**NEW JERSEY INSTITUTE OF TECHNOLOGY**
**Department of Mechanical and Industrial Engineering**

**COURSE:** IE-492 ENGINEERING MANAGEMENT

**SEMESTER:** SPRING 2023 - ONLINE

**INSTRUCTOR:**
Lucie Thibeaud Tchouassi E.I.T
Associate Director, NJIT Learning Communities & First Year Seminar
PHD Student, UKY- Higher Education Studies - Diversity, Equity & Inclusion
BS: Civil Engineering & MS: Transportation Engineering
NJIT:(973) 596-3469 EMAIL:thibeaud@njit.edu

**TEXTBOOKS:**
***Schaum's Outline of Theory and Problems of Engineering Economics,***
Sepulveda, J., Souder, W. and Gottgfried, B., McGraw-Hill, Inc., 1984
***Gido, J. and Clements, J., Successful Project Management 6th or 7th Edition***
South-Western Publishing, 2009, 2012, 2015, ETC.

**COURSE DESCRIPTION:** This course introduces engineering majors to the fundamentals of engineering economics and the factors necessary for successful project management.Engineering economics topics include basic concepts of engineering economics, capital project economics, time value of money and engineering ethics.Project management topics include project management concepts, needs identification, the project manager, project organizations, project communications, project planning, scheduling, control, cost performance and project management software tools.

**COURSE DESCRIPTION** This course covers the fundamental concepts of Engineering Economics and Project Management. It is designed to introduce engineering majors to application of basic finance, time value of money, and project management application of basic finance, time value of money, and project management principles to general engineering problems. Application of these principles helps facilitate decision making in practice

There are two parts to this course.

Engineering Economics section of the course will encompass the following topics: Interest Rates, Time Value of Money Estimating Capital Projects, Economic Feasibility Analysis and Decision Making. To reinforce the concepts learnt in class, we will have several assignments along the way that may include problems/questions, mini cases, and a term project.

Project Management section of the course will cover all phases of the project life cycle, starting from Project Initiation through Project Closeout. We will review various tools and methodologies that have been effective in managing various aspects of the project. We will also touch on popular project management methodologies applicable to a wide range of projects project including engineering and technology projects.

There will also be three quizzes and a final exam in this course.
It is expected that students will work in teams for the term project.
**INDIVIDUAL PROJECTS ARE NOT PERMITTED IN THIS COURSE – NO EXCEPTIONS.**

**COURSE LEARNING OUTCOME:**

-- Effectively apply knowledge of Engineering Management including Engineering Economics and Project Management in real world situations.
-- Identify, formulate, and solve engineering problems.
-- Effectively function on multidisciplinary and virtual teams.
-- Apply course learnings and modern – popular management tools to engineering practice.

**INSTRUCTIONAL METHODS:**

This section is distance learning / online section, and therefore all course materials will be delivered through online medium.

Canvas:

Canvas is an online platform used by NJIT to facilitate delivery of online lectures and materials.
Accessed via canvas.njit.edu
PowerPoint slides, homework problems, video links and other supporting materials will be uploaded for student review and download.
Assignments will be posted on Canvas.
Submissions will be via Canvas as well.
Canvas will also serve as a tool for group collaborations and discussions related to all class assignments and projects.

Textbooks/Assigned Literature:

There are two textbooks for this course. Both are required as one of the textbook covers Engineering Economics and the other covers Project Management section of this course.
It is expected that the students will read and refer to assigned textbooks as we will be covering materials

materials from the same. Homework assignments will also be mostly from textbook. Lecture materials make the best effort to explain the material, but students must read/refer to the assigned literature for detailed explanation and understanding of the topic.

Web Resources:

- **Links to articles, videos, and other materials will be posted in Canvas.**

These links will be helpful in reinforcing concepts learned in this course.

It is also expected that students review online resources and news in order to reinforce concepts learnt in class. It is all about connecting theory to real-life situations!

**Articles, Books, Videos and internet– All will be used to enhance and aid in your experience.**

**NJIT HONOR CODE:**

**Honor Code, Academic Integrity and Class Behavior:**

Please read the University's Academic Honor Code. Violations of NJIT's Academic Honor Code will lead to disciplinary consequences.

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code use the link below.

http://www.njit.edu/academics/honorcode.php

New Jersey Institute of Technology is an institution dedicated to the pursuit of knowledge through teaching and research. The university expects that its graduates will assume positions of leadership within their professions and communities. Within this context, the university strives to develop and maintain a high level of ethics and honesty among all members of its community. Imperative to this goal is the commitment to truth and academic integrity.

**Title IX Statement:**

Under federal law, "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving federal financial assistance." Given the sensitivity of the topics covered in this class, it is important for you to know the professor has a mandatory obligation to notify designated University personnel of incidents of gender-based misconduct that are shared in private or during class discussions. The reason for this is to keep all students safe and connected to the resources & reporting options that are available. Hypothetical scenarios that are discussed do not require any action.

**Statement on Inclusion and Diversity:**

Students in this course are encouraged to participate freely and share personal opinions, perspectives, and stories. It is expected that there will be diverse and perhaps contradictory ideas shared; this variety is a strength of the academic community. Students are asked to show respect and treat peers in a way that validates various experiences and opinions based on a range of identities including ability, economic class, ethnicity, faith tradition or no faith, gender identity and expression, nationality, religion, sexual orientation, veteran status, and their intersections. Acts of bias, harassment, abuse, discrimination, relationship violence, sexual violence (i.e. sexual assault, sexual harassment, etc.), gender harassment, and stalking are not tolerated at NJIT. If you or someone you care about has experienced any one of these crimes and/or violations of NJIT Community Standards, please know that you have rights, reporting options, and other support services available to you.

**SOFTWARE PROGRAMS:**

It is expected that the students will have access to Microsoft Excel, Microsoft Word and Microsoft Project or similar throughout the duration of this The course contains several exercises that need to be completed in Microsoft Excel and Microsoft Project or similar. Futhermore, the final project for the course will require the use of these software applications as well. No other software is required for this course. Note that depending on your familiarity with Microsoft Excel, you may be able to use Microsoft Excel to create project plans for the term project. We will cover this in detail as we progress through the semester.

There are some free open source applications comparable to Microsoft Project but not as extensive as Microsoft Project:

- Trello
- Freecamp
- Basecamp

Most web based software may also allow the student groups to collaborate where an account can be created for each member of the group to access required information.

We will discuss project management software in detail as we progress through the course.

You may want to download Microsoft Project from NJIT IST website. https://ist.njit.edu/software. It is available for current students.

**INSTRUCTOR AVAILABILITY:**

I am usually available every day of the week. I check my emails on a regular basis and will respond within 24 to 48 hours. I am also availale by phone during office hours from 9:00 am to 5:00 pm. As needed and upon request Webex meeting can be scheduled.

**PEER EVALUATIONS:**

As in the corporate world we will have peer evaluations in this course. You will be grading your group members at the end of the semester or various attributes. Peer evaluations will be counted towards the final grade for this course. This is typically known as 360-degree evaluation. Each student must submit a peer evaluation.

Like other courses at NJIT, you will have an opportunity to submit course evaluation, where you will grade the course, content, and me. Your feedback it very important to me and to NJIT and will help me in improving this course going forward. It is all about continuous improvements!

**GRADING:**

| | |
|---|---|
| Online Participation/Case Studies and Questions | 20.0% |
| Group Evaluation/Performance | 10.0% |
| Quizzes (2 total) | 22.0% |
| Term Project | 10.0% |
| Final Report & Project Presentation | 15.0% |
| Peer Evaluation | 3.0% |
| Final Exam | 20.0% |
| | **100.0%** |

***This course follows NJIT recommended grading schedule***

| | | |
|---|---|---|
| **A** | 100.00 | 90.00 |
| **B+** | 89.99 | 85.00 |
| **B** | 84.99 | 80.00 |
| **C+** | 79.99 | 75.00 |
| **C** | 74.99 | 70.00 |
| **D** | 69.99 | 60.00 |
| **F** | 59.00 | BELOW |

# SPRING 2023 - COURSE SCHEDULE

| DATE | WEEK | TOPICS | ASSIGNMENT | DUE DATES |
|---|---|---|---|---|
| 1/15/2023 | 1 | **Introductions and Class Requirements** | **Posted Notes** | |
| | | Engineering Management, Engineering Economics | Self Introductions and expectations (IA) | 1/20/2023 |
| | | Decision Making & Ethics | **Group introductions** | **1/21/2023** |
| 1/22/2023 | 2 | **Engineering Economics** | **Chapters 1 & 2 Schaum's** | |
| | | **Basic Concepts & Annual Compounding** | | |
| | | Interest, Time Value of Money, Cash Flows | Assigned Questions | 1/27/2023 |

| | | | | |
|---|---|---|---|---|
| | | Single-Payment, Uniform-Series, Gradient Series | **Assigned Problems** | **1/28/2023** |
| 1/29/2023 | 3 | **Basic Relationships & Continuous Compounding** | **Chapters3, 4 & 5 Schaum's** | |
| | | Algebraic relationships and Solutions procedures, | Assigned Questions | 2/3/2023 |
| | | Discrete, period compounding, | **Assigned Problems** | **2/4/2023** |
| | | continuous compounding | | |
| 2/5/2023 | 4 | **Team** | Posted Notes & Chapter 11 Gido | |
| | | Project Team & Team Development | ***Project Log/Team Progress Report (GROUP)*** | **2/10/2023** |
| | | Teamwork, Team Building, Effective Project Teams | **QUIZ 1 - CHAPTERS 1-5** | **2/11/2023** |
| | | Ethical Behavior & Time Management | | |
| 2/12/2023 | 5 | **Project Selection and Evaluation Methodology** | **Chapters 6 & 7 Schaum's** | |
| | | Equivalence | Assigned Questions | 2/17/2023 |
| | | Present Worth, Future Worth, | **Assigned Problems** | ***2/18/2023*** |
| | | AnnualEquivalence Analysis | | |
| 2/19/2023 | 6 | **Project Selection and Evaluation Methodology** | **Chapters 8 & 9 Schaum's** | |
| | | Net Present Value, Rate of Return | Assigned Questions | 2/24/2023 |
| | | Payback Period, Benefit-Cost Ratio | **Assigned Problems** | ***2/25/2023*** |
| | | Investment Alternatives | | |
| 2/26/2023 | 7 | **Project Selection and Evaluation Methodology - Part II** | **Posted Notes** | |
| | | Retirement, Depreciation and Taxes | Assigned Questions | 3/3/2023 |
| | | **Fundamentals of Engineering (FE) Exam** | **QUIZ 2 - CHAPTERS 6-9** | **3/4/2023** |
| | | Engineering Economics Introduction | | |
| 3/5/2023 | 8 | **Initiating a Project** | **Chapters 1, 2 & 3 Gido** | |
| | | Project Management Concepts | Assigned Questions | 3/10/2023 |

| | | | | |
|---|---|---|---|---|
| | | Project Identification and selection<br>Proposal Development | **Project Plan Assignment (GROUP)** | **3/11/2023** |
| 3/12/2023 | | **SPRING BREAK** | | |
| 3/19/2023 | 9 | **People: The key to Project Success**<br>Project Manager, Project Team<br>and Project Communication and Documentation | **Chapters 10, 11 & 12 Gido**<br>Assigned Questions<br>**Term Project Part 1 & 2(GROUP)** | <br>3/24/2023<br>**3/25/2023** |
| 3/26/2023 | 10 | **Project Planning, Performing and Controlling**<br>Scope Development<br>Scheduling and Resource Utilization | **Chapters 4, 5 & 6 Gido**<br>Assigned Questions<br>**Term Project Part 3 & 4 (GROUP)** | <br>3/31/23<br>**4/1/2023** |
| 4/2/2023 | 11 | **Project Planning, Performing and Controlling-Cont.**<br>Cost, Budget, Risk managementand<br>Project closing | **Chapters 7, 8 & 9 Gido**<br>Assigned Questions<br>**Term Project Part 5 & 6 (GROUP)** | <br>4/7/2023<br>**4/8/2023** |
| 4/9/2023 | 12 | **Project Planning, Performing and Controlling** | **Draft Term Project (GROUP)** | **4/15/2023** |
| 4/16/2023 | 13 | **Project Management Software**<br>Project Management Software<br>Project Management Information Systems | **App. A Gido**<br>Assigned Questions<br>***Peer Evaluations*** | <br>4/21/2023<br>**4/22/2023** |
| 4/23/2023 | 14 | **Final Exam Review** | ***Review all course Materials***<br>**Final Exam** | <br>**5/6/2023**<br>**5/7/2023** |
| | | **Reading Day 1**<br>**Reading Day 2** | | **5/3/2023**<br>**5/4/2023** |

| | |
|---|---|
| **Final Project (GROUP)** | **5/10/2023** |
| **Group Presentation (GROUP)** | **5/10/2023** |