

Technology Education

10004 Level: Content:	Design, Technology and Engineering 6 This is an activity-based course that involves the design process while providing an introduction to tools and methods that will expand the range of activities possible through the use of technology.
10005 Level: Content:	Design, Technology and Engineering 7-8 This is an activity-based course that involves the design process while providing an introduction to tools and methods that will expand the range of activities possible through the use of technology.
10006 Level: Content:	Applying Technology 7-8 This is an activity-based course addressing all 20 of the Standards for Technological Literacy using primarily a modular classroom environment.
10007 Level: Content:	Invention and Innovation 7-8 Students participate in engineering design activities to understand how criteria, constraints, and processes affect designs. Brainstorming, visualizing, modeling, constructing, testing and refining designs will be studied. This is a recommended course for all middle school programs. A state recommended course guide is available.
10008 Level: Content:	Technological Systems 7-8 Students participate in technological systems; their design, development and connections with other systems. They create, test and evaluate systems, such as transportation, information and biotechnology systems. This is a recommended course for all middle school programs. A state recommended course guide is available.
10105 Level: Content:	Exploring Technology 7-8 Students develop an understanding of the progression and scope of technology through exploratory experiences. Through group and individual activities, students experience ways in which technological knowledge and processes contribute to effective designs and solutions to technological problems. This is a recommended course for all middle school programs. A state recommended course guide is available.
10106 Level: Content:	Manufacturing Technology 7-8 The concept of manufacturing is defined to include all those activities related to the production of goods and services to meet the wants and needs of people.

- 10107 Construction Technology**
 Level: 7-8
 Content: This course will provide students with an overview of the construction industry both residential and commercial including designing, planning, and constructing using various materials.
- 10205 Communication Technology**
 Level: 7-8
 Content: Communications is the process of visually transmitting ideas, thoughts, or concepts. It involves students in meaningful class and instructional activities and develops self-direction, continuous learning, and creativity.
- 10305 Energy/Transportation Technology**
 Level: 7-8
 Content: This course will provide students with an overview of the various forms of energy, its generation, collection, transmission, application, and conservation.
- 10091 Individual Technical Problems**
 Level: 11-12
 Credit: ½ or 1
 Content: To provide a course for schools who cannot offer other specified course titles. Experiences in communication technology, production technology, and energy utilization are to be identified and developed on a contractual basis by the student and approved by the instructor.
- 10093 Applying Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: This is an activity-based course addressing all 20 of the Standards for Technological Literacy using primarily a modular classroom environment.
- 10094 Foundations of Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: Technology consists of key concepts and processes. Students learn that technology is the basis for all that we have and do. Students design and develop innovations and engineer solutions to gain an understanding of technology. Mathematics and science contribute to the unit topics. This is a recommended course for all high school programs. A state recommended course guide is available.
- 10095 Impacts of Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: Students develop skills to systematically assess technology. Students practice approaches to assess technology using analytical thinking, decision-making and techniques for redesigning. This is a recommended course for all high school programs. A state recommended course guide is available.

- 10096 Innovation in Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: Students develop skills to design, use, maintain and assess the following technologies: Medical, agricultural and biotechnologies, energy and power, information and communication, transportation, manufacturing and construction. Simulations, prototyping, case studies and group seminars engage students in developing solutions that lead to innovations. This is a recommended course for all high school programs. A state recommended course guide is available.
- 10110 Production Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: This activity is an activity-based course that provides students with a general introduction to the material processing and management components of a production activity. The major emphasis is placed on the production and management processes used to convert resources into structures, goods, and services. Students will become aware of the social and environmental impacts of technology.
- 10111 Construction Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: To study the technology involved in the construction of residential and industrial structures. Study will include designing, planning, and constructing structures using various materials and methods.
- 10115 Exploring Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: Students develop an understanding of the progression and scope of technology through exploratory experiences. Through group and individual activities, students experience ways in which technological knowledge and processes contribute to effective designs and solutions to technological problems. A state recommended course guide is available.
- 10121 Manufacturing Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: To provide students with a broad overview of the technology involved in creation and production of consumer products. Study will involve techniques and processes used to produce goods including manufacturing systems, materials, planning, financing, and distribution.

- 10124** **Materials and Processes**
 Level: 9-12
 Credit: ½ or 1
 Content: To provide students with an introduction to the characteristics and properties of industrial materials, production of standardized materials and the transformation of standardized materials into goods of increased value. Study of the common processes used to convert raw materials into standardized materials; techniques used to obtain raw materials; types of materials; and principles of layout and measurement used in the manufacturing industry.
- 10125** **Construction Systems**
 Level: 9-12
 Credit: ½ or 1
 Content: To introduce students to the construction practices basic to the erection of commercial, institutional, and residential structures and the installation of mechanical and electrical systems within these structures. Study will include the processes in planning, organizing, directing, and controlling a construction project.
- 10127** **Manufacturing Systems**
 Level: 9-12
 Credit: ½ or 1
 Content: To provide students with an introduction to the design and operation of production systems. Study of the efficient and appropriate plan layouts, process selection and sequencing, materials handling system design, quality control procedures, production planning and control activities, work measurement practices, and product manufacture.
- 10250** **Communication Systems**
 Level: 9-12
 Credit: ½ or 1
 Content: To provide students with a broad overview of all forms of visual communications. Study will involve techniques and processes used to design, produce, and transmit images, ideas, knowledge, or information.
- 10251** **Communication Technology**
 Level: 9-12
 Credit: ½ or 1
 Content: This is an activity-based course that provides the application of tools, materials and energy in developing, processing, using and assessing communication systems. Students will produce graphic and electronic media as they explore techniques used to apply technology communicating information and ideas.
- 10257** **Graphic Communication Systems**
 Level: 9-12
 Credit: ½ or 1
 Content: The graphic communication systems course provides students with an introduction to the graphic communication field. An area of study involving techniques and processes used to transmit ideas, knowledge, or information.

10258	Electronic Communication Systems
Level:	9-12
Credit:	½ or 1
Content:	The study of Electronic Communications includes all technical systems which use electricity to exchange messages. Electronic Communications Systems will provide students with a general introduction to the design, planning, and production concepts utilized in the electronic communication systems of our contemporary society. This content builds from a technical base while working with the applications of electronic communications.
10259	Design/Drafting
Level:	9-12
Credit:	½ or 1
Content:	An evolving study of modern drafting within the framework of communication technology. The course provides an experience in design and drafting as it applies in an industrial environment.
10331	Energy and Transportation Technology
Level:	9-12
Credit:	½ or 1
Content:	This is an activity-based course that introduces students to generation, conversion, control, transmission and storage of energy. Machines and tools are used to increase strength and mechanical advantage in the movement of people and materials. Energy and transportation is equally applied to production, communication and transportation activities introduce major scientific and mathematical concepts that support energy and transportation.
10335	Power Systems
Level:	9-12
Credit:	½ or 1
Content:	To provide the student with an understanding of the various types of energy converters and power systems (mechanical, fluid, electrical, and thermal).
10336	Electrical Systems
Level:	9-12
Credit:	½ or 1
Content:	To introduce the students to the basic principles of DC/AC current, circuits, and electrical components. Study of the electrical industry, including measurements and instruments, symbols, circuits, and electrical components.
10410	Engineering Technology
Level:	9-12
Credit:	½ or 1
Content:	This is an activity-based course that provides an orientation and exposure to the careers and challenges of engineering. Major engineering concepts include modeling, systems, design, optimization, technology-society interaction, and ethics. Content is provided in applied engineering graphics, communicating technical information, engineering design principles, material science, research and development processes, manufacturing techniques and

systems, and opportunities and challenges of other emerging branches of engineering. Students are actively involved with the practices of various engineering fields, high-technology systems, devices and materials, engineering graphics, and mathematics/science principles. This is a recommended course for all high school programs. A state recommended course guide is available.

10510 Invention and Innovation

Level: 9-12

Credit: ½ or 1

Content: Students participate in engineering design activities to understand how criteria, constraints, and processes affect designs. Brainstorming, visualizing, modeling, constructing, testing and refining designs will be studied. A state recommended course guide is available.

10515 Technological Systems

Level: 9-12

Credit: ½ or 1

Content: Students participate in technological systems; their design, development and connections with other systems. They criteria, test and evaluate systems, such as transportation, information and biotechnology systems. A state recommended course guide is available.

10999 Cooperative Work Experience

Level: 11-12, and a minimum student age of 16 years

Credit: maximum of ½ per semester, not to exceed 2 credits while in high school

Content: Provides students with a regularly scheduled, supervised employment opportunity related to Technology Occupations in order to develop and improve work skills. The employment must be preceded by, or concurrent with, classroom instruction related to the work experience, consistent with the student's occupational goals, and related to the Technology Education program area. There shall be a training agreement among all partners to the work experience (school, employer, student, and parents/guardians) outlining the expectations of each party. The instructor shall also develop a specific training plan with the employer for each student placed. The training plan shall include provisions for assessment of student progress and for on-site visits by the instructor during the student's placement. Students may be paid a wage by the employer.

NOTE: The course guide that is recommended is available from the Department of Career and Technical Education, web site address: <http://www.state.nd.us/cte>