Technical and Multimedia Education Courses

**SKILLS FOR LIFE**
Recommended for All Students

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100</td>
<td>Problem Solving Home Repair</td>
<td>Essential skills in home repair, construction, maintenance, &amp; systems</td>
</tr>
</tbody>
</table>

**CONSTRUCTION**
MN Career Field

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1101</td>
<td>Intro to Woods</td>
</tr>
<tr>
<td>1140</td>
<td>Cabinetmaking</td>
</tr>
<tr>
<td>1141</td>
<td>Sports Equipment</td>
</tr>
</tbody>
</table>

**TRANSPORTATION**
MN Career Field

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1144</td>
<td>Intro to Small Engines</td>
</tr>
<tr>
<td>1156</td>
<td>Auto Maintenance</td>
</tr>
</tbody>
</table>

**MANUFACTURING**
MN Career Field

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1103</td>
<td>Intro to Metals</td>
</tr>
<tr>
<td>1137</td>
<td>Welding &amp; Milling</td>
</tr>
</tbody>
</table>

**STEM**
MN Career Field

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1104</td>
<td>Intro to Engineering</td>
</tr>
<tr>
<td>1135</td>
<td>3D Modeling</td>
</tr>
</tbody>
</table>

**ARCHITECTURE**
MN Career Field

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1102</td>
<td>Intro to Drafting</td>
</tr>
<tr>
<td>1131</td>
<td>Architecture &amp; Landscape Design</td>
</tr>
</tbody>
</table>

**COMMUNICATIONS**
MN Career Field

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1105</td>
<td>Intro to Graphics/Animation</td>
</tr>
<tr>
<td>1111</td>
<td>Film Appreciation</td>
</tr>
<tr>
<td>1106</td>
<td>Website Development</td>
</tr>
<tr>
<td>1128</td>
<td>Video Production</td>
</tr>
</tbody>
</table>

**Adv. Design-Build**
(Students that have completed all courses in a chosen career field will create their own project).

**SELF-GUIDED**

**CAREER DEVELOPMENT**
District-Wide Two Hour Block Courses

<table>
<thead>
<tr>
<th>Category</th>
<th>Course Titles</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Vehicle Services</td>
<td></td>
</tr>
<tr>
<td>&gt; Aviation</td>
<td></td>
</tr>
<tr>
<td>&gt; Computer Hardware/</td>
<td></td>
</tr>
<tr>
<td>Software &amp; Game Design</td>
<td></td>
</tr>
<tr>
<td>&gt; Cisco</td>
<td></td>
</tr>
</tbody>
</table>
Courses in the Technology and Engineering Department are organized according to the MN Department of Education and MN State Colleges and Universities Career Fields, Clusters, and Pathways model. These programs of study are designed for students to attain the specific knowledge, skills, and abilities needed to pursue a career of their choice. It is highly recommended that students enroll in a focus area’s introductory courses before enrolling in that area’s upper level courses. Upon completion of all the courses in an entire learning area, students may apply for Advanced Design-Build, a practical applied engineering course that is meant to be a capstone course for any of the focus areas. The department also offers two additional courses outside the main focus areas. These courses require no prerequisite and are meant to benefit a student’s career or life skills.

NOTE: Successful completion of the course Photography A or Photography B or Photography C or Digital Photography A or Digital Photography B or Architecture A or Multimedia: Digital Graphics or Multimedia: Advances Digital Graphics, satisfies the 1 credit “Arts” requirement.

SKILLS FOR LIFE COURSE-RECOMMENDED FOR ALL STUDENTS

1100 Problem Solving Home Repair
Grades 9, 10, 11, 12
Prerequisite: None

Our homes are rooted in human-made products that are prone to malfunction or breakage. It is important for students to gain confidence in troubleshooting and problem solving, so that they may be well prepared for a future that will most certainly require such talents. Concepts such as troubleshooting, redesign and retrofitting, process implementation, tools, systems and safety, will all help to answer the ultimate engineering question: “How does this work?” This course is based in residential construction and how our home’s systems and structures function. Additionally, knowing how to perform repairs can save people thousands of dollars over a lifetime.

CONSTRUCTION COURSES

1101 Intro to Woods
Grades 9, 10, 11, 12
Prerequisite: None

This survey course provides students with basic skills in the safe and proper operation of power tools and techniques used in production. Classroom projects are designed to allow students the opportunity to use a variety of the current production machines in the classroom while learning industry terminology. In addition, activities will include squaring stock, basic joinery, gluing techniques and finishing.

1140 Cabinetmaking
Grades 10, 11, 12
Prerequisite: Intro to Woods

This course focuses on the fundamental understanding of wood technology. Topics covered include wood harvesting and seasoning, species identification, project design, cost estimation, safety practices, and wood finishing technologies.

1141 Build Your Own Sports Equipment
Grades 10, 11, 12
Prerequisite: Intro to Woods

This course will provide students with the opportunity to construct sports equipment of their choice using the Technology Education shop area. This course is aimed towards students who wish to construct non-traditional technology education projects.

MANUFACTURING COURSES

1103 Intro to Metals
Grades 9, 10, 11, 12
Prerequisite: None

This course is an introduction and orientation to the field of metal, manufacturing and fabrication. Technical information in manufacturing and fabrication will be covered with emphasis on exercises for development of fundamental skills and knowledge.

1137 Welding and Machining
Grades 10, 11, 12
Prerequisite: Intro to Metals

Hands-on exploratory experiences in the operation of metal machining will utilize the lathe, milling machine, and drill press. Gas, electric arc, MIG and TIG welding processes will also be explored. Material selection and processing will be emphasized.

ARCHITECTURE COURSES

1102 Intro to Drafting
Grades 9, 10, 11, 12
Prerequisite: None

This course introduces students to the language of drafting through the development of engineering and architectural projects. Designs will be developed through the use of CADD software. Technical drawings and 3D modeling are developed for each project. Drafting is considered the international symbol language and is a major communication medium of the information age.
TECHNICAL AND MULTIMEDIA EDUCATION COURSES

1131  Architecture and Landscaping Design  Grades 10, 11, 12
Prerequisite: Intro to Drafting

This course is a study of interior and exterior residential architectural designs. Orthographic, isometric, oblique, perspective sketching techniques, wall section drawings and material/cost schedules will be covered. Students will create a complete set of residential working drawings to include: scaled floor plan, called foundation plan, scaled elevation drawing, electrical plan, plumbing plan, plot plan, wall section drawing and cost schedules.

TRANSPORTATION COURSES

1144  Intro to Small Engines  Grades 9, 10, 11, 12
Prerequisite: None

This course will cover theory of operation and component design of small gas engines. Students will disassemble, measure, clean and reassemble an internal combustion engine. In addition, troubleshooting and repair of two and four cycle engines will be covered.

1156  Auto Maintenance  Grades 10, 11, 12
Prerequisite: Intro to Small Engines

This course teaches students how to select, purchase, finance and insure a vehicle. In addition, students will learn how to perform the periodic maintenance procedures necessary on most current/common passenger vehicles. Students will not need any previous mechanical experience, but on occasion, have access to a car for lab work.

STEM COURSES

1104  Intro to Engineering  Grades 9, 10, 11, 12
Prerequisite: None

This course is an introduction to the field of engineering. Through projects, students will explore civil, mechanical, and electrical concepts; three of the major branches of engineering. Numerous sub disciplines and interdisciplinary subjects are derived from concentrations, combinations or extensions of these three major branches of engineering.

1135  3D Modeling  Grades 10, 11, 12
Prerequisite: Intro to Engineering

Students will master the fundamentals of drafting to create their own projects. Students will output their designs to 3D printers to create an actual prototype of their work. Standard projection methods, dimensioning, 3D modeling norms and an introduction to CAM (Computer-aided manufacturing) will be covered.

COMMUNICATIONS COURSES

1105  Intro to Graphics/Animation  Grades 9, 10, 11, 12
Prerequisite: None

This course explores Graphic Design and the Technology used for Print, Web and Video Media. Students will experience the design process, image creation and manipulation techniques and produce projects for multimedia presentation. Your portfolio of Projects include digital photography and image manipulation, T-shirt design, basic 3D design, animation and printing. NOTE: Successful completion of this course satisfies the 1 credit “Arts” requirement.

1111  Film Appreciation  Grades 9, 10, 11, 12
Prerequisite: None

Film appreciation is a course that explores the world of film and filmmaking. We will examine the styles and techniques used in making a film. Students will view films, behind the scenes documentaries and use other course materials to prepare for critiques and discussions. Students are required to view films for this class. This class will include field trips to the IMAX and other movie theatres in the area.

1106  Website Development  Grades 10, 11, 12
Prerequisite: Intro to Graphics/Animation

This course is an introduction to web page design for the Internet. Laboratory activities will emphasize the use of Adobe web authoring software. Students will explore the design process, image generation techniques, pre-production activities and web site maintenance. Topics covered include graphic design, typography, multi-platform integration, image formats for web publication, interactivity, animation, web site design, web site publishing, web site management, and web-based feedback mechanisms.
1128 Video Production
Grades 9, 10, 11, 12
Prerequisite: Intro to Graphics/Animation

Explore the artistic and technical aspects of film and video production. Students will get hands-on experience with filming in HD, digital editing, visual effects and computer graphics. Production projects may include but are not limited to music videos, short films, public service announcements and commercials. This course will provide students with the skills needed to successfully transition to Irish Update and/or Video Production courses.

ADVANCED COURSES

1150 Advanced Design-Build
Grades 10, 11, 12
Prerequisite: Application Required

A practical approach to applied engineering. Independent use of machines and materials allows students to design and build a project of their choice. Students will be responsible for researching their project design, cost estimates, project procedures, material selection, and construction. This course will be an extensive personal development of advanced problem solving, with students working independently to the greatest extent possible. The instructor’s role will be focused on the tasks of monitoring shop safety and providing expertise knowledge and resources.