

Course Syllabus

CONCEPTS OF ENGINEERING AND TECHNOLOGY

Each day, we are surrounded by technology and engineering projects. From our phones to the bridges we drive over, engineering and technology influence many parts of our lives. In Concepts of Engineering and Technology, you will learn more about engineering and technology careers and what skills and knowledge you'll need to succeed in these fields. You'll explore innovative and cutting-edge projects that are changing the world we live in and examine the design and prototype development process. Concepts of Engineering and Technology will also help you understand the emerging issues in this exciting career field.

Unit 1: Development & Understanding of Engineering

Learning Objectives:

After studying this unit, you will be able to:

- Distinguish the differences between science, technology, and engineering.
- Understand and use technical terms.
- Discuss important technological developments from the past.
- Identify the various technological ages and the rate of current development.
- Discuss some of the ethical concerns around technology.

UNIT 1 Assignments

Assignment	Type	Score
Development & Understanding of Engineering: Unit Text Questions	Homework	10 points

Development & Understanding of Engineering: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points
Concepts of Engineering & Technology Unit 1 Activity	Activity	15 points
Unit 1 Discussion Assignment 1	Discussion	5 points
Unit 1 Discussion Assignment 2	Discussion	5 points
Unit 1 Quiz – Development & Understanding of Engineering	Quiz	15 points

Unit 2: Making Problems into Ideas

Learning Objectives:

After studying this unit, you will be able to:

- Discuss open and closed systems.
- Identify how technological systems interact to achieve goals.
- Find technological solutions through problem solving.
- Design and maintain a computation engineering notebook.

UNIT 2 Assignments

Assignment	Type	Score
Making Problems into Ideas: Unit Text Questions	Homework	10 points
Making Problems into Ideas: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points

Concepts of Engineering & Technology Unit 2 Activity	Activity	15 points
Unit 2 Discussion Assignment 1	Discussion	5 points
Unit 2 Discussion Assignment 2	Discussion	5 points
Unit 2 Quiz – Making Problems into Ideas	Quiz	15 points

Unit 3: From Sketches to Products

Learning Objectives:

After studying this unit, you will be able to:

- Describe the fundamental processes needed for a project, including design and prototype development.
- Identify the chemical, mechanical, and physical properties of engineering materials.
- Assess risks and benefits of a design solution.
- Maintain a professional portfolio.

UNIT 3 Assignments

Assignment	Type	Score
From Sketches to Products: Unit Text Questions	Homework	10 points
From Sketches to Products: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points
Concepts of Engineering & Technology Unit 3 Activity	Activity	15 points
Unit 3 Discussion Assignment 1	Discussion	5 points

Unit 3 Discussion Assignment 2	Discussion	5 points
Unit 3 Quiz – From Sketches to Products	Quiz	15 points

Unit 4: Civil Engineering

Learning Objectives:

After studying this unit, you will be able to:

- Work in teams to apply the design process.
- Assume different roles within an engineering project.
- Develop and test a project model.
- Use time-management skills to meet project objectives.
- Use criteria to meet project expectations.
- Describe and demonstrate team functions, quality, and requirements.

UNIT 4 Assignments

Assignment	Type	Score
Civil Engineering: Unit Text Questions	Homework	10 points
Civil Engineering: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points
Concepts of Engineering & Technology Unit 4 Activity	Activity	15 points
Unit 4 Discussion Assignment 1	Discussion	5 points
Unit 4 Discussion Assignment 2	Discussion	5 points
Unit 4 Quiz – Civil Engineering	Quiz	15 points

Concepts of Engineering & Technology Midterm Exam

Learning Objectives:

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from the first four units in this course (Note: You will be able to open this exam only one time.)

MIDTERM Assignments

Assignment	Type	Score
Concepts of Engineering & Technology Midterm Exam	Exam	50 points
Midterm Discussion Assignment	Discussion	5 points

Unit 5: Mechanical Engineering

Learning Objectives:

After studying this unit, you will be able to:

- Define and describe the applications of physical and mechanical systems.
- Describe various career opportunities and emerging issues within these fields.
- Explain the history of mechanical engineering and its current trajectory.
- Apply design concepts to problems in physical and mechanical systems.

UNIT 5 Assignments

Assignment	Type	Score
Mechanical Engineering: Unit Text Questions	Homework	10 points

Mechanical Engineering: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points
Concepts of Engineering & Technology Unit 5 Activity	Activity	15 points
Unit 5 Discussion Assignment 1	Discussion	5 points
Unit 5 Discussion Assignment 2	Discussion	5 points
Unit 5 Quiz – Mechanical Engineering	Quiz	15 points

Unit 6: Chemical Engineering

Learning Objectives:

After studying this unit, you will be able to:

- Describe applications of process control and automation systems.
- Describe career opportunities in process control and automation systems.
- Apply design concepts and identify fields related to process control and automation systems while identifying emerging issues.
- Understand and follow safety tests and guidelines while recognizing how to classify and dispose of hazardous materials and waste.

UNIT 6 Assignments

Assignment	Type	Score
Chemical Engineering: Unit Text Questions	Homework	10 points
Chemical Engineering: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points

Concepts of Engineering & Technology Unit 6 Activity 1	Activity	15 points
Concepts of Engineering & Technology Unit 6 Activity 2	Activity	15 points
Unit 6 Discussion Assignment 1	Discussion	5 points
Unit 6 Discussion Assignment 2	Discussion	5 points
Unit 6 Quiz – Chemical Engineering	Quiz	15 points

Unit 7: Biological Engineering

Learning Objectives:

After studying this unit, you will be able to:

- Describe the different fields of biotechnology.
- Identify the underlying principles of bioengineering.
- Understand career opportunities, related fields, and emerging trends in biotechnology.
- Apply design concepts to problems in biotechnology.
- Discuss inherent ethical dilemmas in bioengineering and technology.

UNIT 7 Assignments

Assignment	Type	Score
Biological Engineering: Unit Text Questions	Homework	10 points
Biological Engineering: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points

Concepts of Engineering & Technology Unit 7 Activity 1	Activity	15 points
Concepts of Engineering & Technology Unit 7 Activity 2	Activity	15 points
Unit 7 Discussion Assignment 1	Discussion	5 points
Unit 7 Discussion Assignment 2	Discussion	5 points
Unit 7 Quiz – Biological Engineering	Quiz	15 points

Unit 8: Impossible Engineering!

Learning Objectives:

After studying this unit, you will be able to:

- Define impossible engineering.
- Conduct and present research on emerging and innovative technology.
- Describe ethical behavior and decision making through the use of examples.
- Differentiate among discrimination, harassment, and equality.

UNIT 8 Assignments

Assignment	Type	Score
Impossible Engineering!: Unit Text Questions	Homework	10 points
Impossible Engineering!: Online Concepts of Engineering & Technology Lab Questions	Homework	10 points
Concepts of Engineering & Technology Unit 8 Activity	Activity	15 points

Unit 8 Discussion Assignment 1	Discussion	5 points
Unit 8 Discussion Assignment 2	Discussion	5 points
Unit 8 Quiz – Impossible Engineering!	Quiz	15 points

Concepts of Engineering & Technology Final Exam

Learning Objectives:

- Review information acquired and mastered from this course up to this point.
- Take a course exam based on material from units five to eight in this course – the last four units.

(Note: You will be able to open this exam only one time.)

FINAL Assignments

Assignment	Type	Score
Concepts of Engineering & Technology Final Exam	Exam	50 points
Class Reflection Discussion Assignment	Discussion	10 points