Merrillville High School

Course Information:

Mechanical and Architectural Design 7196 HS Credits: 2.0

Length of Course: 2 trimesters

High School Prerequisites: Introduction to Engineering Design

High School Faculty Information:

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Catalog Description:

Mechanical and Architectural Design provides students with a basic understanding of creating working drawings related to manufacturing detailing and assembly as well as a survey of Architectural design focused on the creative design of buildings. Topics include fastening devices, thread symbols and nomenclature, surface texture symbols, classes of fits, and the use of parts lists, title blocks and revision blocks. From an Architecture perspective, this course covers problems of site analysis, facilities programming, space planning, conceptual design, proper use of materials, and selection of structure and construction techniques.

Course Objectives:

Student will study and understand –

- Reading Working Drawing
    - Parts Lists
    - Title Blocks
    - Revision Blocks
- Creating Manufacturing Detail Prints
- Creating Part abn Assembly Prints
- Fastening Devices
    - Thread Symbols and Nomenclature
    - Surface Texture Symbols
    - Classes of Fits
- Architectural Design
    - Site Analysis
    - Facilities Programming
    - Space Planning

- Concept Design
- Use of Materials
- Structure and Construction Techniques

Course Content:

- Textbook
- 2D CAD and 3D Modeling Software
- Google Classroom

Required High School Textbook/Resources:

Mechanical Drawing Glencoe McGraw-Hill
Exploring Drafting Goodheart-Willcox
AutoCAD and its applications comprehensive 13th Edition Goodheart-Willcox

Grading and Evaluation:

Grades are electronically entered into the online Skyward gradebook. Final exams constitute 20% of overall trimester grade.

Methods of Evaluation:

Grading Scale:

92-5-100 = A
89.5-92.49 = A-
86.5-89.49 = B+
82.5-86.49 = B
79.5 - 82.49 = B-
76.5 - 79.49 = C+
72.5 - 76.49 = C
69.5 - 72.49 = C-
66.5 - 69.49 = D+
62.5 - 66.49 = D
59.5 - 62.49 = D-
59.49 and below = F

Assignments and Tentative Course Schedule:

Class Meeting	**Topic**	**Assigned Work**	**Work Due and Exams**
Week 1	Intro to Course - Engineering Notebook		
Week 2	Mechanical Graphics - Fastening Devices	Identify Fasteners Draw and Detail Fasteners	2D Drawings, Quiz
Week 3	Mechanical Graphics - Thread Symbols	Draw Thread Symbols Understand Thread Nomenclature	2D Drawings, Quiz
Week 4	Mechanical Graphics - Surface Texture	Develop and Draw Proper Surface Texture Symbols	2D Drawings, Quiz
Week 5	Mechanical Graphics -Fasteners Classes of Fit	Calculate Classes of Fits	2D Drawings, Quiz
Week 6	Mechanical Graphics - Working Drawings	3-View Working Detail Drawing - Title Block Creation with Revision Block ACAD	2D Drawings, Quiz
Week 7	Mechanical Graphics - Working Drawings	3-View Working Detail Drawing - Assembly with Parts Lists ACAD	2D Drawings, Quiz
Week 8	Mechanical Graphics - Working Drawings	3-View Working Detail Drawing - Assembly and Parts Inventor	3D Models and Drawings, Quiz
Week 9	Mechanical Graphics - Working Drawings	3-View Working Detail Drawing - Assembly and Parts Inventor	3D Models and Drawings, Quiz
Week 10	Mechanical Graphics - Working Drawings	3-View Working Detail Drawing - Assembly and Parts Inventor	3D Models and Drawings, Quiz
Week 11	Mechanical Graphics - Working Drawings	3-View Working Detail Drawing - Assembly and Parts Inventor	3D Models and Drawings, Quiz
Week 12 (Last week of first trimester,	Final Exam Week		Final Exam

Final Exam)			
Week 13	Architectural Design - History and Architectural Styles	Identify and Understand Different Styles through History	Research, Discussions Quiz
Week 14	Architectural Design	Facilities Programming REVIT	Research, Sketches, Discussions, Quiz
Week 15	Architectural Design	Traffic Flow. Material Handling Flow REVIT	Flow Charts, Plant Layout
Week 16	Architectural Design	Design and Draw - Plan, Section and Elevation Views REVIT	Create Plant Layout, Plant Layout Optimization
Week 17	Architectural Design	Design and Draw - Facilities Layout REVIT	Facility Planning
Week 18	Architectural Design	Design and Draw - Facilities Layout REVIT	Facility Drawing
Week 19	Architectural and Mechanical Design	3D Assemblies - Creating 3-View Drawings INVENTOR REVIT	Production Plan for Assembly into Facility
Week 20	Architectural and Mechanical Design	Parts and Assembly Prints - Plant Layout Process and Flow INVENTOR REVIT	Create Plant Layout for Parts and Assembly
Week 21	Architectural and Mechanical Design	Parts and Assembly Prints - Plant Layout Process and Flow INVENTOR REVIT	Create Plant Layout for Parts and Assembly
Week 22	Architectural and Mechanical Design	Parts and Assembly Prints - Plant Layout Process and Flow INVENTOR REVIT	Create/Modify Layout to improve production using revisions
Week 23	Architectural and Mechanical Design	Parts and Assembly Prints - Plant Layout Process and Flow	Presentations/Assembly Animations
Week 24 (Last week of second trimester,	Final Exam Week		FINAL EXAM

Final Exam)			