

HIGH SCHOOL TECHNOLOGY EDUCATION COURSE CODES GRADES 7-12

High school (grades 9-12) courses in Technology Education require 150 contact hours per credit.

Course Code	Course Name	Grade Levels	Description	Accreditation Time/ Credit Options*	License/credential Required**
10006	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.	NDAC 67-19-01-34 (2)(b) ♦ may be counted as part of the minimum 200 minutes per week of additional courses	License Code: 10005-Industrial Arts ♦ 7-12 OR 10007-Technology Education ♦ 7-12 OR 10010-Industrial Technology ♦ 7-12
10007	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.	NDAC 67-19-01-34 (2)(b) ♦ may be counted as part of the minimum 200 minutes per week of additional courses	
10008	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.	NDAC 67-19-01-34 (2)(b) ♦ may be counted as part of the minimum 200 minutes per week of additional courses	
10105	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.	NDAC 67-19-01-34 (2)(b) ♦ may be counted as part of the minimum 200 minutes per week of additional courses	
10091	Individual Technical Problems	11-12	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.	½ or 1	
10093	Applying Technology	9-12	This is an activity-based course addressing all 20 of the Standards for Technological Literacy using primarily a modular classroom environment.	½ or 1	License Code: 10005-Industrial Arts ♦ 7-12 or 9-12 OR 10007-Technology Education ♦ 7-12 or 9-12 OR 10010-Industrial Technology ♦ 7-12 or 9-12
10094	Foundations of Technology	9-12	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.	½ or 1	

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10095	Impacts of Technology	9-12	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.	½ or 1	License Code: 10005-Industrial Arts ♦ 7-12 or 9-12 OR 10007-Technology Education ♦ 7-12 or 9-12 OR 10010-Industrial Technology ♦ 7-12 or 9-12
10096	Technological Issues	9-12	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.	½ or 1	
10110	Production Technology	9-12	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.	½ or 1	
10111	Construction Technology	9-12	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.	½ or 1	
10121	Manufacturing Technology	9-12	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	½ or 1	
10251	Communication Technology	9-12	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.	½ or 1	

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10259	Design/Drafting	9-12	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.	½ or 1	License Code: 10005-Industrial Arts ♦ 7-12 or 9-12 OR 10007-Technology Education ♦ 7-12 or 9-12 OR 10010-Industrial Technology ♦ 7-12 or 9-12
10260	3D Modeling and Design	9-12	Students will explore systems of design, construction and testing. Through the use of CAD software, students will gain technical skills in product design, prototyping, and the design process.	½ or 1	
10331	Energy and Transportation Technology	9-12	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.	½ or 1	
10338	ProBase Advanced Design Applications	9-12	This is a standards-based, engineering-related course providing an engineering or technical base for students. It consists of four separate learning units, each nine weeks in length: Manufacturing Technologies, Energy and Power Technologies, Construction Technologies and Transportation Technologies. Each unit has a primary challenge or design problem that is supported in separate learning cycles. The course allows students to focus on solutions to problems, with minimal constraints. A state recommended course guide is available.	½ or 1	
10339	ProBase Advanced Technological Applications	9-12	This is a standards-based, engineering-related course providing an engineering or technical base for students. It consists of four separate learning units, each nine weeks in length: Information and Communication Technologies, Medical Technologies, Agriculture and Related Biotechnologies and Entertainment and Recreation Technologies. Each unit has a primary challenge or design problem that is supported in separate learning cycles. The course allows students to focus on solutions to problems, with minimal constraints. A state recommended course guide is available.	½ or 1	

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10410	Engineering Technology	9-12	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.	½ or 1	License Code: 10005-Industrial Arts ♦ 7-12 or 9-12 OR 10007-Technology Education ♦ 7-12 or 9-12 OR 10010-Industrial Technology ♦ 7-12 or 9-12
10411	Robotics Engineering	9-12	Robotics Engineering provides a comprehensive study of engineering concepts including physics, programming, mechanical systems, electrical and electronics systems. These core concepts are delivered with a robotics emphasis through relevant activities and projects.	½ or 1	
10510	Invention and Innovation	9-12	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.	½ or 1	
10511	PLTW Introduction to Engineering Design	9-12	This course emphasizes the development of a design. Students use 3-D computer software to produce, analyze and evaluate models of project solutions. They study the design concepts of form and function, then use state-of-the-art technology to translate conceptual designs into reproducible products. This is a PLTW course and only instructors with this training may use this number and description.	½ or 1	License Code: 10511-Project LEAD the WAY Endorsement (Intro to Eng Design) ♦ 7-12
10512	PLTW Digital Electronics	9-12	This course provides students with the applied logic that encompasses application of electrical circuits and devices. Students will use state-of-the-art technology, including computer software and equipment used by industry. Hands-on activities that utilize the team approach to learning how to solve real-world problems while reinforcing the study of math and science. This is a PLTW course and only instructors with this training may use this number and description.	½ or 1	License Code: 10512-Project LEAD the WAY Endorsement (Digital Electronics) ♦ 7-12

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10513	PLTW Principals of Engineering	9-12	This course provides students with an opportunity to investigate engineering and high-tech careers and to develop skills and understanding of course concepts. Students employ engineering and scientific concepts in the solution of engineering design problems, develop problem-solving skills, and apply their knowledge of research and design to create solutions to various challenges. This is a PLTW course and only instructors with this training may use this number and description.	½ or 1	License Code: 10513-Project LEAD the WAY Endorsement (Prin of Engineering) ◆ 7-12
10514	PLTW Civil Engineering & Architecture	9-12	This course provides students with opportunities to work in teams, exploring hands-on activities and projects to learn the characteristics of civil engineering and architecture. In addition, students use 3D design software to help them design solutions to solve major course projects. Students learn about documenting their project, solving problems, and communicating their solutions to their peers and members of the professional community of civil engineering and architecture. This is a PLTW course and only instructors with this training may use this number and description.	½ or 1	License Code: 10514-Project LEAD the WAY Endorsement (Civil Engineering & Architecture) ◆ 7-12
10515	Technological Systems	9-12	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.	½ or 1	License Code: 10005-Industrial Arts ◆ 7-12 or 9-12 OR 10007-Technology Education ◆ 7-12 or 9-12 OR 10010-Industrial Technology ◆ 7-12 or 9-12
10517	PLTW Computer Integrated Manufacturing	9-12	The major focus of this course is to answer questions such as: How are things made? What processes go into creating products? As students find the answers to these questions, they learn about the history of manufacturing, a sampling of manufacturing processes, robotics, and automation. The course is built around several key concepts: computer modeling, Computer Numeric Control (CNC) equipment, Computer Aided Manufacturing (CAM) software, robotics and flexible manufacturing systems. This is a PLTW course and only instructors with this training may use this number and description.	½ or 1	License Code: 10517-Project LEAD the WAY Endorsement (Computer Integrated Manufacturing) ◆ 7-12

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10999	Cooperative Work Experience	11-12	<p>Provides students with a regularly scheduled, supervised employment opportunity related to Trade and Industrial 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 Trade and Industrial 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.</p> <p>NOTE: <i>Students must be at least 16 years old and may be paid a wage by the employer.</i></p>	maximum of ½ per semester, not to exceed 2 credits while in high school	License Code: 10005-Industrial Arts ♦ 7-12 or 9-12 OR 10007-Technology Education ♦ 7-12 or 9-12 OR 10010-Industrial Technology ♦ 7-12 or 9-12

* *High school curricular requirements are spelled out in NDCC 15.1-21-02. Accreditation Rules can be found at <http://www.legis.nd.gov/information/acdata/pdf/67-19-01.pdf>. For accreditation, schools must provide additional units of credit based on school enrollment [see NDAC 67-19-01-32 (3)].*

** *Please refer to the second page of the teacher's North Dakota Educator's Professional license to verify which subject areas a teacher is qualified to teach. Licenses and endorsements are obtained on a teaching license from the Education Standards and Practices Board (ESPB). Credentials are obtained from the Department of Public Instruction (DPI) and are issued to individuals holding a current teaching license.*