Dear Biology Major,

A special “welcome,” if this is your first year at RI College. I hope that you will find your experience as a biology major rewarding and productive. By virtue of the subject, science majors need to be serious about their studies; but engage yourself in activities where you can make new friends who share common interests with you. The Biology Club is a great example and a positive alternative to “Thirsty Thursdays” at RI College. The club meets on Wednesdays during the free period in the biology lounge. Check their chalkboard in the lounge for meeting dates.

The biology club is a great opportunity to meet the faculty of the department. Learn about their research interests. There are always opportunities for students to do research under the guidance of a faculty advisor. Talk to sophomore, junior and senior students who are involved in research projects. You will probably learn from other students that research is challenging and exciting because it brings what you learn in the classroom to the forefront of knowledge where you can also be a contributor.

I am very new at being the chairperson of the biology department (I started in September). I am going through what you might call, “on the job training” as I learn to deal with 10 or 20 things at the same time! So if you see someone who looks dazed with a vacuous stare wandering the hall and he is wearing a bow tie, then it’s probably me. Please introduce yourself to me so the next time I see you I can hopefully greet you by name. If you need me, I am in the biology office usually chained to my desk. Thankfully, Mrs. Rogers, the department secretary, tries to keep me on a short leash.

Have a great semester!

Lloyd Matsumoto
Professor and Chair of the Department
Biology Course Information

To help you with your planning, here is the list of biology “electives” (upper-level courses not offered every semester) that are tentatively scheduled for the upcoming year.

**Spring 2014**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
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<tbody>
<tr>
<td>BIOL 300</td>
<td>Developmental Biology of Animals ^1</td>
<td>Dr. Meedel</td>
</tr>
<tr>
<td>BIOL 354</td>
<td>Plant Growth and Development ^1</td>
<td>Dr. Roberts</td>
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<tr>
<td>BIOL/CHEM 421</td>
<td>Biochemistry of Energy Metabolism</td>
<td>Dr. Almeida</td>
</tr>
<tr>
<td>BIOL 440</td>
<td>Evolution</td>
<td>Dr. de Gouvenain</td>
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<tr>
<td>BIOL 450/550</td>
<td>Topics: Ecotoxicology</td>
<td>Dr. Merson</td>
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**Fall 2014**

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<tr>
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<tbody>
<tr>
<td>BIOL 353</td>
<td>The Plant Kingdom ^1</td>
<td>Dr. de Gouvenain</td>
</tr>
<tr>
<td>BIOL/CHEM 420</td>
<td>Biochemistry of Proteins and Nucleic Acids</td>
<td>Dr. Avisser</td>
</tr>
<tr>
<td>BIOL 450</td>
<td>Topics: Experimental Mechanisms of Human Disease</td>
<td>Dr. Spinette and Dr. Stilwell</td>
</tr>
<tr>
<td>BIOL 535</td>
<td>Advanced Physiology I</td>
<td>Dr. Hall</td>
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^1 Organismal elective for Biology BS.

Also of note:

**Always check prerequisites!** Most BIOL numbered 200 or above require Biology 111 and Biology 112 (with a grade of C or better) as prerequisites. Some classes (like BIOL 300 and courses in biochemistry) require additional prerequisites.

500-level courses are open to graduate students, and advanced undergraduate students (senior status) with permission from the instructor and the Dean’s office.

If you are using a biochemistry course toward a minor in Chemistry, it is advised that you register as CHEM. If you are using it as a Biology elective, it is advised that you register as BIOL.

Both BIOL 241 (Biology Colloquium 0.5 credits) and BIOL 460 (Senior Seminar, 3 credits) are offered every Fall and Spring semester. Consider taking one session of BIOL 241 concurrently with BIOL 460; attendance at some seminars is a requirement for Senior Seminar anyway.

Contact a faculty member if you are interested in doing a research project (BIOL 49X). Proposals are due November 15 for the Spring semester.

On the cover: Biology MA candidate Ronnie Smith does research in the lab of Dr. de Gouvenain.
BIOL 300 - Developmental Biology of Animals
A descriptive and experimental approach is applied to animal ontogeny, with consideration of cell fate determination, differentiation, morphogenesis, and pattern formation. Lecture and laboratory. 4 semester hours. Prerequisites: required - BIOL 111/112, BIOL 221 (Genetics) and completion of or concurrent enrollment in BIOL 320 (Cell and Molecular Biology). Offered by Dr. Thomas Meedel (tmeedel@ric.edu).

BIOL 354 - Plant Growth and Development
This course surveys a variety of topics in plant physiology, including plant cell structure, photosynthesis, genetic controls on morphogenesis and the anatomical structures associated with these processes. Lecture and laboratory. 4 semester hours. Prerequisites: required - BIOL 111 and 112. Offered by Dr. Eric Roberts (eroberts@ric.edu).

BIOL 440 - Evolution
Dobzhansky's famous assertion that nothing in biology makes sense except in the light of evolution will become evident as we explore milestones in the evolution and extinction of life on Earth, including that of our own ancestors, and examine topics such as natural selection, genetic drift, speciation, evo-devo, biogeography, and the evolution of life histories. Lecture (with some guest speakers) and group discussions of historical and current papers, plus individual literature research and term paper. 3 credits. Prerequisite: BIOL 221 – Genetics. Offered by Dr. Roland de Gouvenain.

BIOL 450/550 - Ecotoxicology
Ecotoxicology is the study of how toxins enter and move through the environment to affect the health of wildlife and humans. This discipline blends ecology and biology with toxicology (the science of poisons), and adds a pinch of other disciplines (hydrology, geology, chemistry, etc.) to describe, assess, and predict the impacts of both naturally occurring and anthropogenic chemical toxicants on the biosphere. Students will investigate the greatest threats to living organisms and evaluate the research and policy behind our current understanding and prognosis for the future. This hybrid course combines face-to-face meetings (W 4-5:50) with online classes (1 hour per week) involving tutorials and the use of databases to examine how environmental conditions and contaminant chemistry interact with organisms’ distribution, trophic level, life history, and physiology to impact individuals, populations, and ecosystems. The course is recommended for upper level undergraduates (BIOL450-01 20612) and graduate students (BIOL550-01 20614). 3 credits. Offered by Dr. Rebeka Merson (rmerson@ric.edu).
At the 2012 Biology Club Holiday Party, Biology Students Sabrina Elgar and Sara Moore were awarded the Mary Keefe scholarship for juniors to encourage their continued excellence in biology. (These two are the new Biology Club co-presidents!)

At the 2013 Cap and Gown convocation, C.J. Pickett was honored with the W. Christina Carlson Award for achievements and research potential, and Kyle Inman was awarded the Theodore Lemeska Award for achievements in biology. These graduates are pictured here at their senior seminar presentations.

This past summer, Sabrina Elgar and Sarah Bilida, students in Dr. Britt’s lab, won the blue ribbon at the 5th Biennial Northeast Regional Institutional Development Award (IDeA) Conference. Read more about it in RIC News (9/18/2013).

Cynthia Gaudet was presented with the Robert Young Scholarship at the Annual Young Memorial Lecture. This is awarded annually to a graduate student in biology who submits an exemplary narrative expressing the value of thesis research in his/her professional development.

In April, RIC Men’s Soccer Player and Biology Major Emmanuel Asiedu was honored along with Nine Other Student-Athletes by the R.I. House of Representatives for their combined academic and athletic achievements at the R.I. State House.
New Health-Related Programs!

BS in Health Science: The new Concentration in Food Safety will start accepting students in the Fall of 2014! This program is a food processing, science oriented degree program preparing students for careers in Food Safety, including Product Development, Research, Technical Support, Management, Quality Assurance, Regulation, Inspection and more! If you are fascinated by the science underlying our food supply and are concerned about its’ safety this might be the degree for you.

BS in Medical Imaging: A new concentration in Magnetic Resonance Imaging (MRI) will be available starting in Fall 2014 along with a revised Diagnostic Medical Sonography (DMS, ultrasound) option. The revised DMS program no longer requires prior certification as an X-ray technologist. Students can now apply for entry into the clinical program in Radiologic Technology in January of each year or apply for entry into the clinical programs for Nuclear Medicine Technology (NMT), DMS or MRI in August (with completion of required prerequisite courses). All Medical Imaging clinical programs are offered through the Rhode Island Hospital School of Diagnostic Imaging.

IF YOU ARE INTERESTED IN ANY OF THESE EXCITING OPPORTUNITIES PLEASE CONTACT DR. ERIC HALL (EHALL@RIC.EDU).

BIOLOGY CLUB

Biology Club meets Wednesdays from 12:30pm to 1:30pm in the Biology Department Student Lounge. This year, the Biology Club will visit the New England Aquarium (11/9) and the American Natural History Museum in the spring. We also hope to visit Roger Williams Park and RISD’s Nature Laboratory. In addition to these weekend trips, the Biology Club introduces students to The Biology Department’s research program and encourages students to become involved in laboratory research. We discuss career opportunities for Biology majors and provide advice for succeeding in the Biology program. In October, we set up microbial microhabitats called Winogradsky columns and will watch this experiment progress throughout the year. (Take a look at the columns in the lounge!)

Above all, we have fun and enjoy Biology outside the classroom! For more information, contact Sabrina Elgar (elgar.sabrina@gmail.com) or Sara Moore (smoore_6564@email.ric.edu).

Photos: Biology majors Gary Margus, Andrew Bartlett (cover page), and Sarah Bilida (this page) show off their Winogradsky columns.

BIOLOGY BOOK CLUB

The Book Club will have two events around our latest book choice - *Gulp, Adventures on the Alimentary Canal* by Mary Roach. Everyone is welcome and snacks are provided!

**Super Size Me** - Watch the movie Friday, November 15 at noon in FLS 200 (The Lough Room).

**Book Discussion** - Wednesday, November 20 during the Free Period (12:30-2) in FS 200. Lunch provided!
Senior Seminar Thrives!

This semester’s section of Senior Seminar is filled to capacity. Nine seniors, eager to launch their professional careers, have chosen newsworthy advances in biological sciences as focus topics for their writing assignments and public seminars. This term, they will present their seminars on November 14, November 21 and December 5 during the usual Thursday afternoon time slot for Department Colloquia (4:00-5:00 PM, FLS 050). Presenters include Titilayo Adedeji-Campbell, Anthony Boutsady, Cybele Collins, Gena Felix, Melody Lawrence, Andrea Lee, David Mitchell, Stephanie Ryan and Rosanny Then.

Topics will include intestinal microbes, invasive species, plant-herbivore interactions, celestial orientation, Gulf War syndrome, visual pathologies, stem cells and more. Everyone is invited. It’s a great opportunity to see what we do in Senior Seminar!

Dr. Anthony

STEM SCHOLARSHIP NEWS

“Alas, ‘tis the end of the RIC STEM-Quahog Scholarship Program this academic year. More than $350,000.00 in scholarships have been awarded since 2009 to more than 50 RIC students majoring in biology, chemistry, computer science, math, physics, and the radiologic tech. program. Fifteen of those students were biology majors, and two were radiotech majors. The program will formally end at the end of the spring 2014 semester. The scholarship was funded by the National Science Foundation, which is gratefully acknowledged for its support.”

Dr. de Gouvenain

The next meeting of the RIC Student Chapter of the National Science Teachers Association will be on Wednesday, November 6 during the free period (12:30-2:00 pm) in FLS 209.

Learn about plans to attend the 2014 national conference in Boston in April.

Contact the officers at NSTA@so.ric.edu for more information.

The RIC Student Chapter of the National Science Teachers Association presents the annual live webcast of the Howard Hughes Medical Institute. The four lecture series will be presented over two days in the Fortes Room of Adams Library. Snacks will be provided!

Dec 5 10:00-11:00 & 11:30-12:30
Dec 6 10:00-11:00 & 11:30-12:30
http://www.hhmi.org/node/29172

Haloween Special Event

The Biology Book Club offers a brown bag lunchtime viewing of the PBS show Secrets of the Dead “Witches Curse” on Thursday, October 31 (Halloween) at noon in FLS 200 (The Lough Room). This show combines the history of the Salem witch trials with the biology of a hallucinogen in the manner of a scientific whodunnit.
BIOLOGY MAJORS TRAVEL THE WORLD

Breanna Canning has recently returned from Panama where she studied tropical ecology. Look for her story in the Ridgway F. Shinn, Jr. Study Abroad Fund Newsletter, Fall 2013.

Irena Maglysh is currently studying in Germany. We look forward to hearing all about her adventures when she returns!

SHINN STUDY ABROAD SCHOLARS

Where are they now?

I was fortunate to land an exciting and rewarding career just a couple months after graduation with The Miriam Hospital’s Lifespan Oncology Clinical Research department as a clinical research assistant (CRA). My department works on multiple adult oncology clinical trials for numerous cancer types including pancreatic, cholangiocarcinoma, anal, breast, and prostate. Some clinical trials study early phase drug development, while others are researching new/different treatment schemas and even new drug combinations. This career has allowed me to participate with cooperative group studies, physician initiated studies, and various pharmaceutical studies. In my career I am able to still perform minor bench-work tasks while working with human subjects for protocol specific data collection studying oncology treatment, prevention, and diagnosis. I credit the combination of the hands-on education I received at R.I.C. and the exciting experience working in Dr. Britt’s research lab to have made me the successful and confident CRA I am today. I will forever be grateful for the opportunities that arose while I was an undergraduate.

Alise Lombardo
BS, Biology ’12
Research from the Govenar Lab makes Headlines!

A Rhode Island College biology professor has been awarded a grant to study the effects of pollutants and global warming on the ecosystem of Narragansett Bay. This is the second of two research grants Breea Govenar, an assistant professor of biology, has received in the past year from the Rhode Island Science Technology Advisory Council. The first grant for $93,000 enables Govenar’s team of researchers, along with a team from the University of Rhode Island, to study greenhouse gas emissions from coastal marshes impacted by “nitrogen loading” in the Bay.

Wastewater has increased nitrogen levels in waters in the Bay, which may be causing the marshes to release elevated levels of carbon dioxide, methane and nitrous oxide, Govenar said. This impacts the entire ecosystem there, affecting water quality and marine life.

Evaluating circumstances

The most recent grant for $199,000 was awarded to Govenar, in collaboration with researchers from URI and the U.S. Environmental Protection Agency. It will enable them to study the effects of ocean acidification on the bay’s ecosystem, in particular the plankton that serve as the base of the ocean’s food chain.

This is a two-part study that includes examining the interaction of different plankton at different levels of acidity that results from the increasing levels of carbon dioxide absorbed into the bay. Govenar’s team will then help to develop a model to investigate how the environmental conditions and biological interactions affect the food web at larger scales.

Changes in the temperatures and pH levels of the water affect the entire ecosystem, including the production of calcium carbonate that mussels, quahogs and other shellfish need to build their skeletons and shells, Govenar explained. So global environmental changes ultimately can impact Rhode Island’s economy by affecting the water quality and the shell fishing industry.

A valuable experience

Govenar, a marine ecologist, joined RIC’s biology department in 2010. “My goal is to provide students with diverse opportunities to take an active role in research of ocean science,” she said. Her team currently includes two students pursuing master’s degrees and four undergraduates. “Although not all of them are going to pursue ocean science as a career, each of them will take from this experience something they can use in the future,” Govenar said.

Sara Moore, a RIC senior who is on Govenar’s research team, said she previously never paid much attention to the coastline, even though she grew up in the Edgewood neighborhood of Cranston, just a few blocks from Narragansett Bay.

“Now when I go to the Bay, I notice a lot more things. I’m looking at things in a different way,” said Moore, 21, a biology major who hopes to study medicine after she graduates.

Janis Hall, 24, of Burrillville, who is pursuing her master’s degree in biology, said she’s excited to be part of the team. “It’s really opened my eyes as to what’s going on in this state—how we’ve been impacting our ecosystems and what we’re doing about it….It impacts all of us.”

Are you a Biology Master’s candidate, immersed in classes and thesis research, yet unaware of other requirements that must be met to receive your degree? Do you know that you are expected to submit a formal research proposal to your Thesis Committee before beginning your lab or field study? Do you know that any change in anticipated coursework requires completion of a Request for Change in Plan of Study form? Issues of this nature can delay your expected date of graduation if you are caught unaware. These and other policies, and a timeline for addressing each, are outlined in a new Biology Department document, “Annotated Checklist of Biology MA Requirements.” Until this item appears on the Biology webpage, you are encouraged to request a copy from our Graduate Program Director, Dr. Anthony.

**TO DO LIST**

1. Email your advisor for a meeting time.
2. Meet with your advisor to plan for the Spring Semester... and beyond!
3. Check MyRIC for your registration time (on or after Oct 28).
4. Put your first choice classes in your shopping cart.
5. Register for classes and have a great Spring semester!