

The Role Biology in the Mission of the College

The natural sciences are one of the major parts of the foundation of a liberal arts education and biology is an integral pillar of this foundation. Liberal arts schools began as “Colleges of the Arts and Sciences” a moniker still found in many schools that have added additional colleges to their structure. A liberal arts education is not about earning a diploma; it is about learning skills, values, attitudes and appreciation of all fields of study. It is about students coming to a self-realization of what they can do with their lives to improve themselves, their families, their communities, and their world. It is about transforming young lives so they can use their knowledge to transform the world.

The goal of the biology program is to provide students with the basic knowledge necessary to learn and understand biology and to lay a foundation of effective thinking and communication skills with the ability to integrate and use knowledge across a wide range of disciplines. Biology courses teach students how to deal with enormous amounts of data, how to consider the sources of information and the inaccuracies, biases, perspectives and blind spots those sources may harbor. Further, students are prepared to organize data or information and communicate their findings in a logical and coherent, meaningful manner.

We assist and encourage students to participate in internships, fieldwork, hands-on research, service projects and leadership roles on campus. These activities bridge the gap between theory and practice through application of creative thinking, use of information technology, analysis and synthesis of information, problem solving and oral and written communication skills in real world situations. Research experiences develop students into life long learners, foster intellectual curiosity, reinforce the reality that science is a discipline of ongoing discovery, and highlight how science can serve others. Our students’ intellectual and moral development is significantly enhanced by these opportunities.

Our curriculum for majors and courses for non-majors stress the limitations and rationality of science and how science can and is used to serve humanity and preserve God’s creation. Students learn that despite the immense diversity among living organisms, all of God’s creatures are interconnected and dependent on one another. Thus, we are responsible for being good stewards of the Earth. Our integration of E.O. Wilson’s book, *The Future of Life*, into our non-major courses is an excellent example of how we tie science to vocation, service and responsibility for our world. Perhaps the most important outcome of science education at Augsburg College is that students discover that in science there is no ultimate truth and even the most ingrained principles of science are constantly re-evaluated based on new knowledge. When evidence is found that shows these principles are incorrect, they are modified to reflect our new knowledge. It is this intrinsic doubt that pervades science that separates it from many other ways of knowing and explaining the world around us and hopefully teaches us that there is not one infallible view of the world.

Our students have a long and strong history of volunteerism both on and off-campus. Students volunteer at Fairview Riverside Hospital, community health organizations, the local chapter of the Sierra Club in our Seward neighborhood, and work with the Mississippi River Gorge Society and the Dodge Nature Center in efforts to protect our natural areas within the city limits. Through our AugSem, introductory biology, microbiology, and independent study courses, students have worked with local immigrant populations in healthcare education and wellness programs. Vocational internships have allowed upper level students to develop and disseminate health modules to the community. Off campus service includes international medical missions, habitat for humanity (international and domestic), work at nursing homes, assisted living for the aged and disabled, and work at hospitals. These activities are a reflection of our commitment to service of others, which continues well beyond their time at Augsburg whether as doctors, researchers developing new medical treatments or individuals contributing to the education of the public about science and how it can be used to solve environmental, health and social problems facing our world.

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The biology curriculum has taken full advantage of our metropolitan setting by using the neighborhood as an outdoor classroom, by working with community groups, by service activities at local parks and nature centers, and our interactions with the G.E.M.S. programs. Many of our classes use the nearby natural areas for teaching about ecology the impact of our activities on these systems. Our microbiology class connects students with local immigrant populations to provide health education and to learn about health issues unique to our neighbors. Our introductory biology students connect with local environmental groups to help with community projects and provide support and help educate the public about local problems and how we can solve them. We provide lab space and whatever support we can to the G.E.M.S. program during the summers and work with outside organization to conduct AP Workshops for science teachers. We also utilize all the wonderful resources a large metropolitan area offer – museums, parks, the University of Minnesota, local neighborhoods – for education and service.

The faith and values of the Christian church are reflected in the biology curriculum, faculty, and students in many ways. Our curriculum respectfully challenges students' view of the world and their faith by alternative explanations of the origin of the Earth and humans, while also discussing how these ideas do not refute the existence of God but only serve to reveal the intricate wonders of creation. This questioning of one's faith, and at times the doubt it sows, helps students to grow and strengthen their faith and become open to the diverse views of the world and God. Hopefully, it also helps them understand that their values and way of living are not the only way to live and serve God and humanity. Biology reveals that even though we are very different from one another we share a strong common origin and humanity. Our faculty mentor students and help them find their place in medicine, teaching, and/or research by guiding them to service opportunities, research, and helping them find their reasons for pursuing whatever career they choose. Our faculty exhibit a deep commitment to our students and their well-being by taking time to share their personal experiences, help them through difficult times, and finding ways to help them achieve their goals – academic and personal.

Our understanding of diversity from the biological and social perspectives is very apparent in our curriculum. Biological diversity and its importance are emphasized in class and these principles can be translated to many other situations. Students discover that differences among organism reflect their different strategies for solving the same problems faced by all living things and it is this diversity that has sustained life on Earth. In the classroom, different learning styles are embraced. This is reflected in the varying teaching methods used and by how students are evaluated. Student grades are often based on a variety of assessment tools, exams, papers, projects, poster presentation, lab exercises, oral presentations, class discussions, and research. This diversity allows students to be successful even if they are weak in one particular activity. We also discuss global issues in class and how science can partner with other disciplines to solve these problems and discuss why we need to be sensitive to other cultures and their values. We also engage students in respectful debates on topics such as stem cell research, biotechnology, genetically modified organisms, and even whether creationism or intelligent design has a place in the science curriculum.

Our society and our world need students who major in the arts, humanities, literature, education, social sciences, business, and religion, to “encounter” science to help them appreciate and understand how to use or evaluate science and technology in their own field. Of even greater importance are non-science majors with a foundation of science from a liberal arts background who will serve as educators, writers and communicators, historians, government officials, church leaders, lawyers, business leaders, nurses, doctors and concerned citizens. As Christians, we are called to feed the hungry, clothe the naked and bring sight to the blind. This will not happen simply because we love others, or give them food, clothes or money; because we teach them how to earn a living; or because of scientific breakthroughs. We believe we need all of these elements working together with good intentions to help solve many of the complex problems we face today and will face in the future.