



University of Rhode Island

## **College of the Environment and Life Sciences University of Rhode Island**

### ***Cell and Molecular Biology***

#### **EXPECTED UNDERGRADUATE STUDENT OUTCOMES**

Welcome to the Department of Cell and Molecular Biology in the College of the Environment and Life Sciences. During your education as an undergraduate student in the Department and the College, you will be given the opportunity to acquire the knowledge, skills and perspectives that will ensure your success after your graduation. The faculty of the Department and College are here to provide you with an excellent educational experience; in return we ask that you dedicate yourself to learning while here at URI.

Your URI studies and your co-curricular experiences will help you to:

- Build a solid base of knowledge and skills in the major that you choose,
- Communicate effectively with the people you will encounter in your work and personal life, and
- Develop an awareness and perspective as a member of a local, national and global community.

Your professors in the Department of Cell and Molecular Biology have established the following list of expectations for your learning here at URI. Please study the list and use it as your road map for your education. Review it on a regular basis and discuss it with your academic advisor. You will be amazed at your educational progress each semester and with your level of achievement at the conclusion of your undergraduate studies.

#### **KNOWLEDGE**

**DEPTH AND APPLICATION OF KNOWLEDGE – You will acquire knowledge and skills necessary to obtain or pursue a professional position or graduate/professional training in your discipline. By the time you complete your education you will have the knowledge of:**

1. Microbial cell biology
2. Microbial genetics
3. Interaction and impact of microorganisms and humans
4. Interaction and impact of microorganisms in the environment
5. Microbial evolution
6. Microbial diversity

**Ability to:**



1. Use bright field and phase contrast light microscopes
2. Properly prepare stained and wet mount slides
3. Routinely use aseptic technique
4. Use appropriate microbiological media and test systems
5. Use standard microbiological laboratory equipment correctly

**QUANTITATIVE COMPETENCE – You will identify and use appropriate quantitative methods to analyze physical, biological, or social phenomena, as they pertain to microbiology. By the time you complete your education you will have the knowledge of:**

1. Basic mathematical and statistical terms and concepts used in microbiology
2. Research methodologies

**Ability to:**

1. Use computational and analytical tools to evaluate microbiological data
2. Determine the number and density of microbes in a sample
3. Measure and determine the concentration of biological molecules (protein, DNA, etc.)
4. Assess the validity of scientific data

**METHODS OF INQUIRY – You will understand and use methods of inquiry appropriate to your discipline. By the time you complete your education you will have knowledge of:**

1. Scientific method
2. The significance of microbiology to everyday life

**Ability to:**

1. Formulate a clear, answerable question
2. Develop a testable hypothesis and predict expected results
3. Collect and organize data in a systematic fashion
4. Draw appropriate conclusions based on the results

**PROBLEM SOLVING – You will use acquired knowledge, skills, and ingenuity to solve complex problems. By the time you complete your education you will have knowledge of:**

1. A range of problem solving strategies

**Ability to:**

1. Use observation, experimentation, and simulation to gain knowledge
2. Recognize the limitations of the methods you use
3. Use existing information to develop problem-solving strategy
4. Evaluate results and refine strategy accordingly
5. Present data in the appropriate form



## COMMUNICATION

**INFORMATION MANAGEMENT – You will gather and interpret information from diverse sources. By the time you complete your education you will be able to:**

1. Locate, compile, and organize information using a variety of techniques and current technology
2. Critically evaluate various sources of information

**COMMUNICATION – You will communicate clearly and effectively using a variety of methods. By the time you complete your education you will be able to:**

1. Speak in an articulate manner and present and discuss your ideas and knowledge effectively
2. Write logically and effectively for diverse audiences
3. Use discipline-specific modes, such as PowerPoint, for graphic communication
4. Be able to listen effectively and respond appropriately

**MULTIDISCIPLINARY PERSPECTIVE – You will recognize the value of, and participate in, multidisciplinary teams. By the time you complete your education you will be able to:**

1. Understand the perspectives and scope of related disciplines
2. Interact effectively with peers and professionals in related fields

## PERSONAL GROWTH

**ETHICAL PRINCIPLES – You will understand and apply ethical principles to issues, problems, and professional practices. By the time you complete your undergraduate education you will:**

1. Develop a personal environmental ethic
2. Be conversant in the ethical standards of microbiology

**GLOBAL AWARENESS – You will develop an awareness of global community and ecology in their physical, biological, and social dimensions. By the time you complete your education you will:**

1. Become familiar with the earth systems and the manner in which they have been modified by human activity over time
2. Recognize and appreciate the diversity of human and microbial interactions and their relationships to local and global ecosystems



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**PERSONAL DEVELOPMENT – You will develop a sense of responsibility to self, community, and society. By the time you complete your education you will:**

1. Recognize the values and benefits of being a contributing member of your community and society
2. Use reflection and self-evaluation to set goals for personal improvement
3. Understand and respect differences among diverse populations