University of Idaho

Industrial Technology (IndT) 3100

Introduction to Engineering Technology

3 Credit Hours 16 Weeks
Fall Semester 2025 Year
Prerequisite(s): MATH 1600 or MATH 1700

Instructor Information

Instructor: Dr. Alex Vakanski
Email: vakanski@uidaho.edu
Phone: (208) 757-5422
Fax: (208) 282-7950
Office Hours: Open door policy, Friday 1 p.m. – 2 p.m. MT on Zoom
Office: TAB 311

E-mail is the preferred medium of communication for any changes to the class schedule. All e-mail notifications will be sent to the student's University of Idaho account only.

Course Description (Catalog)

This course presents an overview of the careers that comprise the field of Engineering Technology and the courses and curriculum for the degree. Topical areas include: the concept of technology, overview of materials and manufacturing, safety science, network technology, electricity and electronics, automation and robotics, energy technologies, and nuclear technology.

Course Scope

The course provides students with an overview of the topical areas in Engineering Technology. The specific topics include engineering design, graphical communication, measurement systems, electricity and power, engineering ethics, materials science, mathematics in engineering, manufacturing technologies, and automation.

Course Objectives

Upon the completion of the course, students should demonstrate the ability to:

1. Identify the primary topical areas of engineering technology.
2. Understand basic foundational concepts in technology and engineering.
3. Identify the main steps and considerations in engineering design problems.

4. Discuss the forms for implementing engineering technology concepts across different workplaces in the industry.
5. Solve mathematical and physical problems using the fundamentals dimensions and units.
6. Explain the concepts of work, mechanical energy, power, and efficiency.
7. Summarize the properties and characteristics of various materials, and explain the main factors considered in materials selection.
8. Outline the main characteristics of the dominant engineering manufacturing processes and systems.
9. Identify the principal methods and systems used for manufacturing automation.

Learning Outcomes and Competencies

The learning outcomes and competencies of the IndT 3100 course relate to the ability of students to:

1. Apply theories and principles from mathematics, physical science, and computer applications and information technology to solve practical technology problems (1a).
2. Apply quality, safety, and engineering technology skills in a professional work environment within real-world constraints (1b).
3. Interpret, describe, and implement information contained in typical project specifications (1e).
4. Develop, motivate, direct, and assist teams in applying critical thinking concepts to solve technology and engineering problems (2b).
5. Analyze contemporary issues for pertinence and potential impacts (4a).

Note: The numbers in parentheses refer to Learning Outcomes and Competencies for the Industrial Technology program at the University of Idaho, as defined by the Advisory Board. The full list of learning outcomes and competencies is available at the Industrial Technology's website.

Project Information

The course does not require a project.

Course Materials

Required Textbook: Saeed Moaveni
Engineering Fundamentals: An Introduction to Engineering
5th edition, 816 pages, Cengage Learning, 2016
ISBN-10: 1305084764
ISBN-13: 978-1305084766

Optional Reference Materials

Other reference materials will be posted on the website of the course on Canvas.

Evaluation Procedures

The course is delivered in a web-based format. Course materials, related to lecture notes, assignments, recommended readings, and supplementary materials, are posted on Canvas. The students are responsible to actively participate in the course by regularly logging in on Canvas, reading the posted materials, and completing the assignments in a timely manner. Canvas is the main medium for communication between the students in the course and the instructor.

Examination: There is one midterm examination and one final examination. The dates of each examination are indicated in the Course Outline below. Failure to take the exams on the due dates, without prior approval by the course instructor, will result in zero marks. Prior approval could be granted only under acceptable circumstances.

Homework assignments: There are 6 homework assignments in the course. The assignments must be submitted on the dates specified in the Course Outline below. All the assignments carry equal weight toward the final grade.

Grading/Evaluation Procedure:

Homework assignments (6)	60 marks
Midterm Exam	20 marks
Final Exam	20 marks
Total	100 marks

Final Grades:	Above 90	A
	80 – 89	B
	70 – 79	C
	60 – 69	D
	Below 60	F

Student Honor Code

I have read the honor code below and agree with its provisions. My continued enrollment in this course constitutes full acceptance of this code.

I will not:

- provide or receive information from another person in completing the assessment components,
- plagiarize information from books, journals, or the internet,
- copy another person's solutions and submit them as my own.

Course Outline

Date	Topics	Course Objectives	Learning Outcomes	Readings	Due
8/26	**Introduction to Engineering Technology, Career Choice**	1, 2, 4, 5	4	Chapter 1	
9/2	**Engineering Design, Engineering Communication**	1, 2, 3, 4	4, 5	Chapters 3, 4	HW1
9/9	**Graphical Communication**	2, 3, 4	1, 3	Chapter 16	
9/16	**Measurement Systems**	1, 3, 5	1	Chapters 6, 7, 8	HW2

9/23	**Mass, Force**	2, 3, 4	1	Chapters 9, 10	
9/30	**Temperature**	2, 3, 5	1	Chapter 11	HW3
10/7	**Engineering Ethics, Workplace Safety**	5, 6	4, 5	Chapter 5, Materials Provided	
10/14	**Midterm Exam**				
10/21	**Electric Current, Energy and Power**	2, 5	1, 2	Chapters 12, 13	
10/28	**Mathematics in Engineering**	3, 4	1	Chapter 18	HW4
11/4	**Mathematics in Engineering – Part II**	3, 4	1	Chapter 18	
11/11	**Probability and Statistics**	3, 4	1	Chapter 19	HW5
11/18	**Introduction to Materials**	2, 5	2, 3	Chapter 17	
12/2	**Introduction to Manufacturing**	2, 4, 5	1, 2	Materials Provided	HW6
12/9	**Automation and Robotics**	2, 4, 5, 6	1, 2	Materials Provided	
12/16	**Final Exam**				

Policies

WRITING EXPECTATIONS

All written submissions should be submitted in a font and page set-up that is readable and neat. It is recommended that students try to adhere to a consistent format, which is described below.

- Typewritten in double-spaced format with a readable style and font and submitted inside the electronic classroom (unless classroom access is not possible and other arrangements have been approved by the professor).
- Arial 11 or 12-point font or Times New Roman styles.
- Page margins Top, Bottom, Left Side and Right Side = 1 inch, with reasonable accommodation being made for special situations and online submission variances.

CITATION AND REFERENCE STYLE

Assignments completed in a narrative essay or composition format must follow APA or MLA style guidelines.

LATE ASSIGNMENTS

For each day of late submission of the homework assignments, 10 % of the assignment marks will be deducted, unless the student contacts the instructor ahead of time about an extenuating situation.

DISABILITY ACCOMODATIONS

This institution complies with the Americans with Disabilities Act, Section 504 of the Rehabilitation Act, and the World Wide Web Consortium's (W3C) Universal Access Guidelines. Reasonable accommodations are available for students who have a documented disability. Please notify your instructor(s) during the first week of class regarding accommodation(s) needed for the course. All accommodations must be approved through the ISU Counseling Testing and Career Services Office in Idaho Falls. For assistance, please call 282-7750 or stop by their office in the Student Union Building Room 223.

CELL PHONE/TEXTING POLICY

The policy does not apply to web-based courses.

NETIQUETTE

Online universities promote the advance of knowledge through positive and constructive debate – both inside and outside the classroom. Discussions on the internet, however, can occasionally degenerate into needless insults and "flaming." Such activity and the loss of good manners are not acceptable in a university setting, where basic academic rules of good behavior and proper "netiquette" must persist. Remember that you are in a place for the fun and excitement of learning, which does not include descent to personal attacks, or student attempts to stifle the discussion of others.

- Technology limitations: while you should feel free to explore the full-range of creative composition in your formal papers, keep e-mail layouts simple. The Educator classroom may not fully support MIME or HTML encoded messages, which means that bold face, italics, underlining, and a variety of color-coding or other visual effects will not translate in your e-mail messages.
- Humor note: despite the best of intentions, jokes and (especially) satire can easily get lost or taken seriously. If you feel the need for humor, you may wish to add "emoticons," such as ;-), :), or J, to help alert your readers.

ACADEMIC INTEGRITY

The University of Idaho expects that students will engage in academic activity with high standards of honesty and integrity. These values are central to the educational process and are also cornerstone values for citizenship and professional conduct after you leave the University.

The University of Idaho has specific academic honesty expectations described in the Student Code of Conduct. These are minimum standards that are generally applied across the University.

For more information see;

http://www.uidaho.edu/DOS/academicintegrity

NONDISCRIMINATION POLICY

The University of Idaho has a policy of nondiscrimination on the basis of race, color, religion, national origin, sex, age, disability or status as a Vietnam era veteran. This policy applies to all programs, services, and facilities, and includes, but is not limited to, applications, admissions, access to programs and services, and employment. Such discrimination is prohibited by titles VI and VII of the Civil Rights Act of 1964, title IX of the Education Amendments of 1972, sections 503 and 504 of the Rehabilitation Act of 1973, the Vietnam Era Veterans' Readjustment Assistance Act of 1974, the Age Discrimination Act of 1975, the Age Discrimination in Employment Act Amendments of 1978, the Americans With Disabilities Act of 1990, the Civil Rights Act of 1991, the Rehabilitation Act Reauthorization of 1992 and other state and federal laws and regulations. Sexual harassment violates state and federal law and policies of the Board of Regents, and is expressly prohibited, as stated in Faculty Staff Handbook (FSH) 3220. The University of Idaho also prohibits discrimination on the basis of sexual orientation, as stated in FSH 3215. The entire FSH can be accessed online at http://www.webs.uidaho.edu/fsh. Questions or concerns about the content and application of these laws, regulations or University policy may be directed to the Human Rights Compliance Officer (208-885-4213); Complaints about discrimination or harassment should be brought to the attention of the Human Rights Compliance Office (208-885-4212). Retaliation for bringing forward a complaint is prohibited by FSH 3810.

LIBRARY RESOURCES

As a UI student, you not only have access to valuable print and electronic resources from the university's library, but you also have the access to personalized assistance from the librarians. If you have assignments or research questions and aren't sure how to make the most of library resources from off campus, feel free to contact the College of Education liaison librarian with questions. Help may be obtained via phone; 208-885-2503. As always, you may also call the main reference desk anytime Monday to Thursday 9am to 9pm, Friday 9am to 5pm, and Sunday 1pm to 9pm, 208-885-6584, or visit http://www.lib.uidaho.edu for email or IM assistance.

DISCLAIMER STATEMENT

Course content may vary from the outline to meet the needs of this particular group.