

30. Technology Education – 1602-1699

This subject area encompasses courses that concern general workplace skills, occupational preparation, and non-specific work experience, on-the-job training, and cooperative programs. Courses that develop a general familiarity with industrial materials, processes, and systems are included here, as are courses that examine new and emergent technologies. Lastly, technical or industrial courses that did not readily fit into other subject areas are also included here.

1604 Employability Skills - Recommended for Students Grades 9 - 12 - Like Career Exploration courses, Employability Skills courses also help students match their interests and aptitudes to career options. However, the focus of Employability Skills courses is placed on sources of employment information, job seeking, interview techniques, applications and resumes, and the skills needed to remain and advance within the workplace. Course content may also include consumer education and personal money management topics.

1605 Diversified Occupations - Recommended for Students Grades 9 - 12 - Course helps students enter the work force through career exploration, job search and application, and by developing positive work attitudes and work related skills. Career planning and selection, money management, communication skills, interpersonal business relationships and behavior, and personal responsibility are typical topics covered in diversified occupations courses. Employment may be a required component of this course, or students may be required to enroll concurrently in a work experience course.

1606 Work Experience - Recommended for Students Grades 11 - 12 - Course provides general work experience, and emphasizes career guidance, job search, application, and employability skills (including refining academic and job skills and developing positive work attitudes). Students are employed, but their employment is not necessarily related to a particular vocational program or course of study.

1611 General Technology Education - Recommended for Students Grades 9 - 12 - Course exposes students to the tools, machines, processes, and systems that may be encountered in manufacturing-related occupations and enable students to develop the manual skills to use these tools in a variety of applications. The courses also explore the technology used in manufacturing products, transporting goods and people, effective communication, and efficient energy conversion. Topics may include (but are not limited to) drawing and planning, electricity, graphic arts, woodwork, metalwork, plastics, and power technology. General safety and career exploration are also covered.

1612 Materials and Processes. - Recommended for Students Grades 9 - 12 - Similar to Technology Education courses in that they expose students to the tools, machines, and systems that may be encountered in manufacturing related occupations. Materials and Processes courses relate this exposure particularly to the analysis, testing, and processing of metals, plastics, woods, ceramics, and composite materials.

1613 Metal and Wood Technology - Recommended for Students Grades 9 - 12 - Course includes studying the properties of metals, woods, and composites, and using these materials to design and construct functional products. Metal and Wood Technology courses enable the student to experience the process of translating an idea into a finished product, with instruction

in planning, designing, selecting materials, and using tools and machines.

1614 Industrial Safety/First Aid - Recommended for Students Grades 9 - 12 - Course provides instruction in safe operating procedures related to various trades, as well as more general training in emergency first aid and CPR. Course topics may include the importance of standard operation procedures, agencies and regulations related to occupational safety and hazard prevention, and the dangers of particular materials.

1615 Introduction to Engineering Design - Recommended for Students Grades 9 - 12 - Course teaches problem-solving skills using a design development process. Models of product solutions are created, analyzed, and communicated using solid modeling computer design software. (A "Project Lead the Way" course).

1616 Digital Electronics - Recommended for Students Grades 10 - 12 - Course in applied logic that encompasses the application of electronic circuitry and devices. (A "Project Lead the Way" course).

1617 Principles of Engineering - Recommended for Students Grades 9 - 12 - Course explore technology systems and manufacturing processes. Students learn how engineers and technicians use math, science, and technology in engineering problem solving. (A Project Lead the Way course)

1618 Computer Integrated Manufacturing - Recommended for Students Grades 10 - 12 - Course that applies principles of robotics and automation. The course builds on computer solid modeling skills developed in earlier courses. Students use CNC equipment to produce actual models of their three-dimensional designs. (A Project Lead the Way course)

1619 Civil Engineering and Architecture - Recommended for Students Grades 10 - 12 - a course provides an overview of the fields of Civil Engineering and Architecture, emphasizing the interrelationship and dependence of both fields on each other. Students use art software to solve real world problems and communicate solutions to hands-on-projects and activities. (A "Project Lead the Way" course)

1620 Engineering Design and Development - Recommended for Students Grade 12 – A course in which students work in teams to research, design and construct a solution to an open-minded engineering problem. Students must apply principles developed in Principles of Engineering, Digital Electronics, Introduction to Engineering Design, Computer Integrated Manufacturing and . Students must present progress reports, submit a final written report and defend their solutions to a panel of outside reviews at the end of the year. (A "Project Lead the Way" course)

1621 Aerospace Engineering - Recommended for Students Grades 10 - 12 - a course students will engage in engineering design problems related to aerospace information systems, star sailing or astronautics rocketry, propulsion, and the physics of space science, space life sciences (Bio-Space) that includes looking at habitat and crew systems with life support, and the biology of space science, principles of aeronautics, structures and materials, and systems engineering. (A "Project Lead the Way" course)

1623 Production Systems - Recommended for Students Grades 9 - 12 - Course introduces students to the concepts of manufacturing technologies, from conception through production. Although courses vary, students typically analyze markets, design and develop prototypes, plan a marketing or sales strategy, manage a production plan, and manufacture useful products. The evolution and impact of technology on society's social, cultural, and economic systems and institutions is also explored.

1624 Manufacturing Systems - Recommended for Students Grades 9 - 12 - Course introduces students in a general fashion to the manner in which materials are processed and transformed using various methods. Processing techniques covered may include casting, forming, separating, assembling, and finishing. The courses may also include an overview of management techniques in planning, organizing, and controlling various segments of the manufacturing process, including design, engineering, production, and marketing. Students may organize a "company" and create products for sale.

1625 Technology Systems - Recommended for Students Grades 9 - 12 - Course enable students to explore the designs, resources, processes, management, products, and analyses as they relate to information physical and bio/chemical technologies. The development, practical application, and impact of technologies are emphasized, as is teamwork. This course may be offered in a shop setting, a computer-driven lab, a classroom, or combination of the three.

1626 Emergent Technologies - Recommended for Students Grades 9 - 12 - Course exposes students to the new technologies that affect our technological society. A wide range of technologies may be covered, but examples include video production and editing, lasers, fiber optics, electronics, robotics, technical communications, bio/chemical technologies, and computer technologies (artificial intelligence, computer-aided design and/or machining, and so on). This course is often offered in a modular format.

1627 Research and Development - Recommended for Students Grades 9 - 12 - Course provides students with the opportunity to focus on one or more areas of technology, creatively pursuing new knowledge or solving a technological problem, by designing and building prototypes and working models. Appropriate information is learned and applied in order to complete the research and development process.

1628 Biotechnical Engineering - Recommended for Students Grades 9-12 - a course which applies and concurrently develops secondary level knowledge and skills in biology, physics, technology, and mathematics. It includes experiences from the diverse fields of Bio-technology, Bio-engineering, Bio-medical engineering, and Bio-molecular engineering. (A “**Project Lead the Way**” course)

1629 Micro-electro-mechanical Systems (MEMS) - Recommended for Students Grades 9-12 - This course is a study of elements of MEMS design utilizing integrated Sandia National Laboratories MEMS software coupled with Auto CAD to form the basis of a fully integrated MEMS design environment. Emphasis will be placed on teaching the process involved in producing MEMS as well as the usage of tools within the AutoCAD environment to realize these design ideas. The class will be hands-on and facilitate laboratory equipment.

1633 Appliance Repair - Recommended for Students Grades 9 - 12 - Course provides students with the knowledge and experience to repair, install, and service appliances such as stoves, refrigerators, washers, dryers, air conditioners, water heaters, and so on. Students gain an understanding of the mechanics and working systems of these appliances, the skills to read blueprints and specifications; and proficiency in using related tools and products.

1634 Equipment Maintenance and Repair - Recommended for Students Grades 9 - 12 - Course prepares students to adjust, maintain, replace and repair parts of machinery and to repair tools, equipment, and machines. The courses may have a general emphasis or may focus on a specific type of machinery or on equipment related to a particular industry. Depending upon the intent, course topics may include electric, hydraulic, or mechanic systems; control devices, valves, and gates; or supplemental equipment such as fans, hoses, and pipes.

1643 Upholstery - Recommended for Students Grades 9 - 12 - Course exposes students to the tools, materials, and techniques used to fit and repair furniture with material coverings, padding, fillers, and springs. Course content includes selection of furniture and fabric; design and construction of upholstery projects; and finishing and trimming furniture.

1650 Foundations in 21st Century Skills Grade 9 – 12 - Introductory course that introduces workforce skills based on the following modules of the Ford Partnership for Advance Studies curriculum: From Concept to Consumer: Building a Foundation in Problem- Solving, Media and Messages: Building a Foundation of Communication Skills, People at Work: Building a Foundation of Research Skills, Careers, Companies, and Communities.

1651 Working Toward Sustainability – Grades 9 – 12 - Ford Partnership for Advance Studies course that addresses the following 5 modules for green and sustainable energy:

1. We All Run on Energy
2. Energy from the Sun: Biomass
3. Is Hydrogen a Solution?
4. The Nuclear Revolution,
5. Energy for the Future.

1653 Getting Smart about Business Grades 9 – 12 - Ford Partnership for Advance Studies course that addresses the following 5 business based modules: From Concept to Consumer: Building a Foundation in Problem-Solving, Media and Messages: Building a Foundation of Communication Skills, Careers, Companies, and Communities, Calculating Your Future: Personal Finance, Planning for Business Success.

1654 Manufacturing for Tomorrow – Grades 9 -12 - Ford Partnership for Advance Studies course that addresses 4 manufacturing modules: From Concept to Consumer, Closing the Environmental Loop, Planning for Efficiency, Ensuring Quality.

1655 Data, Decisions, and Design – Grades 9 – 12 - Ford Partnership for Advance Studies course that addresses 3 design and engineering modules: From Data to Knowledge, Reverse Engineering, Different by Design.

1656 Living in a Global Economy – Grade 9 – 12 - Ford Partnership for Advance Studies course that addresses 3 Global economy modules.

1657 Putting Math to Work – Grades 9 – 12 - Ford Partnership for Advance Studies course that addresses 3 personal and business finance modules.

1660 Principles of Biomedical Sciences – Grades 9 – 12 - Students explore the concepts of human medicine and are introduced to research processes and to bioinformatics. Hands-on projects enable students to investigate human body systems and various health conditions, including heart disease, diabetes, sickle-cell disease, hypercholesterolemia, and infectious diseases.

1661 Human body Systems – Grade 9 – 12 - Students examine the processes, structures, and interactions of the human body systems to learn how they work together to maintain homeostasis (internal balance) and good health.

1662 Medical Intervention – Grades 9 – 12 - Student projects investigate various medical interventions that extend and improve quality of life, including gene therapy, pharmacology, surgery, prosthetics, rehabilitation, and supportive care.

1663 Biomedical Sciences – Grades 9 – 12 -- In this capstone course, students apply their knowledge and skills to answer questions or solve problems related to the biomedical sciences. Students design innovative solutions for the health challenges of the 21st century as they work through progressively challenging open-ended problems, addressing topics such as clinical medicine, physiology, biomedical engineering, and public health. Students have the opportunity to work on an independent project and may work with a mentor or advisor from a university, hospital, physician's office, or industry. Throughout the course, students are expected to present their work to an adult audience that may include representatives from the local business and healthcare community.

1695 Technology Education-Related Subjects - Recommended for Students Grades 9 - 12 - Course provides skills and knowledge necessary or useful for particular occupations or technologies within an industrial or technological field. Particular topics and skills, or their applications, covered in these courses may vary with the occupation or technology.

1696 Technology Education-Independent Study - Recommended for Students Grades 9 - 12 - Course often conducted with instructors as mentors; enable students to explore topics of interest within one of the fields related to industry or technology.

1699 Technology Education - Recommended for Grades - Other