

TECHNOLOGY DEPARTMENT

The Technology Department offers 4 pre-engineering courses for the student who is serious about going on to a 4 year college. Students with an 85% average or higher in our pre-engineering classes can sit for a college exam and receive 4 college credits through the Rochester Institute of Technology (RIT) for \$200.

Facts

- 187 Students have received credit for RIT courses
- Each course is 4 RIT credits
- 748 credits received in 10 years
- Our students pay \$50 per credit
- RIT gets \$503 per credit on campus
- Our students have saved \$339,000 in 10 years

L091 Introduction to Engineering Design (CAD) **1 Semester - 1 Credit** **4 RIT College Credits Available**

IED is the pre-requisite to all of our college engineering courses. Students will use AutoDesk Inventor to create 3-d objects. Students will then learn how to layout their 3-d object in orthographic projections and dimension them using current engineering drafting standards. Types of Drawing to include: Auxiliary views, section views, assembly, detail drawings and design concepts.

Fulfills Art/Music Graduation Requirement

L095 Digital Electronics **1 Semester - 1 Credit** **4 RIT College Credits Available**

Digital Electronics is the world of the calculator, the computer, and the integrated circuit. You see digital circuits, such as digital watches, in automobiles, digital displays, mp3 players, stereo receivers, cash registers, and televisions in operation every day. It is becoming more important that you understand how digital electronic circuits work. In this course you will use simple integrated circuits or "IC's" and computer simulations to construct and test digital circuits used in everyday electronics.

Recommended: Introduction to Engineering Design

Fulfills 3rd Year Math or Science Requirement

L092 Computer Integrated Manufacturing **1 Semester - 1 Credit** **4 RIT College Credits Available** **Offered in 2011-12**

We all live in a three dimensional world. In Computer Integrated Manufacturing, you will design and develop 3D models that can be analyzed, animated, and produce. Will you be part of the group that makes a computerized "work cell" that can make hundreds of parts without human intervention in a flexible manufacturing system? First, you will utilize the full capabilities of a Computer Aided Drafting system to model 3D objects in virtual space. The CAD system will then produce engineering information about your 3D object that will be converted to NC code with Post-Processor software. Computer controlled machines; such as a CNC Mill and CNC Lathe will actually make the part you designed. Robots you program, for material handling and other functions, will complete your experience in CIM. Computer Integrated Manufacturing is part of the PLTW Engineering sequence.

Pre-Requisite: Introduction to Engineering Design

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L094 Principles of Engineering **1 Semester - 1 Credit** **4 RIT College Credits Available**

Students will study and learn about the different engineering career opportunities. The course involves statistics, design solutions and problem solving. Many of the projects are real life projects where students will problem solve, design and produce a solution. The focus will be on the big five engineering fields: Mechanical, Electrical, Industrial, Civil, & Architectural.

Pre-Requisite: Introduction to Engineering Design
Fulfills 3rd year Math or Science Requirement

L041 Communication Systems **1 Semester - 1 Credit**

Students will study and produce computer based projects. The class is designed to give students an overview of many different types of computer software and their uses. Upon completion students will have a better working knowledge of different software applications and how they can use them in their everyday life. Projects will be designed for the following software applications: Adobe: InDesign, PhotoShop, Illustrator, Flash, Premiere; and the MicroSoft Office Package.

Fulfills 1/2 Art/Music Graduation Requirement

L042 Productions & Residential Structures **1 Semester - 1 Credit**

Students will learn about everything necessary to build a home. Foundations, Framing, Sheathing, Roofing, Electrical wiring and plumbing will all be covered. Students will wire common circuits, build a model and construct a storage shed in this class. The shed will be sold to a community member for the cost of the materials.

L040 Transportation & Energy **1 Semester - 1 Credit**

Students will create engineering based problem solving projects. Included will be small engine disassembly, reassembly and repair, energy conservation and rocketry. Students will research a topic related to energy or modern transportation developments and prepare and present a PowerPoint to the class. Students will have the option to take the New York State Boater Safety Exam.

L044 Broadcast & Video Production **1 Semester - 1 Credit**

Students will learn how to create videos using professional video editing software. Student grades will be based on 50% projects, 30% quiz and 20% homework. Projects will include commercials, humor/skits, movie trailers, music videos and more.

053 Architectural CAD **1 Semester - 1 Credit**

Did you ever dream about designing your own house or building? This course will teach you how to make drawings that will begin to make that dream a reality. You will study the design, planning, drafting and construction methods for residential home and then, using a CAD system, develop floor plans, elevations, section details, wall and roof framing plans, and foundations plans. Students will find it helpful to have completed DDP-A or IED before taking this course. Fulfills 1/2 Art/Music Graduation Requirement

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L013 Flash Animation

1 Semester - 1/2 Credit

Students will use Adobe Flash to make 2D computer animations. Class work will demonstrate different aspects of computer animation. The course is all project based with 70% of the grade coming from being able to use the program. The other 30% is based on creativity. Projects include animated stories, web pages and games.

L011 Furniture & Cabinet Making

1 Semester - 1/2 Credit

This is an introductory woodworking class. Students will select a project, generate a set of plans and build the item. We will cover material properties, safe use of machine tools, advanced assemble methods and finishing. Materials available are oak, cherry, maple and walnut.

L016 Design & Drawing for Production - A

1 Semester - 1/2 Credit

Students will use AutoCAD to draw 2-d objects using the rules of orthographic projections and current drafting standards. The course is all project based with 100% of the grade coming from being able to use the program and dimension correctly.

Fulfills 1/2 Art/Music Graduation Requirement

L017 Design & Drawing for Production - B

1 Semester - 1/2 Credit

This is the companion class to DDP-A. In this class students will learn to plan a project by sketching. We will use Oblique, Isometric and Orthographic Projection methods. Students will complete a problem solving project and draw a complete set of plans and pictorial sketches of it.

Fulfills 1/2 Art/Music Graduation Requirement

L018 Microcontroller & Robotics

1 Semester - 1/2 Credit

Students will learn to program and wire electronic circuits on a miniature computer attached to a robotic base. Using sensors (light, sound, temperature, pressure, magnetism, Accelerometers) to control the robot in actives such as: roaming a room, avoiding obstacles, follow a line, display the temperature, make a compass, make music, measure distance, avoided edges, move a dot around a screen. Students will find it helpful to have completed Digital Electronics before taking this course.

Technology Education

Sequence & Graduation Requirements

Full Credit Courses	4 RIT College Credits	Fine Art Credit	3 rd Year Math or Science Credit	Foundation	Systems	Elective
Introduction to Engineering Design	Yes	Yes (Full)		1 Unit		1 Unit
Digital Electronics	Yes		Yes			1 Unit
Principles of Engineering	Yes		Yes			1 Unit
Computer Integrated Manufacturing	Yes					1 Unit
Communication Systems		Yes (Half)		½ Unit	½ Unit	
Productions & Residential Structures					½ Unit	½ Unit
Transportation & Energy				½ Unit	½ Unit	
Broadcast and Video Production						1 Unit
Architectural CAD		Yes (Half)				1 Unit
Half Credit Courses	4 RIT College Credits	Fine Art Credit	3 rd Year Math or Science Credit	Foundation	Systems	Elective
Flash Animation						½ Unit
Furniture & Cabinet Making						½ Unit
Design & Drawing for Production - A		Yes (Half)		½ Unit		
Design & Drawing for Production – B		Yes (Half)		½ Unit		
Microcontroller and Robotics						½ Unit
Minimum Units Required For a 5 Unit Sequence				1 Unit Minimum	½ Unit Minimum	1 Unit Minimum