*Unit 3 Project Management

Content Area: **Technology**
Course(s): **Capstone in Technology, Design & Engineering**
Time Period: **November**
Length: **8 blocks**
Status: **Published**

Transfer Skills

Effective project management requires proper planning of all stages involved and includes an outline of all necessary tasks, an assignment of responsibilities and a timeline of events.

Enduring Understandings

The completion of a long-term group project requires extensive and effective planning.

Project timelines are an effective way to keep a long term project on schedule.

A project outline lays out an entire project and all of its primary and secondary parts.

Projects are completed in stages and each stage has its own set of goals, steps, requirements, etc.

Individual parts of a project can be assigned an overall percent value to the project whole.

Short and long-term goals are an important part of project management.

A Gantt chart is an effective way to show a visual timeline of a project.

Essential Questions

How can the planning process affect the outcome of a large project?

How are project timelines fluid and how are they ridged?

How can a project outline be used to assign priority levels to various parts of a project?

Why is it important to break up a large project into separate stages?

How can assigning percent values to parts of a project allow you to better manage your time?

Content

Gantt chart, Constraints, Critical path, Deliverable, Project manager, Functional manager, Life cycle, Stakeholder, Workplan

Skills

Work within a team to develop a plan for a long-term robotics project.

Independently develop a solution for a particular part of a robot design.

Document, through journal entries, engineering portfolios, etc., the design process used to complete a long-term robotics project.

Develop and present a "Critical Path" for a project.

Present, both prepared and impromptu, proposed and completed ideas to small group and whole class audiences.

Resources

Desktop computers

Research database access

2D & 3D CAD systems

3D printer

Laser cutter

Color laser printers

Large format printer

Prototyping equipment (hand-held and power tools)

Prototyping materials

Prototyping furniture

Presentation device

Standards

TECH.8.1.12.A.3	Collaborate in online courses, learning communities, social networks or virtual worlds to discuss a resolution to a problem or issue.
TECH.8.1.12.B.CS1	Apply existing knowledge to generate new ideas, products, or processes.
TECH.8.1.12.C.1	Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.
TECH.8.1.12.C.CS2	Communicate information and ideas to multiple audiences using a variety of media and formats.
TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.
TECH.8.1.12.F.CS1	Identify and define authentic problems and significant questions for investigation.
TECH.8.1.12.F.CS2	Plan and manage activities to develop a solution or complete a project.
TECH.8.1.12.F.CS3	Collect and analyze data to identify solutions and/or make informed decisions.
TECH.8.1.12.F.CS4	Use multiple processes and diverse perspectives to explore alternative solutions.
TECH.8.2.12.A.1	Propose an innovation to meet future demands supported by an analysis of the potential full costs, benefits, trade-offs and risks, related to the use of the innovation.
TECH.8.2.12.B.1	Research and analyze the impact of the design constraints (specifications and limits) for a product or technology driven by a cultural, social, economic or political need and publish for review.
TECH.8.2.12.B.2	Evaluate ethical considerations regarding the sustainability of environmental resources that are used for the design, creation and maintenance of a chosen product.
TECH.8.2.12.C.3	Analyze a product or system for factors such as safety, reliability, economic considerations, quality control, environmental concerns, manufacturability, maintenance and repair, and human factors engineering (ergonomics).
TECH.8.2.12.C.5	Create scaled engineering drawings of products both manually and digitally with materials and measurements labeled.
TECH.8.2.12.C.7	Use a design process to devise a technological product or system that addresses a global problem, provide research, identify trade-offs and constraints, and document the process through drawings that include data and materials.
TECH.8.2.12.C.CS2	The application of engineering design.
TECH.8.2.12.D.1	Design and create a prototype to solve a real world problem using a design process, identify constraints addressed during the creation of the prototype, identify trade-offs made, and present the solution for peer review.
TECH.8.2.12.D.2	Write a feasibility study of a product to include: economic, market, technical, financial, and management factors, and provide recommendations for implementation.
TECH.8.2.12.D.3	Determine and use the appropriate resources (e.g., CNC (Computer Numerical Control) equipment, 3D printers, CAD software) in the design, development and creation of a technological product or system.
TECH.8.2.12.D.CS1	Apply the design process.
TECH.8.2.12.D.CS2	Use and maintain technological products and systems.