TECHNOLOGY EDUCATION COURSES AND SEQUENCE

Technology Education helps students learn how to become engineers, architects, and designers of our future! Technology classes offer insight into the careers, education, technical skills, problem solving, designing, materials, tools, and products of our future. The purpose of technology education is to provide an exploration of career opportunities available in the technical world we live in. Technology Education also fosters an attitude in students that will assist them in attaining their goals as citizens in our technological society.

It is possible to obtain a Regents sequence in Technology Education. However, careful schedule planning is essential to insure proper fulfillment of the requirements. Technology teachers and guidance staff will be available to assist students as needed.

Courses are offered in three levels, enabling students to obtain a sequence in Technology Education. The three levels **do not** necessarily progress in difficulty, and very few courses require a prerequisite. However, it is strongly recommended that if students intend to take more than one course in a given area, the courses should be taken in sequence for better in-depth learning. The district has incorporated **Project Lead the Way,** a pre-engineering curriculum, into the Technology Education Program. This program starts at the middle school level with an introduction to engineering and continues to more in-depth studies at the high school level.

The following is a sequence for students wishing to receive a Regents sequence in Technology Education:

Technology Education – 3 Unit Regents Sequence – Grades 9-12

1 Unit (Select a single one unit course or 2 half unit courses)	Foundation courses: • Design Drawing for Production (1 Unit) • Principles of Engineering (1 Unit) • Communications Systems (½ Unit) • Transportation Systems (½ Unit) • Production Systems (½ Unit) • Construction Systems (½ Unit)
2 Units	Choose any of the remaining "Foundations" courses or select courses from "Electives" list found in sequence section on the next page.
3 Units Total	

Pre-Engineering Sequence

Pittsford Central School District is participating in **Project Lead the Way**, produced by Charitable Ventures Foundation in Conjunction with RIT, to promote pre-engineering education. High school students entering 9th grade have the opportunity to complete a 5-unit sequence in pre-engineering. This program is designed to help students explore technology related careers and to prepare them for two and four year degree programs in engineering.

Example: Design Drawing for Production (1 Unit)
Principles of Engineering (1 Unit)
Computer Integrated Manufacturing (1 Unit)
Civil Engineering and Architecture (1 Unit)
Engineering Design and Development (1Unit)

Technology Education Sequence Can Replace World Language Requirement

Technology sequence: A five-unit sequence in Technology may be substituted for the three-unit World Language requirement for a NYS Regents Diploma with Advanced Designation.

A five-unit sequence must include two Foundation courses and Business Dynamics I (Course #0512).

Foundation Courses (choose two)

Design and Drawing for Production (PLTW)	1 Unit
Principles of Engineering (PLTW)	1 Unit
Transportation Systems	½ Unit
Communication Systems	½ Unit
Construction Systems	½ Unit
Production Systems	½ Unit

1-3½ Units Electives

Digital Electronics (PLTW)	1 Unit
Computer Integrated Manufacturing (PLTW)	1 Unit
Engineering Design and Development (PLTW)	1 Unit
Computer Science and Software Engineering (PTLW)	1 Unit
Civil Engineering and Architecture (PLTW)	1 Unit
Computer Aided Drawing	½ Unit
Photography	½ Unit
Manufacturing Systems	½ Unit
Automotives I	½ Unit
Automotives II	½ Unit
Automotives III	½ Unit

Design Drawing For Production (DDP) For Fine Arts Credit

The Regents Action Plan permits students to satisfy the high school art/music graduation requirement by substituting the Design and Drawing for Production course for the Studio Art course. Students interested in selecting this alternative may speak with their counselor.

TECHNOLOGY EDUCATION COURSES AND DIFFICULTY LEVELS

SUTHERLAND HIGH SCHOOL

LEVEL 1 (BASIC)	LEVEL 2 (ADVANCED)
Design and Drawing for Production (PLTW) 1 Unit – full year course – grades 9-12	Civil Engineering and Architecture (PLTW) 1 Unit – full year course – grades 10-12
Production Systems ½ Unit – one semester course – grades 9-12	Manufacturing Systems ½ Unit – one semester course – grades 9-12
Transportation Systems ½ Unit – one semester course – grades 9-12	Computer Aided Drawing (CAD) ½ Unit – one semester course – grades 10-12
Digital Electronics (PLTW) 1 Unit – full year course – grades 9-12	Principles of Engineering (PLTW) 1 Unit – full year course – grades 10-12
Communication Systems ½ Unit – one semester – grades 9-12	Computer Integrated Manufacturing (PLTW) 1 Unit – full year course – grades 10-12
Automotives I* (Mendon High School) ½ Unit – one semester – grades 11-12	Automotives II* (Mendon High School) ½ Unit – one semester – grades 11-12
Construction Systems ½ Unit – one semester course – grades 9-12	Automotives III* (Mendon High School) ½ Unit – one semester – grades 11-12
Computer Science and Software Engineering 1 Unit – full year course – grades 11-12	Engineering Design and Development (PLTW) 1 Unit – full year course – grade 12

***Automotives Courses are offered to Sutherland students but are conducted at Mendon High School**

COLLEGE CREDIT OPPORTUNITIES

Pittsford Central Schools' technology teachers are certified to teach the following courses for college credit from RIT and/or MCC. The process is very similar to the Advanced Placement courses administered in the core areas. Students pay tuition to the college and they receive credit from both Pittsford and the participating college.

Class	Monroe Community	RIT
Design Drawing for Production	3 credits	3 credits
Digital Electronics	6 credits	3 credits
Principles of Engineering		3 credits
Computer Integrated Manufacturing		3 credits
Photography	3 credits	
Civil Engineering and Architecture		3 credits
Computer Science and Software Engineering		3 credits

Technology Education Course Descriptions

0711 DESIGN & DRAWING FOR PRODUCTIONS (DDP)

GRADES 9-12 ♦ FULL YEAR - 1 UNIT (PLTW Basic Course)

Design & Drawing for Production is a blend of artistic hand drawing, technical drawing, and computer aided design & drawing (CADD) all rolled into one course. Students will learn how to solve problems presented in the class by using their knowledge, communication, and drawing skills that will be developed during the course of a year. Students will brainstorm new ideas, draw their ideas on paper, and then mock up their designs using inventor software on the school computers. Students will be given opportunities to build prototypes and test working models of their problem solving techniques. Students practice working in groups and as individuals on problem solving projects. They may give presentations to the class on their findings and designs. Students will then be given an opportunity to evaluate themselves at the end of these activities. Activities may include designing, building and testing a Puzzle Cube, using the laser engraver to make a plaque or a key chain, and using the 3D printer to make a part they have designed. When the students are done with these activities, they get to take their projects home and keep them!

0742 DIGITAL ELECTRONICS

PREREQUISITE: 2 YEARS REGENTS MATH
GRADES 9-12 ♦ FULL YEAR - 1 UNIT (PLTW Basic Course)
[SHS: OFFERED IN 2016-2017 AND 2018-2019 MHS: OFFERED IN 2017-2018 AND 2019-2020]

Digital electronics is a full year class that is geared to those students who enjoy hands on learning. Digital Electronics is a course of study in how to design, build and test Digital Circuits. This course is patterned after the first semester course in Digital Electronics taught at two and four year colleges. Students will study the application of electronic logic circuits (which are found in watches, calculators, video games, and thousands of other devices), and apply Boolean logic to the solutions of problems. The use of smart circuits is abundant in industry today. Its use is rapidly increasing, making Digital Electronics an important course of study for a student exploring a career in engineering/ engineering technology. Students will learn how to simulate a circuit design on the computer using the latest software called Multisim. Students will get out the electronic components they need, plug them into a digital trainer (PGA bread board), to test simple and complex real live digital circuits. Students will also learn how to soldier these components to a printed circuit board and take their projects home to keep.