Introduction
The core curriculum is the shared educational experience across all disciplines of all Rensselaer undergraduate students that provides them with a foundation to live, learn and excel in a technology rich, culturally diverse world. It forms part of the foundation for continued investigations within a student’s chosen discipline(s). It has a dual role as a complement for any specialization, providing insight into the perspectives of other disciplines, and as a platform upon which students can optimize their specialized knowledge to address complex issues and problems.

Discipline-specific education, at least in its present form, is not sufficient to address all these needs. It is Rensselaer’s belief that a well-educated person has been educated broadly in the sciences, humanities, and social sciences, upon which is built a discipline specific education that provides enough depth to allow graduates to pursue a career in their chosen area.

It is in this context that the following Core Curriculum requirements are presented.

Purpose
The purpose of the Core Curriculum is to develop a student’s critical thinking skills, creativity and imagination, a sensitivity to cultures and points of view other than one’s own, contribute to a foundation for continued intellectual growth, and create an appreciation for the broad range of human intellectual and artistic endeavors.

The Core Curriculum Outcomes

Knowledge
Rensselaer was founded for the purpose of “applying science to the common purposes of life.” Our mission states that we will educate “the leaders of tomorrow for technologically based careers,” and that we “celebrate discovery, and the responsible application of technology, to create knowledge and global prosperity.” Achieving these goals requires knowledge of modern science, quantitative analysis, a global awareness, and literacy in the social sciences and the humanities that prepare graduates for a lifetime of learning and active participation in a world that is multidimensional, multidisciplinary, and multicultural.

To ensure this, graduates will have:

- A fundamental understanding of the scientific method of inquiry with basic understandings of both the physical and biological world.
• A fundamental grasp of the basic principles of calculus, and an understanding of data analysis through exposure to the fundamental principles of probability and statistics.
• A background for informed understanding of the methods social scientists use to explore social phenomena, and knowledge of the major concepts, models, and issues of at least one discipline in the social sciences.
• An appreciation for the breadth of human endeavor through a significant exposure to at least one of the disciplines of the humanities.
• The knowledge, skills, and attitudes that are the basis for decision-making and participation in a world characterized by cultural pluralism, interconnectedness, and international economic cooperation.
• A basic understanding of how organizations turn ideas, services, and technology into value.

Thoroughness
Thoroughness in any area requires practice, integration and appropriate feedback from instructors. Thoroughness should be emphasized throughout the curriculum so that our students learn to apply their skills effectively regardless of the field of endeavor. To achieve this objective, the core curriculum should strive to give students competencies in the following categories:

Information: Graduates will:
• Be able to apply information and concepts from multiple disciplines in their intellectual, professional, and community lives.

• Have a fundamental understanding of the concept of an algorithm and have the ability to examine and engage problems through the use of information technology.

• Be able to locate information using resources such as the Internet and libraries, and be able to evaluate and synthesize this information.

Communication: Graduates will
• Be able to identify, analyze and evaluate arguments and data as they occur in their own or others' work, and develop well-reasoned arguments.

• Be able to communicate in ways that display organization of ideas, a command of style and “mechanics,” and awareness of context and audience.

• Be able to communicate in a variety of media and to develop content appropriate for each.

• Have the ability to assess and revise their own and others’ work
Research and Design: Graduates will
• Have experience in addressing open-ended problems by identifying essential issues, defining and framing a problem statement, researching and exploring various alternatives, and developing and communicating solutions to a diverse audience.

Ethics: Graduates will
• Have a personal value system that respects self, others and society, and one that speaks to the societal impact of differences among people.
• Be able to make informed and principled choices when presented with conflicting situations in their personal and professional lives, and to foresee the consequences of these choices.
• Have the capacity to actively evaluate the assumptions, goals, and methods of gaining knowledge in academic studies and in professional life.

Leadership: Graduates will
• Have developed leadership skills that embrace cultural diversity and world citizenship.

Outreach: Graduates will
• Be able to examine and organize knowledge and experience and be able to apply it to issues and problems in a broad sphere.

Experiences

All students should have multiple opportunities to integrate their knowledge by solving problems that lead to a broader understanding of the principles involved. These activities would be part of each level of their education and would build on their current knowledge and competencies. By stressing both disciplinary and interdisciplinary areas of study our graduates will be prepared to think creatively, to understand the complexity of problems, teams, and cultural contexts both in their professional and personal lives.

• Students will be exposed to several activities requiring them to synthesize their knowledge; often in the creation of a product (i.e. report, thesis, exhibition) that demonstrates their ability to frame and resolve an open-ended question. These activities should occur at several points throughout their four-year curriculum, and provide experiences both within and outside of their discipline.

• Students will have several opportunities to participate in team-oriented activities that allow them to develop their collaborative and leadership skills.

• Students in all programs will have the opportunity to include at least one out-of-classroom activity (e.g. co-op, study abroad, community service) that is a mixture of life and academic experience.