



Planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

**Pathway: Engineering and Technology**

**Inventions and Innovations**

**Credit: 1**  
**SDE Course Code: 3810**  
**MNPS Course Code: IND8192**

Innovations and Inventions will enable students to further develop technological literacy skills and should be offered as an integral component of the core school curriculum. Integrated academics combined with a hands-on program of study that teaches about the development and applications of technology and the effects technology has on individuals, society and the environment. This course integrates the three (3) Gateway courses throughout the learning expectations and is articulated in all of the sample performance tasks.

**Technological Systems**

**Credit: 1**  
**SDE Course Code: 3811**  
**MNPS Course Code: IND3811**

This is an overview course designed to introduce students to the application of technology to solve problems and meet human needs and wants. Laboratory experiences are focused on the technology systems of bio-related technology, communication, computer applications, construction, energy, power, transportation, and manufacturing. Students will study concepts about technological systems and the influences these systems have at home, in communities, and at work.

The content of the course includes, but is not limited to, the study of systems of technology, application of technology, design/problem solving, evolving technologies, safety, maintenance, entrepreneurship, leadership, careers, and marketing.

**Engineering Process**

**Credit: 1**  
**SDE Course Code: 3812**  
**MNPS Course Code: IND3812**

This is an overview course that introduces students to the concepts and practices that underlie careers in engineering and engineering technology. The course integrates STEM (Science, Technology Engineering and Mathematics) into pre-engineering activities. Students acquire knowledge and skills in engineering problem solving and explore requirements for engineering careers. The purpose of Engineering Processes is to expose students to project-based learning activities using advanced mathematics, design, pre-engineering concepts, use of time studies and problem solving using both classroom and on-line materials. Students will also be required to perform research and upper level literacy in technology engineering education. This course is designed to provide information and experiences to help students adapt themselves to the workforce and the changing demands that will be placed on the engineering work

force in the 21<sup>st</sup> century. It will help students develop skills in problem solving, teamwork, time management, computer skills, and engineering systems.

**Problems and Solutions in Technology**

**Credit: 1**  
**SDE Course Code: 3813**  
**MNPS Course Code: IND3813**

Problems and Solutions in Technology is a research course which allows students to develop advanced technical knowledge and skills by solving problems in one or more of the technology systems: communication, computer applications, construction, energy, power, transportation, manufacturing, and bio-related technology. In this research course, students develop and apply the knowledge and skills gained in previous courses to identify and resolve relevant problems. This course is designed to give students the opportunity to synthesize and apply knowledge and skills gained in several courses and apply the skills to new situations. The course integrates mathematics, science, language arts, and social studies competencies in a contextual setting using Project-Based Learning Activities as performance tasks. A culminating research/project report is required to satisfactorily complete this research course.

**Pathway: Science and Mathematics**

**Inventions and Innovations**

**Credit: 1**  
**SDE Course Code: 3810**  
**MNPS Course Code: IND8192**

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