) Staff Prerequisite(s): Instructor’s consent*

This course provides graduate-level instruction to public school teachers and other professionals who require postgraduate certification or special training. Courses are offered on an occasional basis as demand warrants. Instructors or faculty team members identify a client group and formulate a course description that serves individual professional needs. An example of a course offered recently is experimental design in the marine science laboratory, a lecture and laboratory course for science teachers that addressed standards of learning in Virginia. Courses may include lecture and laboratory components, field trips and demonstrations.

• **MSCI 550 - Rivers: Processes and Problems**

*Spring, odd years (3) Canuel*
Rivers form the main link between land and the ocean, discharging more than 35 thousand km\(^3\) of water and more than 20 billion tons of suspended and dissolved solids annually to the global ocean. Three central themes are stressed: 1) How do rivers work: the hydrologic cycle and water budget, basin character, physical and chemical erosion; 2) Temporal and spatial variations, ranging from seasonal to millennial, with particular emphasis on catastrophic events; 3) Human interactions: land degradation, river management, future impact of climatic change and anthropogenic activities. Includes a one-week field trip.

• **MSCI 553 - Introduction to Benthic Boundary Layers and Sediment Transport**

*Fall, even years (3) Friedrichs, Harris*

This course addresses the physical and geological aspects of coastal and estuarine benthic boundary layers, their dynamic forcing and the associated suspension and transport of sediments. Principles of waves, tides and currents are introduced with emphasis on shallow-water processes. Boundary layer structure and shear stress on the seabed, wave boundary layers and turbulence are considered in relation to the coastal environment. Forces on sediment particles, initiation of sediment movement and principles of sediment transport are treated at an intermediate level.

• **MSCI 554 - Principles of Numerical Computing**

*Spring (3) Harris, Wang*

This course provides students in the marine sciences with the tools needed to pursue study and research using numerical methods. It will enable them to write programs to solve fairly complex problems, to explore and understand the current literature in which numerical methods are used. Topics include principles of floating-point computation, interpolation, linear and non-linear systems of equations, numerical integration, ordinary and partial differential equations, and optimization. Emphasis is placed on finite difference solutions to conservation of mass and momentum equations. The course consists of three lecture hours per week, assigned problems using MATLAB, and a term project in a topic chosen by the student.

• **MSCI 559 - Parasitology**

*Spring, odd years (3) Shields*

Recommended: Invertebrate Zoology or comparable course. This course covers the biology and ecology of protozoan, helminth and crustacean parasites. Focus is on parasites of medical and veterinary importance. Emphasis is placed on life cycles, pathology, control methods and ecological impacts of parasitic infections. Three lecture and three laboratory hours. Cross-listed with (Bio 404 and BIOL 504)
• MSCI 560 - Fundamentals of Ecotoxicology

*Spring* (3) *Newman*  
Prerequisite(s): Basic Ecology

This course is an introduction to ecotoxicology, the science of contaminants in the biosphere and their effects on constituents of the biosphere, including humans. The course provides a general survey of environmental toxicology and risk assessment from an ecological vantage. Cross-listed with BIOL 404

• MSCI 562 - Water Pollution

*Fall* (2) *Hale*

This course will introduce students to processes impacting aquatic environments. Emphasis will be on pollution by man-made chemicals and metals. Additional topics include consequences of excessive nutrients, habitat modification and introduction of exotic or elimination of native species.

• MSCI 563 - Environmental Chemistry

*Spring* (3) *Unger*

The fundamental physical, chemical and biological processes controlling the fate of major classes of aquatic contaminants are covered in this course. Topics such as photolysis, biodegradation, sorption and redox chemistry are examined to elucidate the mechanisms controlling chemical degradation and transport. Case studies are used to show how these basic research principals can be integrated and applied to solve real world environmental problems.

• MSCI 564 - Aquatic Toxicology

*Spring* (3) *Van Veld*

This course will present factors influencing the fate and behavior of major environmental toxicants in aquatic organisms and mechanisms involved in their uptake, distribution, biotransformation and clearance. Topics of discussion will include the effects of toxicants on aquatic organisms ranging from effects at the biochemical and cellular level, to effects on individuals, populations and communities. Current methods of laboratory and field toxicity testing will be addressed.

• MSCI 565 - Principles of Pathobiology

*Spring* (3) *Kaatari, Shields*
This course focuses on the molecular and cellular mechanisms of pathogenesis in important emerging diseases in the medical, veterinary, and aquacultural fields. Students will learn how current molecular and cellular techniques are being applied to the resolution of a variety of infectious and non-infectious diseases. Mammalian models provide a foundation for application to the diseases of fish and shellfish.

- **MSCI 566 - Diseases of Marine Organisms**

*Fall, odd years (4) Staff*

This course includes identification, life histories, pathology, and control of important infectious disease agents of fish and shellfish including viruses, bacteria, protists, helminths and arthropods. Also covered will be general principles of disease in the marine and estuarine environment. Three lecture and three laboratory hours.

- **MSCI 567 - Comparative Immunology**

*Fall, odd years (3) Kaatari Note: Some familiarity with biochemistry and genetics recommended.*

This lecture course focuses on the immunology of teleost and elasmobranch fish. Topics include the biochemistry of antibody function, the molecular and cellular basis of the immune response, the role of innate and adaptive immunity in disease resistance, aquacultural vaccine design, development, and application, immunopathology, immunodeficiencies, and immunotoxicology.

- **MSCI 573 - Environmental Microbiology**

*Fall, even years (3) Anderson*

This course examines the role of autotrophic and heterotrophic microorganisms in response to anthropogenic and natural perturbations of importance in aquatic environments. Specific topics may include responses to nutrient enrichment and changes in sea level, temperature, and light quality/quantity. The effect of global climate change on microbial biodiversity, factors leading to the development of harmful algal blooms, and the occurrence and transmission of water-borne pathogens will also be considered. Attention will be also be focused on the role of microorganisms in biodegradation and bioremediation in both surface and subsurface habitats. Methodologies for detecting microorganisms and measuring processes in a variety of environments will be addressed as well as regulatory approaches designed to address environmental microbiological concerns.

- **MSCI 575 - Aquatic Microbial Ecology**

*Fall, odd years (3) Anderson Note: Organic chemistry or biochemistry recommended.*

This course provides an introduction to the role that microorganisms play in the biogeochemical cycling and production
of dissolved and particulate inorganic and organic matter in freshwater and marine ecosystems. The approach will be ecological, relating environmental physiochemical properties to regulation of microbial processes, distributions, and biodiversity. Topics will include state of the art methods for detecting distributions, biomass, and activities of microorganisms in the natural environment, the energetics regulating microbial processes, microbial biochemical pathways, biodegradation, microbial interactions, and the role that microorganisms play in the food webs of various ecosystems. Although emphasis will be placed on marine systems, processes in lacustrine, riverine, and groundwater ecosystems will also be discussed. Readings will draw heavily on the primary literature.

- **MSCI 576 - Evolutionary Ecology**

*Fall, even years* (3) Duffy

This course presents a conceptual and empirical exploration of interactions between environment and evolution of organismal structure, function, and behavior in deep time through contemporary ecological time scales. Topics include natural selection and adaptation, sexual selection and mate choice, evolution of life histories, speciation, coevolution, human evolutionary ecology, and evolutionary responses to human-induced environmental change. Reading, discussions and writing projects draw from the primary literature, concentrating on examples involving marine organisms.

- **MSCI 579 - Wetlands Ecology**

*Fall* (4) Chambers, Perry Prerequisite(s): Instructor’s consent

Structural and functional attributes of tidal and non-tidal wetlands are examined in this course, with emphasis on analysis of wetland systems at the landscape and community level. The course provides and introduction and practical experience in common research techniques, including wetland classification, vegetation mapping, functional assessment models, and field sampling techniques. Individual research projects and/or a paper will be expected. The course includes lectures and field trips. Cross-listed with (BIOL 427, BIOL 627)

- **MSCI 580 - Asian Environmental Issues of the 21st Century**

*Spring* (3) Perry, Smith

This purpose of this course is to provide students with a working knowledge of past, current, and future environmental issues in East Asia in relation to societal, economic, and regulatory structures. Emphasis will be placed on large-scale environmental issues that impact ecological, social, and economic processes. Students will be expected to assimilate the course material into hypothetical development of future East Asian and global environmental policies. Grading will be based on a presentation, written mid-term prospectus, and final term paper on an individual environmental topic. Cross-listed with ENSP 440-02.
• **MSCI 583 - Molecular Genetic Data Analysis, Bioinformatics**

*Spring, odd years (3) Reece*

This is a lecture and largely computer-based laboratory course covering the principles and practice of analyzing and interpreting population genetic, phylogenetic and genetic mapping datasets. Molecular data sets including sequences and genotypic profiles will be generated on agarose gels or the automated sequencers/ gel scanners. Data will be exported and processed for analysis by the appropriate suite of computer software programs. Software to be utilized include DNA sequence analysis, genotyping, population genetic, sequence alignment, phylogenetic, and mapping programs. Phylogenetic programs will include those based on genetic distance, maximum parsimony, maximum likelihood and Bayesian analyses. Population genetics programs include those such as GenePop to perform standard population genetic statistical analyses, Arlequin for doing AMOVAs, and STRUCTURE for doing assignment testing.

• **MSCI 599 - Thesis**

*Fall, Spring and Summer (1-9) Major or Co-Major Advisor(s)*

This is the avenue for original research in biological, chemical, geological and physical oceanography, environmental science, marine fisheries science and marine resource management. The master’s project is chosen in consultation with the student’s major professor and the Associate Dean of Academic Studies.

• **MSCI 610 - Effects of Global Change on Modern Marine Systems**

*Fall (2-3) Canuel, Smith*

The course will explore the recent literature highlighting effects of climate and global change on various aspects of marine systems including (but not limited to) biogeochemical cycling, ecosystem structure and function, alterations in ocean chemistry, and physical processes such as polar and glacial ice melting, ocean circulation and sea level rise. The course is designed as a 2-credit course. Students will be evaluated primarily on the basis of the quality and organization of the class discussion they lead (including a short introductory background presentation), as well as participation in all other class discussions. In addition, a short (5 pages) critical writing assignment assessing the effectiveness of one or more recently published papers on impacts of global change in marine systems will be required. A 3-credit option may be made available to students who wish to undertake more detailed independent study of a particular topic in the form of additional readings and a research term paper.

• **MSCI 611 - Estuarine Hydrodynamics I**

*Spring, even years (3) Wang Prerequisite(s): MSCI 520*

This course examines classification of estuaries, time scales of motions, tidal dynamics in estuaries, non-tidal circulation, mechanism of arrested salt wedge, gravitational circulation, diffusion induced circulation and turbulence in stably
stratified flows.

- **MSCI 612 - Estuarine Hydrodynamics II**
  
  *Fall, even years (3) Wang Prerequisite(s): MSCI 611*
  
  The content of the course includes zero-, one- and two-dimensional descriptions of estuaries, salt intrusion, and pollutant flushing sediment transport through estuaries, field experience in estuaries and model laws for estuarine models.

- **MSCI 615 - Hydrodynamic Modeling of Estuarine and Coastal Waters**
  
  *Spring (3) Wang Prerequisite(s): MSCI 520 or Instructor’s consent*
  
  This course will survey numerical methods for the solution of partial differential equations describing the estuarine and coastal water motion and transport. Topics include stability, accuracy, consistency and convergence analysis of numerical scheme, formulation of primitive and scalar transport equations, and the pre- and post-processing for numerical computational models. The course will involve classroom lectures, seminar readings, and application of models for operational environmental prediction.

- **MSCI 617 - Estuarine Water Quality Models**
  
  *Fall, odd years (3) Staff Prerequisite(s): MSCI 611*
  
  This course examines the principles of mass balance, physical transport processes, diffusion and dispersion in estuarine environments. Water quality processes, representation of biochemical transformations, dissolved oxygen modeling and survey of available models are other topics of discussion.

- **MSCI 621 - Coastal Morphodynamic Processes**
  
  *Fall, odd years (3) Friedrichs*
  
  The emphasis of this course is on the mutual adjustments between coastal depositional and erosional morphologies and the hydrodynamic processes that cause sediment transport and transport gradients. Continental shelf, beach/shoreline, reef, deltaic, and estuarine processes will be examined. The course involves a mix of classroom lectures, seminar discussion and student presentation of readings, application of computer models, and analysis of field observations.

- **MSCI 623 - Isotope Geochronology**
Fall, odd years (3) Kuehl

The focus of the course is on the principles of radioisotope dating techniques with emphasis on those applicable to marine settings. Equations of radioisotope decay and in growth will be detailed along with the geochemical systematics of each technique.

• MSCI 624 - Ocean Waves: Theory, Measurement and Analysis

Fall, even years (3) Maa Prerequisite(s): Instructor’s consent

In this course, students are introduced to linear water wave theory and its applications. Course topics include mechanisms of wave generation (wind waves and tides), the governing equations, wave properties, wave transformation, special cases for tidal wave propagation (e.g., Kelvin waves), wave bottom boundary layer, nonlinear properties (i.e., radiation stress). Practical applications of numerical models for wind wave generation, wave transformation, the spectrum analysis for wave measurements, and harmonic analysis for tides will be introduced and demonstrated.

• MSCI 625 - Multivariate Analysis and Time Series

Spring, odd years (3) Forrest

This course will address the topics of regression and modeling, analysis of residuals; multivariate regression, eigenvector methods, principal component analysis and factor analysis. Fourier and stochastic models applied to geophysical and other time series data sets will be included.

• MSCI 626 - Advanced Quantitative Methods for Marine Scientists

Spring (3) Staff

Topics in this course include an introduction to matrices, multiple regression, sensitivity analysis, non-linear function-fitting techniques. Additional areas of focus include empirical eigen function methods with applications, complex notation as applied to the description of sinusoidal variations, and fourier transforms spectra and filtering.

• MSCI 627 - Marine Organic Geochemistry

Spring, even years (3) Canuel Prerequisite(s): Organic Chemistry

This course focuses on the characterization of organic carbon, nitrogen, phosphorus and sulfur in the marine environment. Modern methods of organic analysis that enhance our understanding of how organic materials cycle through the oceans will be discussed. Topics include the role of organic matter in the C, N, S and P cycles; chemical
composition of marine organic matter; biogeochemistry; diagenetic transformations of organic materials; organic matter decomposition and preservation; and petroleum geochemistry.

- **MSCI 627L - Marine Organic Geochemistry Lab**

  *Spring, even years (1) Canuel Prerequisite(s): Organic Chemistry*

  In this 1-credit lab module students will conduct an independent lab project that complements the lecture portion of MSCI 627 - Marine Organic Geochemistry.

- **MSCI 630 - Advanced Aquatic Chemistry**

  *Spring, even years (3) Beck*

  This course explores the basic principles of natural water chemistry, with particular focus on marine systems. Topics include chemical kinetics and thermodynamics, ions in aqueous solution, acids and bases, carbonate chemistry, oxidation and reduction reactions, sorption and mineral precipitation/dissolution, and photochemical processes, with reference to biogeochemical cycling in marine waters.

- **MSCI 638 - Fish Histology and Histo-pathology**

  *Spring, even years (4) Vogelbein*

  The course is a detailed examination of the normal microscopic structure and function of tissues and organs in fishes and the morphological and functional changes that occur in tissues during disease. Infectious and non-infectious diseases, including pathological changes elicited by chemical toxicants and environmental factors will be evaluated. Lab will consist of in-depth training in routine methods of paraffin histology and histochemistry. (Three lecture and three laboratory hours. Restricted to 6 students.)

- **MSCI 640 - Quantitative Ecotoxicology**

  *Spring (4) Newman*

  This course covers essential ecotoxicology principles and quantitative methods for the analysis of ecotoxicological data. Laboratory exercises will include method applications with PC-based software. Emphasis will be placed on the scientific and statistical soundness of techniques.

- **MSCI 641 - Identifying, Quantifying and Communicating Environmental Risk**
Methods for identifying harmful agents, quantifying any associated risk, and communicating that risk will be covered in this course, with an emphasis on practical, quantitative techniques. The basic NRC framework and methods for environmental risk assessment are presented for comparative, retrospective, and predictive assessments. The course explores logical and quantitative methods for identifying hazards in the presence of high uncertainty, working in teams to effectively assess risk, and communicating risk to stakeholders. Bayesian inference and estimation will be emphasized with additional theory and quantitative methods drawn from cognitive psychology, epidemiology, innovation diffusion theory and group decision theory.

**MSCI 642 - Practical Environmental Statistics**

*Spring, even years (3) Newman Prerequisite(s): Instructor’s consent*

This course explores practical statistics for sampling, measuring, and making sound inferences from environmental data. The course is intentionally a broad survey of methods applicable to physical, chemical and biological studies, drawing examples from each of these areas. It will blend lectures, student-directed exploration of concepts, and computer-based examples. Exercises will be done with the SAS statistical software package and other more specialized shareware. Eight general themes will be addressed: quantitative measurement, basic measurement quality control/outlier detection, variance structure, applications of regression analysis, sample size estimation, establishing field sampling or laboratory experiment designs, quantifying belief, and Monte Carlo/Bootstrap methods.

**MSCI 648 - An Introduction to Mathematical Biology**

*Fall (3) Staff*

In this course, students are given an introduction to developing, simulating, and analyzing models to answer biological questions. Mathematical topics may include matrix models, non-linear difference and differential equations, and stochastic models. Biological topics may include ecology, epidemiology, evolution, molecular biology, and physiology. Cross-listed with MATH 345.

**MSCI 649 - Modeling Biological and Ecological Systems**

*Spring, even years (3) Brush, Latour*

This course provides an introduction to quantitative modeling in marine science, with an emphasis on the process of constructing mechanistic models of biological, ecological, and biogeochemical processes. General topics include determination of modeling objectives and assumptions, model formulation and parameter estimation, determination of model accuracy through calibration, validation, and sensitivity analysis, and use of models to address scientific questions through simulation analysis. Types of models covered include compartmental ecosystem models, age/size-structured population models, and food web network analysis, with consideration of deterministic, stochastic, and
spatially explicit approaches. Lectures are supplemented with readings from the primary literature and students receive hands-on experience building and using models through in-class lab exercises.

**MSCI 650 - Estuarine Ecology**

*Fall, odd years (3) Brush, Schaffner Prerequisite(s): [MSCI 503]*

This survey course will expose students to the key aspects of estuarine ecosystems. Topics covered will include both the abiotic settings of estuaries, including geological, physical, and chemical characteristics, and the biotic components and their interactions, including nutrient dynamics, biogeochemistry, microbial processes, primary production, ecosystem metabolism, secondary production, and food web dynamics. The course will end with overviews of current and emerging issues in estuarine science, including eutrophication and climate change. Bi-weekly class meetings will consist of interactive discussions led by the instructors based on readings from key estuarine ecology texts and the primary literature, supplemented with student-led discussions of primary literature and “virtual field trips” to a variety of well-studied estuaries. Students will work on a semester-long project to develop course materials into an estuary-focused wiki on the William & Mary wiki site. Each student will lead the development of materials for a select number of topics, and be responsible for contributing materials and editing content for all topics. Students will also lead field trips to local systems to illustrate class topics and synthesize existing datasets to conduct a comparative analysis of estuarine ecosystems.

**MSCI 652 - Marine Plankton Ecology**

*Fall, odd years (3) Smith, Steinberg. Tang Prerequisite(s): [MSCI 524] or [MSCI 526] or consent of the instructors*

This course will cover contemporary topics in cellular, population, community and ecosystem level dynamics of plankton systems, including nutrients and organic matter, viruses, bacteria, phytoplankton, protists and zooplankton. Course format will be primarily discussions, student presentations, literature evaluation, and writing exercises.

**MSCI 653 - Marine Benthos**

*As required (3) Schaffner Prerequisite(s): Permission of instructor*

Ecology of marine and estuarine benthos is the focus of this course. Emphasis is placed on determining how ecological processes affect function and structure of benthic communities. Consideration is given to interactions among autotrophs, microheterotrophs and larger metazoans and interactions between these organisms and their physical-chemical environments.

**MSCI 655 - Stable Isotope Biogeochemistry**

*Fall, even years (2) Anderson, Bronk*
This course is a survey of applications that use stable isotopes of carbon, nitrogen, oxygen, and sulfur to define elemental flow through experimental and natural systems. Topics include stable isotope theory; tracer versus natural abundance techniques; quantifying processes of elemental uptake, regeneration, and respiration; and defining trophic relationships using multiple tracers.

• MSCI 656 - Seagrass Ecosystems

*Spring, odd years (1-2) Moore, Orth*

This lecture-seminar course covers topics related to seagrass ecosystems. Emphasis will be on the structure and function of seagrass communities, submerged angiosperm physiology, primary and secondary production, and integration of seagrass communities to the marine environment. Students will be assigned projects to complete. Course credit will depend upon difficulty of the assignments and must be arranged prior to registration.

• MSCI 658 - Larval Ecology

*Spring, odd years (3) Mann*

The course is based on a broad discussion of the following topics within the marine invertebrates: the concept of the larval form, spawning and developmental patterns, limitations on the fertilization process and embryology, the Reynolds number environment at typical larval size, feeding and nutrition in the larval size range, larval size and parental investment, larval dispersal and supply in maintaining community structure, roles of physical versus biological processes in inducing metamorphosis, early post-metamorphic survival, and larval ecology in extreme environments.

• MSCI 659 - Phytoplankton Ecology

*Fall, odd years (3) Smith Prerequisite(s): MSCI 501 (may be taken concurrently with Instructor’s consent.)*

This course will examine the factors, which influence the growth, losses and distributions of phytoplankton in marine systems. Topics include photosynthesis, pigmentation, productivity, biochemical fractionation, grazing, and nutrient uptake and interactions. A laboratory will introduce students to modern methods used in the study of phytoplankton such as isotopic measurements, HPLC analysis of pigments, fluorometry, and image analysis. Samples from the local estuaries will be used in the laboratories to illustrate the principles discussed in class.

• MSCI 660 - Zooplankton Ecology

*Spring (4) Steinberg*

This course will examine the ecology, natural history, basic cell or body design features, physiology, and life histories of
all the major groups of zooplankton. Food webs, specialized habitats, physical-biological coupling, and behavior are also discussed. Laboratories will concentrate on the groups or topics that are being discussed that week in lecture. The laboratories will be devoted to studying freshly collected (live local net tows), laboratory cultured, and occasionally museum specimens of the various taxa, and to introducing students to methods of study of zooplankton ecology (microscopy, biomass measurement, grazing experiments). There will also be field trips.

• **MSCI 664 - Marine Conservation Biology**

*Fall, even years (3) Lipcius*

This course focuses on the application of multidisciplinary scientific principles to the protection, enhancement and restoration of marine biodiversity (genetic, species, community and ecosystem). Ecological emphasis will be on the conservation of biodiversity threatened by habitat degradation and loss, overexploitation, invasive species, and global change. Social, legal, economic and political influences will be discussed. Also included will be practical application through case studies and training in population viability analysis. (Lecture and laboratory)

• **MSCI 666 - Ichthyology**

*Spring (4) Hilton*

Fishes form a large, diverse group of vertebrates that are culturally, economically, and scientifically important, and they offer much for the study of evolutionary biology. This course provides an intensive overview of all aspects of the evolution of fishes, with an emphasis on their morphology and systematic relationships; other topics include the biogeography, functional anatomy, and physiology of fishes. The lectures cover the diversity and evolutionary history of fossil and living fishes, and discuss the evidence for different hypotheses of their phylogenetic relationships. The mandatory lab section emphasizes dissection-based anatomical study and the global diversity of fishes, and includes some field sampling.

• **MSCI 667 - Experimental and Quantitative Ecology**

*Fall, odd years (3) Lipcius*

The course addresses the design, conduct, analysis and interpretation of field and laboratory experiments in ecology. The lectures, discussion and supervised field and laboratory projects are designed to illustrate the diversity of experimental and quantitative approaches in use by ecologists. Topics include the scientific method, experimental design, the use and abuse of statistical techniques, modeling and manuscript preparation, with emphasis on topical ecological issues such as those dealing with predatory-prey interactions, recruitment phenomena, environmental science (e.g., dose-response assays) and metapopulation dynamics. (Lecture and laboratory)
• **MSCI 668 - Malacology**

*Spring, even years (3) Mann*

The course begins with a discussion of the ancestral mollusc form and the fossil record, proceeds through examination of the structure and function of the molluscan shell. It concludes with reviews of molluscan taxonomy, reproductive biology, physiology, ecology, and feeding mechanisms.

• **MSCI 669 - Linear and Generalized Linear Models in Ecology**

*Fall (3) Fabrizio Prerequisite(s): MSCI 528 or consent of instructor, and ability to program in SAS or R*

This course emphasizes the design and analysis of field data (e.g., retrospective studies, experimental manipulations in the field), rather than design and analysis of controlled laboratory experiments. Students will gain a working knowledge of linear and generalized linear models useful in the analysis of ecological data. Both theoretical development and application of statistical methods will be presented.

• **MSCI 670 - Stock Assessment Methods**

*Spring (3) Hoenig*

This course will survey methods for assessing the status of exploited populations given various combinations of data types. Emphasis will be placed on deriving statistical methods using maximum likelihood and other analytical techniques, and on computing estimates for a variety of datasets. Population models will be used to integrate information on stock status in order to determine appropriate management measures. Additional topics include analysis of uncertainty in the assessment of results and implications of uncertainty for management, analysis of research surveys, commercial catch, fishing effort, and tagging data.

• **MSCI 671 - Fisheries Population Dynamics**

*Fall (3) Latour*

This course provides an introduction to the fundamental processes governing fish population dynamics, with an emphasis on the theory and practical application of models used to characterize the factors influencing population abundance. Topics include the theory of mortality, growth, stock-recruitment (compensation, depensation), surplus production, VPA, statistical catch-at-age, tagging, and the introductory aspects of multispecies and fisheries ecosystem models. Lectures are supplemented with readings from the primary literature and students receive hands-on experience with nonlinear parameter estimation through computer laboratory sessions using the statistical software package R.
• MSCI 672 - Ecology of Fishes

Fall (3) Staff

This course will provide students with an understanding of fish ecology as related to vertebrate evolution and diversity, systematics, feeding and reproductive biology, early life history ecology, and fish community structure and biotic interactions.

• MSCI 673 - Marine Molecular Genetics

Spring, even years (3) Graves, McDowell, Reece Prerequisite(s): Undergraduate Genetics or permission of instructor

Students will study the evolutionary processes responsible for the intra- and interspecific genetic relationships of marine organisms, with an emphasis on the application of current molecular methodologies. 3 hrs. Lecture.

• MSCI 674 - Marine Molecular Genetics Laboratory

Spring, even years (2) Graves, McDowell, Reece Prerequisite(s): Undergraduate Genetics or permission of instructor

Students will elucidate intra- and interspecific genetic relationships by employing a variety of molecular techniques for the analysis of proteins and nucleic acids (5 hrs. of laboratory).

• MSCI 684 - Coastal and Marine Policy Implementation: The Art & Science of Governance

Spring (3) Hartley

This course will examine real world examples of implementation of local, state, federal, and regional coastal and marine policies through case studies, guest speakers, and literature from public administration, policy, and political science.

• MSCI 685 - Practical Application of Marine Resource Management Techniques

As required (1-3) Hershner, Staff

In this course, students participate in real world management activities under the guidance of involved faculty members and in association and consultation with members of various levels of government. Topics may include issue identification and resolution, committee involvement at local, regional, state, interstate, and federal levels of government, development of management plans, drafting position papers, developing draft legislation and exposure to policy making mechanisms. Requirements will vary depending on the issue(s) addressed. Students will be evaluated on
participation, written work (memoranda, position papers, etc.) and knowledge gained as evidenced by interaction with staff and by other means. Credit, which must be arranged in advance of registration, will depend upon difficulty of the assignment. The course may be repeated provided the instructor determines there is no duplication of material.

• **MSCI 687 - Environmental Policy**

Fall (3) Hicks

This course will explore policy making for environmental problems and will focus on issues that are local, national, and international. The course will primarily focus on national environmental policy, and the procedures by which policy is implemented at both local and regional levels. Issues explored will include water pollution policy and land-use in the Chesapeake Bay, U.S. Marine Mammal Policy, and U.S. water and air quality regulations. For each of these issues, U.S. laws and regulations as well as federal agencies’ approaches for quantitatively assessing the benefits and costs of environmental policy will be examined. Cross-listed with **PUBP 622**

• **MSCI 689 - Public Policy for Science & Professions**

Fall (3) Gilmour, Rossiter

This course examines a component of the larger process of law and rule making, for students to understand the identification and definition of a policy problem, the generation of options or choices for addressing the problem, the selection of a particular policy option through political institutions (e.g., the executive or legislative), the development of a plan for implementation, and the implementation and evaluation of the outputs and outcomes of policy. The course is specifically designed for an interdisciplinary class of graduate students from the Schools of Business, Education, Law, and Marine Science, and non-master’s in Public Policy from the School of Arts and Sciences. Students will come to understand public policy as an academic discipline and as a systematic method of thinking about the design, development and assessment of public sector policies and programs. By the end of the course students will develop the skills required to define and analyze policy issues and problems, articulate relevant decision-making criteria for policy analysis, evaluate alternative policy solutions, assess their political and economic implications. The course is taught in an engaging seminar format using provocative materials with practical application.

• **MSCI 693 - Environmental Law**

As required (3) Law School Staff Prerequisite(s): Consent of instructor

Students will study the nature and causes of environmental pollution and of the main legal techniques for its control. The course will consider the common law, the environmental impact assessment process (e.g., the National Environmental Policy Act), and the basic regulatory framework for air, water and solid and hazardous waste control (the Federal Clean Air Act, Clean Water Act and Resource Conservation and Recovery Act), with attention given under each statute to the basic regulatory framework and the main policy issues presented by it. Other topics will include the role of the federal courts in reviewing agency action, new developments in federal administrative law (including current
efforts at administrative law reform), natural resource management and allocation issues involved in the division of scarce resources (e.g., air and water) among competing users, toxic and hazardous substance regulation, and enforcement of environmental laws. Cross-listed with LAW 424.

- **MSCI 694 - Land Use Control**

  *As required (3) Law School Staff, Butler Prerequisite(s): Consent of instructor*

  This course presents an analysis of the legal principles governing the use and management of land and the fundamental values underlying those principles. While focusing primarily on government regulation of land use, the course also will examine common law rules, which affect the way that land is used. Topics that might be considered include judicial control of land use, zoning and the rights of landowners, zoning and the rights of neighbors, land use planning, public regulation of land development, aesthetic regulation, and the preservation of natural and historic resources. Cross-listed with LAW 425.

- **MSCI 695 - Administrative Law**

  *As required (3) Law School Staff Prerequisite(s): Consent of instructor*

  This course is a study of practice in the administrative process, examining the procedures for administrative adjudication and rule making; legislative and judicial control of administrative action; and public access to governmental processes and information. Cross-listed with LAW 453.

- **MSCI 697 - Problems in Marine Science**

  *Fall, Spring and Summer (1-4) Staff*

  This is the avenue through which supervised projects may be selected to suit the needs of the graduate student, including those wishing to perform an internship as part of the Curricular Practical Training Program. Projects are chosen in consultation with the student’s major professor and the instructor. Acceptable research outlines and project reports are required, and the amount of credit depends upon difficulty of course. Examples of projects offered in recent years include management issues in shellfish sanitation; groundwater nutrient processes; bacterioplankton methods and techniques; pesticide analysis in environmental samples; marine molecular population genetics; and law and policy relating to the introduction of non-indigenous plants. Subjects will be announced prior to registration and after approval by the Educational Policy Committee (EPC).

- **MSCI 698 - Special Topics in Marine Science**

  *Fall, Spring and Summer (1-3) Staff*
This is the avenue through which subjects not covered in other formal courses are offered. These courses are offered on an occasional basis as demand warrants. Examples of courses offered in recent years include: continental margin sedimentation; biomineralization in marine organisms; molecular markers and evolution; oligochaete biology; quantitative methods of image analysis; and organism-sediment interactions in coastal systems. Subjects will be announced prior to registration and after approval by the EPC.

- **MSCI 699 - Dissertation**

*Fall, Spring and Summer (1-9) Major or Co-Major Advisor(s)*

This is the avenue for original research in biological, chemical, geological and physical oceanography, environmental science, marine fisheries science and marine resource management. The doctoral project is chosen in consultation with the student’s major professor and the Associate Dean of Academic Studies.
Marine Science

- **MSCI 150W - Freshman Seminar**
  
  *Fall (4) Staff*

  Freshman Seminar in Marine Science. A course designed to introduce freshmen to topics in the study of marine science. Course number 150W satisfies the freshman writing requirement. Topics will vary.

- **MSCI 330 - Introduction to Marine Science**
  
  *Spring (3) Patterson, Bronk, Tang Prerequisite(s): BIOL 220 (formerly 204), CHEM 103, GEOL 101, GEOL 110, GEOL 150W, PHYS 101, or PHYS 107 (for MSCI 330); GEOL 101 or GEOL 110 or GEOL 150W (for GEOL 330), OR BIOL 220 (for BIOL 230)*

  This course provides an overview of physical, chemical, biological, and geological processes operating in the world ocean. The interdisciplinary nature of marine science is emphasized, providing an integrated view of factors that control ocean history, circulation, chemistry, and biological productivity. (Cross listed with GEOL 330 and BIOL 230).

- **MSCI 331 - Field Studies in Coastal Marine Environments**
  
  *Summer (3) Luckenbach and TBD Prerequisite(s): MSCI 330. Course will be offered at VIMS Eastern Shore Laboratory*

  This course focuses on fundamental processes in marine science through the examination of the near shore, barrier island, coastal lagoon, and salt marsh environments along Virginia’s outer coast. Through a series of field trips, lectures, laboratory exercises and independent projects, students will examine the fauna and flora of the region and learn how natural and anthropogenic factors shape these coastal ecosystems. Housing is provided in dormitories at the VIMS Eastern Shore Laboratory. Meals are included. Lab fee required.

- **MSCI 332 - Coastal Marine Environments North Wales (School of Marine Science)**
Summer (3) Staff

This is a field-based course to be conducted in north Wales, U.K. in association with the School of Ocean Sciences, Bangor University. The course will emphasize field-based instruction and student-led data collection in various coastal marine environments in northern Wales and the western Irish Sea. Lectures, laboratory exercises, and field trips will cover topics on the ecology of rocky shores and extensive mudflats, biological and physical processes affecting species distribution and ecology in high energy macrotidal coastal environments, paleoceanography, and biodiversity. The course will involve a 13-day trip to Bangor, Wales where the students will be housed in dormitories on the Bangor University campus and have access to laboratories and research facilities at the School of Ocean Sciences. Costs: Tuition + fees (lodging & transportation in Wales) + airfare

- **MSCI 332 - Coastal Marine Habitats in North Wales**
  
  *Summer (3) Luckenbach, Perry Prerequisite(s): Permission of instructor*

  This is an intensive 16-day, field-based course conducted in north Wales, U.K. in association with the School of Ocean Sciences, Bangor University. The course emphasizes field-based instruction and student-led data collection in coastal marine environments in northern Wales, the Isle of Anglesey, and the eastern Irish Sea. Topics include the ecology of rocky shores, biological and physical processes affecting species distribution and ecology in high energy macrotidal coastal environments, paleoceanography, and geological history of the region. Lab fee required.

- **MSCI 391 - Marine Science Mash-up**

  *Fall and Spring (1) Staff*

  Marine scientists conduct research in areas such as biological oceanography, earth science, fisheries science, and the physical sciences (e.g., physical and chemical oceanography). Scientists in this discipline are also engaged in collaborative research that crosses over these fields of study and connects to fields outside the natural sciences such as the social sciences, government and law, economics, and communication. This 1-credit course introduces students to the interdisciplinary field of marine science through presentations by faculty conducting marine science research at the Virginia Institute of Marine Science, College of William & Mary, and neighboring institutions. By meeting these people and completing course assignments students will learn about how marine scientists study these topics, the availability of opportunities for student research, and the potential benefits of pursuing Marine Sciences as a career.

- **MSCI 398 - Marine Science Seminar**

  *Fall and Spring (1) Staff*

  Seminar in interdisciplinary topics in Marine Science. The course topic, prerequisites, and instructors will vary from year to year. Commonly the prerequisite for MSCI 398 is **MSCI 330, BIOL 230** (formerly 330), or **GEOL 330**. This course may be repeated for credit for different topics. Seminars can be repeated for credit if the topic is different. Depending on the topic, a specific section may be crosslisted with **GEOL 407 (Special Topics in Geology)** and/or...
• **ENSP 249** (Environmental Challenges: Topics)

• **MSCI 398** - Marine Science Seminar (School of Marine Science)

  *Fall and Spring (1) Staff*

  Seminar in interdisciplinary topics in Marine Science. The course topic, prerequisites, and instructors will vary from year to year. Note: This course may be repeated for credit for different topics. Depending on the topic, a specific section may be cross-listed with GEOL 407 and/or ENSP 249.

• **MSCI 401A** - Fundamentals of Marine Science, Physical Oceanography

  *Fall (2) Brubaker Prerequisite(s): MSCI 330 or BIOL 230 or GEOL 330, and MATH 111 or permission of instructor*

  This course provides an introduction to the various types and scales of motion in the ocean, the global heat budget, major water masses, and processes controlling distributions of temperature and salinity. Discussions on phenomena associated with water motion will include global circulation, wind-driven circulation in ocean basins, tides, coastal upwelling, storm surge, waves, turbulence, and circulation in estuaries. Underlying dynamics governing water motion will be presented, elucidating the role of the rotation of the earth. The El Nino/La Nina oscillation will be examined as a key example of large-scale ocean-atmosphere interactions. MSCI 401A requires co-registration with the relevant MSCI 401R.

• **MSCI 401B** - Fundamentals of Marine Science, Chemical Oceanography

  *Fall (2) Beck Prerequisite(s): MSCI 330 or BIOL 230 or GEOL 330, and CHEM 103 or permission of instructor*

  This course presents an overview of the chemistry of estuaries and the ocean including chemical processes that occur in marine sediments and at the air/sea interface. Discussion topics will include the chemical properties of seawater, chemical equilibrium and kinetics, the seawater carbonate system and ocean acidification, the global and oceanic carbon and nitrogen cycles, ion speciation, trace metals, and nutrients, sediment diagenesis, and fundamentals of radioisotope and stable isotope biogeochemistry. Interdisciplinary applications are emphasized. MSCI 401B requires co-registration with the relevant MSCI 401R.

• **MSCI 401C** - Fundamentals of Marine Geology

  *Fall (2) Kuehl Prerequisite(s): MSCI 330 or BIOL 230 or GEOL 330*

  This course provides an introduction to the major topics of marine geology without expecting the student to have a background in geology. The course addresses the age and internal structure of the earth, the processes of plate tectonics including the formation of oceanic crust, seamounts, hydrothermal vents, the characteristics and classification of sediments and the distribution of sediments in the deep sea. Also addressed is the interrelationships...
among and importance of paleoceanography, climate change, and sea-level change, and the processes and characteristics of various marine, estuarine, and coastal sedimentary environments. The course includes discussion of various types of field equipment and logistics and of some economic and societal implications. MSCI 401C requires co-registration with the relevant MSCI 401R.

- **MSCI 401D - Fundamentals of Marine Science, Biological Oceanography**

  *Fall (2) Steinberg, Tang Prerequisite(s): MSCI 330 or BIOL 230 or GEOL 330, and BIOL 220 or permission of instructor*

  This course examines the biology and ecology of marine organisms and how they interact with their environment. Topics include the organisms and their behavior, distribution, and underlying physiology; effects of biology on elemental and nutrient cycles and visa versa; and ecosystem structure and ecological interactions. An interdisciplinary approach will be taken, as biology both depends on and influences ocean chemistry, physics, geology, and climate. The course will emphasize open ocean, pelagic systems, but will include many examples from coastal and estuarine systems, as well as shallow and deep-sea benthic systems. MSCI 401D requires co-registration with the relevant MSCI 401R.

- **MSCI 401E - Fundamentals of Environmental Chemistry, Toxicology, and Pathobiology**

  *Fall (2) Van Veld, Vogelbein Prerequisite(s): MSCI 330 or BIOL 230 or GEOL 330, and BIOL 220 and BIOL 225, and CHEM 103*

  This course emphasizes ongoing and emerging environmental concerns in the Chesapeake Bay and world ocean. Lectures will address basic concepts and mechanism of contaminant chemistry and toxicology, infectious and noninfectious diseases in aquatic organisms. Case histories will be used to illustrate sources, fate and effects of anthropogenic chemical contaminants, and the important role of environmental change on disease in marine and estuarine ecosystems. MSCI 401E requires co-registration with the relevant MSCI 401R.

- **MSCI 401F - Fundamentals of Marine Fisheries Science**

  *Spring (2) Fabrizio, Graves Prerequisite(s): MSCI 330 or BIOL 230 or GEOL 330, and BIOL 220 and BIOL 225*

  **MSCI 401F is only offered at VIMS.** This lecture course will introduce the principles and techniques of fishery science. Lecture topics will include the theory and impacts of fishing, description and status of international, North American and regional fisheries, fisheries oceanography, recruitment processes, single-species and ecosystem-based approaches to stock assessment, and fisheries management, and the goals and problems of sustaining an open-access common pool resource. MSCI 401F requires co-registration with the relevant MSCI 401R.

- **MSCI 401R - Fundamentals of Marine Science Recitation**
MSCI 401R can be repeated once, and the title will change depending on whether the recitation section is biological or physical. The Biological topic reinforces and augments lecture material presented in MSCI 401D, E and F through discussion, problem sets, and review in advance of tests and quizzes. It is required for all students enrolled in MSCI 401 D, E or F. The Physical topic reinforces and augments lecture material presented in MSCI 401A, B and C through discussion, problem sets, and review in advance of tests and quizzes. It is required for all students enrolled in MSCI 401 A, B or C. MSCI 401R may be taken twice to fulfill the Fundamentals of Marine Sciences requirement, once with each topic.

MSCI 460 - Oceans and Climate (School of Marine Science)

Spring (2) Tang Prerequisite(s): MSCI 330

This course will examine how physical, geological, chemical and biological processes in the oceans together affect the planet’s climate in different time and spatial scales. Abrupt climate change caused by recent human activities will also be discussed.

MSCI 460 - Oceans and Climate.

Fall (2) Tang Prerequisite(s): MSCI 330, BIOL 230 (formerly 330), or GEOL 330.

This course will examine how physical, geological, chemical and biological processes in the oceans together affect the planet’s climate in different time and spatial scales. Abrupt climate change caused by recent human activities will also be discussed.

MSCI 490 - Research in Marine Science

Fall, Spring, or Summer (1-3) Staff

This course is designed to permit students (particularly marine science minors) to engage in independent research. Students will work closely with a faculty member as an advisor. Each student will be expected to conduct research and prepare a research paper appropriate for the number of credits. This course may be repeated for credit.

MSCI 497 - Problems in Marine Science

Fall, Spring, or Summer (1-4) Staff

This is the avenue through which supervised projects are selected to suit the need of the upper level undergraduate student. Projects are chosen in consultation with the student’s supervising professor and the instructor. Credit hours
• MSCI 497 - Problems in Marine Science (School of Marine Science)

*Fall, Spring and Summer (1-4) Staff*

Supervised projects selected to suit the need of the upper level undergraduate student. Projects are chosen in consultation with the student’s supervising professor and the instructor. Credit hours depend upon the difficulty of the project and must be arranged with the instructor in advance of registration.

• MSCI 498 - Special Topics in Marine Science

*Fall, Spring, or Summer (1-3) Staff*

This is the avenue through which subjects not covered in other formal courses are offered. These courses are offered on an occasional basis as demand warrants. Seminars can be repeated for credit if the topic is different.

• MSCI 498 - Special Topics in Marine Science (School of Marine Science)

*Fall, Spring and Summer (1-3) Staff*

This is the avenue through which subjects not covered in other formal courses are offered. These courses are offered on an occasional basis as demand warrants. Subjects will be announced prior to registration. Hours to be arranged.

• MSCI 501A - Fundamentals of Marine Science, Physical Oceanography

*Fall (2) Brubaker Prerequisite(s): MSCI 330 and MATH 111 or permission of instructor.*

This course provides an introduction to the various types and scales of motion in the ocean, the global heat budget, major water masses, and processes controlling distributions of temperature and salinity. Discussions on phenomena associated with water motion will include global circulation, wind-driven circulation in ocean basins, tides, coastal upwelling, storm surge, waves, turbulence, and circulation in estuaries. Underlying dynamics governing water motion will be presented, elucidating the role of the rotation of the earth. The El Nino/La Nina oscillation will be examined as a key example of large-scale ocean-atmosphere interactions.

• MSCI 501B - Fundamentals of Marine Science, Chemical Oceanography

*Fall (2) Beck Prerequisite(s): MSCI 330 and CHEM 103 or permission of instructor.*

This course presents an overview of the chemistry of estuaries and the ocean including chemical processes that occur in marine sediments and at the air/sea interface. Discussion topics will include the chemical properties of seawater,
chemical equilibrium and kinetics, the seawater carbonate system and ocean acidification, the global and oceanic carbon and nitrogen cycles, ion speciation, trace metals, and nutrients, sediment diagenesis, and fundamentals of radioisotope and stable isotope biogeochemistry. Interdisciplinary applications are emphasized.

- **MSCI 501C - Fundamentals of Marine Geology**

  *Fall (2) Kuehl Prerequisite(s): MSCI 330.*

  This course provides an introduction to the major topics of marine geology without expecting the student to have a background in geology. The course addresses the age and internal structure of the earth, the processes of plate tectonics including the formation of oceanic crust, seamounts, hydrothermal vents, the characteristics and classification of sediments and the distribution of sediments in the deep sea. Also addressed is the interrelationships among and importance of paleoceanography, climate change, and sea-level change, and the processes and characteristics of various marine, estuarine, and coastal sedimentary environments. The course includes discussion of various types of field equipment and logistics and of some economic and societal implications. Note: GEOL 306 Marine Geology can be used as a substitute for MSCI 501C.

- **MSCI 501D - Fundamentals of Marine Science, Biological Oceanography**

  *Fall (2) Steinberg, Tang Prerequisite(s): MSCI 330 and BIOL 220 or permission of instructor.*

  This course examines the biology and ecology of marine organisms and how they interact with their environment. Topics include the organisms and their behavior, distribution, and underlying physiology; effects of biology on elemental and nutrient cycles and visa versa; and ecosystem structure and ecological interactions. An interdisciplinary approach will be taken, as biology both depends on and influences ocean chemistry, physics, geology, and climate. The course will emphasize open ocean, pelagic systems, but will include many examples from coastal and estuarine systems, as well as shallow and deep-sea benthic systems.

- **MSCI 501E - Fundamentals of Environmental Chemistry, Toxicology and Pathobiology**

  *Fall (2) Van Veld, Vogelbein Prerequisite(s): MSCI 330; BIOL 220 and BIOL 225; CHEM 103.*

  This course emphasizes ongoing and emerging environmental concerns in the Chesapeake Bay and world ocean. Lectures will address basic concepts and mechanism of contaminant chemistry and toxicology, infectious and noninfectious diseases in aquatic organisms. Case histories will be used to illustrate sources, fate and effects of anthropogenic chemical contaminants, and the important role of environmental change on disease in marine and estuarine ecosystems.

- **MSCI 501F - Fundamentals of Marine Fisheries Science**
Spring (2) Fabrizio, Graves Prerequisite(s): MSCI 330; BIOL 220 and BIOL 225.

Other Requirements: MSCI 501F is only offered at VIMS This lecture course will introduce the principles and techniques of fishery science. Lecture topics will include the theory and impacts of fishing, description and status of international, North American and regional fisheries, fisheries oceanography, recruitment processes, single-species and ecosystem-based approaches to stock assessment, and fisheries management, and the goals and problems of sustaining an open-access common pool resource.
School of Marine Science students participate in graduate studies at an active, year round research facility with approximately 450 scientists, support technicians and staff. The 35-acre main campus of the Virginia Institute of Marine Science is located in Gloucester Point at the mouth of the York River, a major tributary and natural passageway to the Chesapeake Bay and Atlantic Ocean.

The Graduate Student Association (GSA)

The Graduate Student Association ([http://wmpeople.wm.edu/site/page/marsci](http://wmpeople.wm.edu/site/page/marsci)) is a voluntary organization open to all graduate students in the School of Marine Science. The purpose of the GSA is to advance the academic and social interests of its members. Students will find information on the GSA website about funding opportunities and housing availability. Officers are elected each spring for the following academic year.

Cultural Life at VIMS and William and Mary

Many activities on the College's campuses and in the local communities enrich the lives and career development of students enrolled in SMS. Students have the opportunity to interact with top national and international marine scientists during an annual seminar series. Luncheons with the speaker and social gatherings also allow students to interact with these scientists in less formal settings. After Hours Lectures feature experts from VIMS and main campus who shed light on the natural history of Chesapeake Bay and the current issues it faces. Marine Science Day, which takes place in May is biggest public event at VIMS. Many members of the VIMS community, including faculty, staff, and students get involved – it’s a great way for scientists to engage with the public and discuss current the implications of current research for the local community and the globe. The GSA also offers many social opportunities to students and the VIMS campus. Parties during the fall and spring are open to all members of the VIMS community and their families. The annual GSA Community Yard Sale is a great way to buy and sell household items and to mingle with locals.

Gloucester Point and Yorktown's Riverwalk Landing are the areas closest to the VIMS campus. They boast popular beaches that attract local citizens. Gloucester Point and other areas along the York River are great locations for water sports including kayaking, sailing, and windsurfing. VIMS staff and students are in charge of a William & Mary’s Sail and Paddle Club. The club has kayaks, windsurfers, and sailboats that are available to its members. Lessons and weekend trips are
offered many times a year.

Farmer’s markets and local produce and seafood stands on both sides of the York River offer local foods and are a great way to network with local community members. Local venues display art and hold concerts featuring local and national artists. Live music is regularly accessible at the Crab Deck in Gloucester Point and at Yorktown’s Riverwalk Landing.

Gloucester and Yorktown hold many celebrations of local and national pride. In Gloucester, the Daffodil Festival in spring is a large celebration of Gloucester’s history of flower cultivation. Seafood festivals in Gloucester, Poquoson, and Urbanna celebrate traditional lifestyles centered around the Chesapeake Bay. Yorktown holds wonderful fireworks displays and the VIMS campus at Gloucester Point is a prime location for viewing.

Many cities in Virginia are easily accessible from Gloucester, including Richmond, Williamsburg, Norfolk, and Virginia Beach. These cities each provide an array of businesses and cultural and entertainment events throughout the year. Washington, D.C. is a three hour drive and is also accessible by train from Williamsburg. As part of the William & Mary community, School of Marine Science students have access to all of the amenities and events offered at William & Mary. Students have access to Swem Library, the Rec Center, theater performances, art exhibits, concerts, sporting events and lectures. All SMS students also have a William & Mary email address, through which important information about student requirements and upcoming events are disseminated. Look for student happenings emails to find out about upcoming events. With a William & Mary ID card, SMS students also have free access to the buildings at Colonial Williamsburg.

### Housing

There is no student housing on the VIMS campus, and most students live in Gloucester Point or in surrounding communities. Rental housing is somewhat limited in the Gloucester Point area, but apartments in nearby Gloucester, Mathews, Yorktown, and Newport News are more plentiful if one is willing to commute a short distance. One bedroom apartments generally range from $500 to $1000, while multiple bedroom apartments will generally cost about $300 to $500 per occupant. These figures do not include utilities or amenities. Students often elect to share housing in order to keep costs to a minimum. A limited number of apartments for graduate students are available on the Williamsburg campus. Located next to the Marshall-Wythe School of Law, the Graduate Housing Complex is within walking distance of the College’s main campus and historic Colonial Williamsburg.

Information and application forms can be obtained from the Office of Residence Hall Life located on the main campus (757) 221-4134, or email living@wm.edu.

### Recreational Sports

The Recreational Sports Department at the College of William and Mary provides a variety of recreational opportunities to all students, faculty and staff through intramural, sports clubs, informal recreation, fitness/wellness and outdoor programs. Facilities include the Student Recreation Center, Adair Gymnasium, William and Mary Hall and various outdoor facilities. Facilities are open seven days per week during most of the year with a modified schedule during the break periods. Facility schedules and procedures for checking out equipment are available at the Student Recreation Center. See the Recreational Sports website at [http://www.wm.edu/rec](http://www.wm.edu/rec) for building hours, intramural schedule, sports club listings, and fitness/wellness services.

The Recreation Center offers 40 fitness classes throughout the year for students, faculty, and staff at the College. Sold at very low rates are Semester and Year Passes. Classes include Body Pump, Cardio Dance, Pilates, Yoga, Spinning, Step and more! Also held at the Rec Center, Personal Training and Massage Services Center. Check for prices on the website.
Intramural play held for each of over 25 sports/activities during the year. Informal or open recreation, generally considered “free play,” is offered in swimming, racquetball, squash, basketball, volleyball, weightlifting and cardio machines. The Sport Club program consists of 46 clubs, each self-governing and self-supporting and dictated simply by participants’ interest in the activity. Clubs includes: Badminton, Ballroom Dance, Baseball, Men’s Basketball, Women’s Basketball, Brazilian Jiu-Jitsu, Croquet, Cycling, Equestrian, Fencing, Field Hockey, Golf, Gymnastics, Ice Hockey, Judo, Kendo, Men’s Lacrosse, Women’s Lacrosse, Martial Arts, Outdoor Club, Racquetball, Rock Climbing, Rowing, Men’s Rugby, Women’s Rugby, Running, Sail and Paddle (VIMS), Sailing (Racing), Scuba, Shotokan Karate, Men’s Soccer, Women’s Soccer, Softball, Swimming, Synchronized Swimming, Table Tennis, Tae Kwon Do, Tennis, Triathlon, Men’s Ultimate Frisbee, Women’s Ultimate Frisbee, Men’s Volleyball, Women’s Volleyball, Water Polo, Wrestling and Yoga.

The use of W&M’s Recreational Sports facilities is included in the payment of fulltime tuition. Graduate students who pay for fewer than 9 credit hours per semester may use the facilities by paying an annual activities fee. For information on the annual fee, any activity program or service offered by Recreational Sports, please call (757) 221-3310.

Parking

All motor vehicles, including motorcycles and motorbikes, parked on VIMS property must be registered with Parking Services. Registration includes the purchase of a College of William and Mary or VIMS-only parking decal or temporary pass, which must be displayed on or in the vehicle. Illegally parked or unregistered vehicles are subject to citation. The VIMS-only decal is valid only at the William & Mary Hall lot when visiting the main campus in Williamsburg. Students with unresolved citations will not be allowed to register a vehicle on campus until the debt is resolved. Outstanding debt to Parking Services may result in an administrative hold in Banner, which will limit registration for classes or to receive degrees. At the end of the semester outstanding debt will be forwarded to the Bursar’s office and will be posted to student accounts. A full description of campus motor vehicle regulations is contained in a brochure available from Parking Services or online at www.wm.edu/parking. You may also contact Parking Services at telephone (757) 221-4764 or email parked@wm.edu.
College of William & Mary

2013 - 2014 Graduate Catalog

The College: Services

» About
» Academic & General Policies
» Student Financial Information and Policies
» Services

- Dean of Students Office
- Disability Services
- Senior Citizens
- Student Health Center
- Counseling Center
- University Libraries
- Information Technology

Dean of Students Office

Marjorie S. Thomas, Dean of Students
Campus Center, Room 109, 221-2510
Web site: http://www.wm.edu/deanofstudents/

The Office of the Dean of Students assists all students, graduate and undergraduate, from their initial orientation to the College through successful completion of their academic and personal goals. The Dean of Students is an advocate for student needs and acts as liaison between students and academic departments. Staff members provide learning assistance counseling and workshops for students who are interested in boosting their time management and study skills. Disability Services for permanent or temporary disabilities are coordinated within this office (see Disability Services section). In addition, members of the staff work with students who are experiencing unexpected or difficult circumstances that may result in a need for a medical leave or mid-semester withdrawal.

The Dean’s office is responsible for managing all violations of the Code of Student Conduct and for training and advising the graduate and undergraduate Honor Councils. Staff members are available to discuss the community’s standards, the systems by which they are enforced, or concerns related to the conduct of students or student groups. Any member of the community may submit reports about student conduct to this office. The Office of the Dean of Students publishes the Student Handbook, which includes statements of rights and responsibilities for all students. Information about other services available to students also is included.

Disability Services

Lisa Colligan, Director of Disability Services and Assistant Dean of Students
Campus Center 109, (757) 221-2510
Web Site: http://www.wm.edu/offices/deanofstudents/services/disabilityservices/index.php

Disability Services strives to create a comprehensively accessible living and learning environment to ensure that students
with disabilities are viewed on the basis of ability by considering reasonable accommodation on an individual and flexible basis in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. The decision to request accommodation is voluntary and a matter of individual choice. Students seeking accommodation are strongly encouraged to contact Disability Services and submit all supporting documentation early to allow adequate time for planning.

Documentation of Disability

Documentation serves two primary purposes. First, it establishes that the individual has a disability, and therefore is protected from discrimination. Second, documentation must describe the current functional impact of the disability so that potential accommodations can be identified.

All documentation of disability should consist of an evaluation by an appropriate professional that is not older than three years from the date of the first accommodation request. Included must be a clear statement of the diagnosis, the basis for the diagnosis, and the current impact of the disability as it relates to the accommodation request. As appropriate to the disability, the documentation should also include the following elements:

- A diagnostic statement identifying the disability, date of the most current diagnostic evaluation, and the date of the original diagnosis.
- A description of the diagnostic tests, methods, and/or criteria used including specific test results and standardized test scores, as well as the examiner’s narrative interpretation.
- A description of the current functional impact of the disability. This may be in the form of an examiner’s narrative, and/or an interview, but must have a rational relationship to diagnostic assessments. For learning disabilities, current documentation is defined using adult norms.
- A statement indicating treatments, medications, or assistive devices/services currently prescribed or in use, with a description of the mediating effects and potential side effects from such treatments.
- A description of the expected progression or stability of the impact of the disability over time, particularly the next five years.
- A history of previous accommodations and their impact.
- The credentials of the diagnosing professional(s), if not clear from the letterhead or other forms. Please note that diagnosing professionals cannot be family members or others with a close personal relationship with the individual being evaluated.

Documentation of cognitive impairment such as Specific Learning Disability, Attention Deficit Disorder, or physical, medical, and psychological disorders affecting learning must include a comprehensive report of psycho-educational or neuropsychological evaluation meeting specified documentation criteria. (Please see http://www.wm.edu/offices/deanofstudents/services/disabilityservices/index.php for a list of criteria.) IEP or 504 plans will not be considered sufficient documentation unless also accompanied by a current and complete comprehensive report.

Documentation prepared for specific non-educational venues such as the Social Security Administration or the Department of Veteran’s Affairs may not meet these criteria. Records from school divisions concerning students exiting from special education services under the Individuals with Disabilities Education Act (IDEA) will be given due consideration in determining the presence of a qualifying disability and making accommodation decisions. All documentation of disability is considered confidential and will not be released without a student’s prior written consent.

Beyond the more objective determination of a disability and its impact provided by external documentation, the College recognizes that input from the individual with a disability is also a rich and important source of information on the impact
of disability and on the effectiveness of accommodations. Accommodation decisions are made on a case by case basis, considering the impact of a particular student’s disability within the specific context of a college-level academic environment.

**Senior Citizens**

Senior citizens of Virginia who wish to take advantage of fee waiver privileges for attending courses in the School of Education are invited to contact the University Registrar for full details.

**Student Health Center**

Dr. Virginia Wells, Director  
Appointment Line 221-2998; Front Desk 221-4386  
E-mail: sthlth@wm.edu  
Web site: [http://www.wm.edu/health](http://www.wm.edu/health)

The Student Health Center provides high-quality, primary medical care for students becoming ill or experiencing minor emergencies while away from home. The Health Center delivers a wide variety of services, many of which are covered by the Student Health Fee included in the Tuition and General Fee. All matters between a student and the Health Center staff are confidential and, except in the case of life-threatening situations, medical emergencies, severe emotional or psychological distress, or when required by law, will not be released without the student’s written consent.

Virginia State law requires all full-time students enrolling for the first time in a four year public institution to provide a health history and an official immunization record. Previously enrolled students re-entering as full-time students after an absence from campus of greater than 10 years, must also revalidate their immunization record. This information MUST be submitted on William and Mary’s Health Evaluation Form; faxes or photocopies will not be accepted.

Medical services are provided for all full-time students and for those graduate students certified by the Dean of their school to be doing the ‘equivalent of full-time work’. In order to be eligible for medical care both groups of students must have paid the Student Health Fee for the current semester and have met the Health Evaluation Form requirements including submission of an official immunization record.

Students choosing to seek care at an off campus site are responsible for charges incurred. Likewise, if a Health Center provider deems it medically necessary to refer a student to an off campus specialist, this also becomes the student’s financial responsibility. Students experiencing severe emotional or psychological distress will be evaluated by the College’s medical/emotional emergency response team and appropriate measures instituted. Anyone having knowledge of such circumstances should immediately contact the Dean of Students @221-2510, or the Student Health Center @221-4386.

**Student Health Insurance:** The College of William & Mary requires all full-time undergraduate, graduate and all F-1 & J-1 international students to have adequate health insurance coverage throughout the school year. Students who already have health insurance must submit a waiver request by the posted deadline each academic year. The waiver must be approved to avoid being enrolled in and billed for the Student Health Insurance Plan. Visit [www.wm.edu/health/insurance](http://www.wm.edu/health/insurance) for more information about the insurance requirement or the College-endorsed insurance plan. If you have any questions please email the Student Insurance Coordinator or call (757) 221-2978.

The Student Health Center is located on Gooch Drive, south of Zable Stadium. Hours of operation are Monday, Tuesday,
Thursday, and Friday 8:00 a.m. to 5:00 p.m.; Wednesday 10:00 a.m. to 5:00 p.m. when school is in session. During the summer and intersessions the hours of operation are Monday, Tuesday, Thursday and Friday 7:45 a.m. to 4:00 p.m. and Wednesday 10:00 a.m. to 4:00 p.m. Appointments with physicians and nurse practitioners may be scheduled by calling 221-2998.

**Counseling Center**

Dr. Warrenetta C. Mann, Director  
Blow Memorial Hall, Suite 240; 221-3620  
Web site: [http://www.wm.edu/counselingcenter/](http://www.wm.edu/counselingcenter/)

The Counseling Center offers a range of brief psychological and counseling services for William and Mary students in order to address psychological issues, personal concerns, interpersonal issues, and crisis intervention. Staff members are available to discuss any important personal concerns a student may be facing and work with that student to provide resources to address those concerns.

The staff of the Counseling Center consists of a diverse group of mental health professionals with expertise in the issues that most frequently face student populations. A sport psychologist is available for students interested in learning how to enhance their athletic or academic performance. Psychiatric consultation is available through referral to the Student Health Center. All staff are trained and experienced in dealing with the problems of university students. Students are initially seen for an initial assessment. Follow up services are determined according to the needs of each individual student. Individual, couples, family, or group sessions offered at the counseling center are provided at no additional cost to the student. If appropriate, a student may be referred to other sources of help after an initial evaluation.

Counseling is confidential. Therapy is most effective when a student can be direct and honest with a counselor without fear that personal information will be divulged. Information about a student is not released without that student’s written permission, except in accordance with the laws and ethics governing our profession. Notations of counseling are not a part of a student’s College educational record.

Appointments may be made by calling the Counseling Center at 221-3620, or by coming to the office in person. Office hours are 8 a.m.-noon and 1 p.m.-5 p.m., Monday through Friday. Emergency services during the fall and spring semesters are also available after hours and on weekends by calling the Campus Police at 221-4596 and asking to speak with the Counseling Center ‘on-call’ counselor.

**University Libraries**

**Swem Library**

[www.swem.wm.edu](http://www.swem.wm.edu)  
Carrie Cooper, Dean of University Libraries  
(757) 221-4636

The Earl Gregg Swem Library actively participates in the teaching and research missions of the College of William and Mary by providing services, collections, staff, and facilities that enrich and inform the educational experience, and promote a lifelong commitment to learning.

The library fulfills this mission by helping students, faculty, staff, and visitors find information and learn research skills;
selecting and acquiring the best resources for the College’s curricular and research needs; and organizing, preserving, and providing access to these resources efficiently and effectively.

Hours for the library, various departments, and branch libraries are posted at https://swem.wm.edu/about/hours. Because these hours may vary, especially during interim periods and holidays, please check the posting or call (757) 221-4636 to confirm hours before you visit.

Swem Library includes networked and wireless connections throughout the building. There are more than one hundred computers, including laptops, in the library. Numerous group study rooms are available for collaborative use.

### Collections and Reference Services

Contact (757) 221-3067 or [www.swem.wm.edu/services/reference/](http://www.swem.wm.edu/services/reference/)

### Government Information Services

Specialized indexes for microform collections of government titles are available in the department. Contact the Government Information Department at (757) 221-3065.

### Circulation Services

Please visit the library’s home page [www.swem.wm.edu](http://www.swem.wm.edu) and click on ‘Your Records’. Contact the Circulation Department at (757) 221-3072.

### Reserve Readings

Reserves Department at (757) 221-3072.

### Interlibrary Loans

Interlibrary Loan Department at (757) 221-3089.

### Media Center

Contact the Center at [http://swem.wm.edu/services/media/](http://swem.wm.edu/services/media/) or (757) 221-1378 or sms/text 757-561-0791.

### Special Collections Research Center

Special Collections at [http://swem.wm.edu/scrc/index.cfm](http://swem.wm.edu/scrc/index.cfm).

### Swem Departmental Libraries

For more information about Swem’s departmental libraries, please visit [http://swem.wm.edu/libraries](http://swem.wm.edu/libraries).

- Chemistry Library, Integrated Science Center Room 1022, (757) 221-3119, contains approximately 12,000 volumes and journals.
- Geology Library, contains 17,000 volumes, journals and over 21,000 maps, but all materials have been transferred to
Swem Library or the off-site stacks and materials are available via Swem Library’s online catalog, [http://swem.wm.edu/](http://swem.wm.edu/).

- Music Library, 250 Ewell Hall, (757) 221-1074, contains more than 18,000 sound recordings, 10,000 pieces of printed music, and video recordings of musical performances and musical instruction.

- Physics Library, 151 Small Hall, contains over 30,000 volumes and journals. Anyone with card access to the building can use the library 24/7. Other William and Mary libraries include the Business/Professional Resource Center (757) 221-2916, [http://business.wm.edu/prc/](http://business.wm.edu/prc/); Education/Learning Resource Center (757) 221-2311; Law (757) 221-3255, [http://law.wm.edu/library/home/index.php](http://law.wm.edu/library/home/index.php); and Marine Science (804) 684-7116, [www.vims.edu/library/](http://www.vims.edu/library/).

- The Law Library, the oldest in America, is home to the historic Thomas Jefferson Collection, as well as primary and secondary source materials covering the entire breadth of Anglo-American law. (757) 221-3255.

- The Mason School of Business Library, located on the second floor of the stunning Alan B. Miller Hall, offers the latest online tools, journals and videos for studying real-world business practices. (757) 221-2916.

- The William J. Hargis, Jr. Library at VIMS holds the ever-expanding collection of marine science reports, studies, theses and scholarly papers produced by VIMS staff and students. (804) 684-7116.

- The Education Library, re-located to its new home in the cutting-edge School of Education building in 2010. (757) 221-2311.

**Information Technology**

[www.wm.edu/it/](http://www.wm.edu/it/)

(757) 221-4357 (HELP)

The College of William and Mary’s Information Technology department is devoted to assisting students and providing invaluable resources through one-on-one consultations, the Technology Support Center, and our extensive web site. With these points of interaction, we hope to help faculty, staff, and students become proficient users of campus technology. IT maintains a wide range of computing support for students, from answering questions about personal computers, to PAC Labs. We offer guidance and training in the areas of software setup and use, network connection and navigation, and general computer operation.

**Public Access Computing (PAC) Labs**

[http://www.wm.edu/offices/it/services/computerlabs/locations/index.php](http://www.wm.edu/offices/it/services/computerlabs/locations/index.php)

PAC Labs are provided across campus to efficiently attend to the needs of the College’s students, staff, and faculty.

**Academic Software**

[www.wm.edu/offices/it/a-z/software/index.php](http://www.wm.edu/offices/it/a-z/software/index.php)

The Software Repository has a collection of free and licensed software for the W&M community.