Interdisciplinary Studies Index

In its efforts to shape tomorrow's leaders, Rensselaer's faculty has created innovative interdisciplinary curricula. Students are encouraged to work in inter- and cross-disciplinary programs that allow them to combine scholarly work from several departments or schools.

The Master of Science degree traditionally has been in a single subject matter, e.g. chemistry, physics, or mathematics. However, the working environment that college graduates face today and will face in the future is one in which their jobs increasingly bridge more than one area of specialization. The M.S. in Applied Science program is based upon Rensselaer's belief that science graduates of the past few decades and most current graduates are not educated adequately for today's interdisciplinary world. Options exist in many areas of science.

Two such closely related fields as biochemistry and biophysics are a logical choice for combination into an interdisciplinary degree program. Biochemical and biophysical research is advancing the frontiers of research in the basic life sciences and making possible advances in more applied fields such as medicine and agriculture. Rensselaer's B.S. in Biochemistry and Biophysics provides exceptional preparation for graduate school and/or employment in various sectors of the rapidly developing biotechnology industry. It also provides an excellent background for students planning careers in medicine. An M.S. degree is also available in this interdisciplinary field and is ideal preparation for jobs in biotechnology, pharmaceuticals, and other related industry sectors.

Biotechnology and information technology are emerging new fields that are changing the world. Anticipating the demand for graduates with a range of skills covering mathematics, chemistry, and physics, Rensselaer developed a B.S. degree program that provides solid background in all of these disciplines. At the program's core are courses in the theory and practice of bioinformatics that deal with topics such as database design and search algorithms, sequence alignment, sequence analysis, and molecular modeling. This core includes a molecular biology sequence and training in drug discovery.

The B.S. degree combines ecological economics, environmental policy studies, and social and cultural theory and practice. Offered by the Department of Economics and the Department of Science and Technology Studies, the program in Ecological Economics, Values, and Policy (EEVP) satisfies the curriculum requirements for the B.S. programs in both departments. The program combines the best of both departments: economic analysis and a broader humanities and social science analysis that emphasizes the roles science and technology play in today's global economy and culture.

The professional master's program is aimed at early and mid-career professionals in state and local government, secondary education, business, and the nonprofit sector who are looking to upgrade their skills and advance their careers. The program helps students to acquire the skills they will need to address the complex multidisciplinary problems any society faces in such areas as environment and health and sustainable development.

Electronic Media, Arts, and Communication (EMAC) .....pp. 290

The EMAC degree combines communication theory and practice with electronic media arts studio and theory. This program combines offerings in the Department of Language, Literature, and Communication and the Arts Department.

Environmental Science .....pp. 407

The challenge of keeping the Earth safely inhabitable while still providing for an ever increasing population and its expanding needs ensures an ongoing demand for environmental scientists. Meeting this challenge requires broader perspective than any single discipline affords. In fact, expertise is necessary beyond just the sciences. Rensselaer's B.S. in Environmental Science addresses these challenges with a multifaceted program.

Information Technology .....pp. 304

Rensselaer's unique cross-disciplinary degrees in Information Technology combine an innovative information technology curriculum with courses in other disciplines to give students the broad base of skills that industry is seeking. The program offers dual competencies: a grounding in information technology and expertise in a concentration such as management, the arts, engineering, architecture, science, and medicine. At Rensselaer, IT is understood in the broadest sense to incorporate the computing and communications industries, including hardware and software; the information, communications, and entertainment services; and the research and application of IT in and to all fields. The program leads to a Bachelor of Science in Information Technology and a Master of Science in Information Technology.

Interdisciplinary Science .....pp. 411

Always encouraging of students' interests outside the traditional disciplines and career paths, Rensselaer offers this B.S. program that allows for the combination of sciences in innovative ways. In addition it provides the opportunity to combine science with more humanistic studies such as management, law, education, communication, public service, economics, policy-making, or community affairs.

Interschool Minor in Energy .....p. 287

Rensselaer offers this interschool minor as an opportunity for students in any undergraduate major to learn about a wide variety of issues involved in understanding energy. It includes fundamental courses in architecture, engineering, management, science, and the humanities and social sciences.

Minds and Machines .....pp. 295

The Minds and Machines (M&M) program, which is closely affiliated with the Rensselaer Artificial Intelligence and Reasoning Laboratory (RAIR Lab), offers students a number of options for the B.S. degree. Course work and research are designed to prepare students to make smarter machines and to design the machines that make people smarter. As industry and government increasingly produce and deliver their products and services in computer-mediated environments, the demand is increasing for people who understand human intelligence, machine intelligence, and the social and organizational aspects of the interface between human and machine systems. For more information consult *www.rpi.edu/dept/ppcs/MM/mm.uc.html*.

Multidisciplinary Science.....pp. 413

Increasingly, college graduates with traditional discipline oriented backgrounds are discovering that their jobs are bridging more than one area of specialization. Rensselaer's M.S. and Ph.D. programs in multidisciplinary science are designed to help such individuals function more effectively in such multidisciplinary environments. Through these programs, students interact with faculty representing a variety of disciplines and participate in interdisciplinary research programs that bridge not only science disciplines but also science and engineering.

Product Design and Innovation.....pp. 135, 234, 298

Product Design and Innovation merges the technical with the creative and stimulates originality. A dual major in one of four fields (Mechanical Engineering, Building Sciences, Management, and IT) and Science and Technology Studies combines engineering disciplines, STS courses, and design studios. A dual major in Building Sciences (School of Architecture) and Science and Technology Studies combines architecture and building science disciplines, STS courses, and design studios. The program in Product Design and Innovation (PDI) is jointly offered by the Schools of Engineering, Architecture, Humanities and Social Sciences, and the Lally School of Management and Technology. It offers four tracks; the first satisfies the requirements for the B.S. program in both Mechanical Engineering and Science, Technology, and Society (STS); the second satisfies the requirements for the B.S. programs in both Building Sciences and STS; the third satisfies the requirements for IT and STS; and the fourth satisfies the requirements for management and STS. For more information, consult *www.rpi.edu/dept/sts/pdi.*