Principles of Applied Engineering

Midland Freshman High School | Academic Year: 2026–2027 | Length of Course:1 Year
Semester: S1 **| Number of Credit Hours** .5 **| Prerequisite:** None **Instructor**: Sumanth Boddapati • **Email**: sumanth.boddapati@midlandisd.net • **Conference Period**: 1st Period

Program of Study- Engineering

Course Description

Principles of Applied Engineering provides an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students will develop engineering communication skills, which include computer graphics, modeling, and presentations, by using a variety of computer hardware and software applications to complete assignments and projects. Upon completing this course, students will understand the various fields of engineering and will be able to make informed career decisions. Further, students will have worked on a design team to develop a product or system. Students will use multiple software applications to prepare and present course assignments.

Course Objectives

By the end of this course, students will be able to:

Objective 1	1 Professionalism in the Sciences: Applied Engineering
Objective 2	2 Introduction to Applied Engineering
Objective 3	3 Electromechanical Systems
Objective 4	4 STEM Careers: Applied Engineering
Objective 5	5 Engineering Design
Objective 6	6 Engineering Notebooks
Objective 7	7 Basic Computer-Aided Drawing
Objective 8	8 Safety Testing & Material Properties

Objective 9	9 Lab Safety: Applied Engineering
Objective 10	10 Mathematical Principles: Measurements
Objective 11	11 Impact of Technology
Objective 12	12 Basic Electronic Theory
Objective 13	13 Team Problem Solving
Objective 14	14 Robotics Basics
Objective 15	15 Design Challenge: Trebuchet
Objective 16	16 Design Challenge: Cranes & Compound Pulleys
Objective 16	17 Applied Engineering Capstone

Instructional Materials & Supplies

- iCEV, Autocad
- **Notebook**, tools, safety glasses
- Tech access: Google Classroom, Autocad, iCEV

Course Outline

UNIT	TOPIC	APPROXIMATE TIME (week)
Unit 1	1 Professionalism in the Sciences: Applied Engineering	1.5
Unit 2	2 Introduction to Applied Engineering	0.5

Unit 3	3 Electromechanical Systems	2
Unit 4	4 STEM Careers: Applied Engineering	1
Unit 5	5 Engineering Design	2
Unit 6	6 Engineering Notebooks	0.5
Unit 7	7 Basic Computer-Aided Drawing	12.5
Unit 8	8 Safety Testing & Material Properties	0.5
Unit 9	9 Lab Safety: Applied Engineering	0.5
Unit 10	10 Mathematical Principles: Measurements	2.5
Unit 11	11 Impact of Technology	1
Unit 12	12 Basic Electronic Theory	2
Unit 13	13 Team Problem Solving	2
Unit 14	14 Robotics Basics	2
Unit 15	15 Design Challenge: Trebuchet	3
Unit 16	16 Design Challenge: Cranes & Compound Pulleys	3.5

Grading Breakdown

Major assignments are those that allow you to demonstrate mastery of the course objectives. Minor assignments include skill checks, quizzes, homework, and other short assessments that contribute to your overall understanding of the course material.

Category	Percentage
Major Assignments(Tests, Projects)	60%
Minor Assignments (Quizzes / Skills Checks)	40%
Semester Exam / Project	15%

Grade Scale: A = 90–100 | B = 80–89 | C = 70–79 | F = < 70

Semester grades include a grade for each of the three six-week periods and an exam or project that is weighted 15% of the overall semester grade.

Classroom Expectations

- Be on time, prepared, and respectful
- Follow safety protocols (PPE, tools, etc.)
- Use tech when instructed
- Ask questions and engage actively

Attendance & Participation

Attendance is mandatory. You must:

- Attend scheduled classes
- Make up missed work with 1 school day allowed for each excused absence

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Late Work & Make-Up Policy

- Students are allowed one day of make-up time for each day of absence
- Late assignment penalties:
    - 1 School Day Late- Maximum Grade of 90
    - 2 School Days Late- Maximum grade of 80
    - 3-5 School Days Late- Maximum grade of 70
- Missed assessments must be rescheduled

Academic Integrity

Cheating or plagiarism is not tolerated. First offense may result in a zero and parent contact. Further violations follow district policy.

Industry-Based Certifications

This course aligns with and prepares students for the following credentials:

- **Certification Name : AutoCAD**

Earning credentials enhances employability and may qualify for dual credit or advanced placement.

Safety & Equipment Use

- Always follow safety instructions and wear required PPE
- Report damaged tools/equipment immediately
- Violation of safety protocols may result in removal from lab and disciplinary action

Parent/Guardian Communication

- Progress reports are sent every 3 weeks if the grade is below 70.
- Grades available in PowerSchool. Emails and phone calls are made if students are struggling in class due to grades or behavior.
- Parents/Guardians can email at any time with concerns or questions.

Acknowledgment of Understanding

Please return this signed page by Friday August 21, 2026.

Student Name: _____ Signature: _____

Guardian Name: _____ Signature: _____

Preferred Contact (Email/Phone): _____

Statements of Nondiscrimination

Midland Independent School District does not discriminate on the basis of race, color, national origin, sex, or disability in its programs or activities and provides equal access to the Boy Scouts and other designated youth groups. The following person has been designated to handle inquiries regarding the nondiscrimination policies: Melissa Horner, Executive Director of Student Services, at 615 W. Missouri Avenue, Midland, TX 79701, melissa.horner@midlandisd.net, or at 432-240-1000.