

CIVIL ENGINEERING SYSTEMS

FALL 2023 SYLLABUS

ABSTRACT

This course discusses systems analysis of civil engineering discipline. In this course, you will learn about basic engineering economics, linear regression, engineering statistics, and probability as relevant to civil engineering applications.

Jagadish Torlapati, Ph.D

Civil & Environmental Engineering, Rowan University

TABLE OF CONTENTS

Title	Page
I General Information	1
II Course Guidelines	3
III Lecture Topics	6
IV Other Information	7

I. GENERAL INFORMATION

STATEMENT OF DIVERSITY & INCLUSION

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, abilities, and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming, and inclusive environment for every other member of the class. If you feel that your contribution is not being valued for any reason, please speak with me privately. If you wish to communicate anonymously you may do so in writing or speak with the Office of Social Justice, Inclusion, Conflict Resolution (socialjustice@rowan.edu, 856-256-5496, Room 118, Robinson Hall).

COMMUNICATION

[Discord](#) will be the preferred method of communication during the semester. Discord offers an app for Windows, MacOS, iOS, and Android as well as a browser application. It is the responsibility of the student to accept the invitation and familiarize themselves with the application. Any issues with the application should be resolved within the first week of the beginning of classes. Canvas can also be used for sending messages. Emails will be answered but it is not a preferable mode of communication.

Please DO NOT EXPECT AN INSTANT RESPONSE. Feel free to send a reminder if your email/message was not answered in a day. Typical response times are below:

- Messages received between 9 - 4 PM will be answered on that day.
- Messages received after 4 PM will be answered the next day.
- Messages received on the weekends may or may not be answered.
- **Typically, due dates are not extended, especially if you ask for an extension on the due date. All quizzes and assignments will be posted at least one week in advance.**

ACCOMMODATION

Your academic success is important. If you have a documented disability that may have an impact on your work in this class, please contact me. Students must provide documentation of their disability to the Academic Success Center to receive official University services and accommodations. The Academic Success Center can be reached at 856-256-4234. The Center is located on the 3rd floor of Savitz Hall. The staff is available to answer questions regarding accommodation or assist you in your pursuit of accommodations. We look forward to working with you to meet your learning goals.

ATTENDANCE POLICY

Lectures: Attendance is mandatory, and all classes will be in-person unless the University mandates virtual learning. If you know that you will be absent from a class for a valid reason, obtain approval from the instructor 24 hours before the class period. The only exception to this rule is a medical emergency. **Missing exams without valid medical excuse will result in a zero grade.**

ROWAN SUCCESS NETWORK (RSN)

The Rowan Success Network powered by Starfish® is designed to make it easier for you to connect with the resources you need to be successful at Rowan. Throughout the term, you may receive emails from the Rowan Success Network team (Starfish®) regarding your academic performance. Please pay attention to these emails and consider taking the recommended actions. Utilize the scheduling tools to make appointments at your convenience including tutoring. Additional information about RSN may be found [here](https://sites.rowan.edu/student-success/rsn/index.html) (<https://sites.rowan.edu/student-success/rsn/index.html>)

ACADEMIC INTEGRITY POLICY

The faculty want to know that upon course completion you are prepared to move into more difficult courses and ultimately work as an engineer. For civil engineers, nearly all the work you will perform professionally impacts the public, and much of it will have life safety implications. We need to be confident that the work we are assessing is your work. You will eventually be entering professional practice. What might be called “cheating” in a university setting, with consequences such as failing a class or academic suspension becomes “fraud” in professional practice, with consequences of harm or death to others and a prison for the perpetrator. Given the level of public trust that is placed upon practicing Civil Engineers, we cannot accept any violations of academic integrity by Engineering students. We will fully enforce Rowan University policies related to academic integrity. The consequences of academic integrity violations can be severe. The full academic integrity policy that defines some of the types of infractions and the potential penalties is linked [here](https://confluence.rowan.edu/display/POLICY/Academic+Integrity+Policy). (<https://confluence.rowan.edu/display/POLICY/Academic+Integrity+Policy>)

There appears to be a troubling nationwide trend toward a reduction of academic integrity during remote instruction due to COVID-19. Tutoring services such as Chegg are central to these issues. If your actions, either direct or indirect, cause course material to be distributed on Chegg or other similar services, you will be subject to Rowan’s Academic Integrity process. This process can lead to your failing the course, as well as suspension or expulsion from the University.

Although generative AI can be used as a tool to support learning (e.g., in obtaining feedback or generating ideas), work submitted by a student should be that of the student and not the work of an AI system. If you include material generated by an AI program, it should be cited like any other reference material. Ultimately, the

student bears responsibility for any inaccuracies or misinformation. If you have questions about how AI may be used to complete assignments within the scope of this academic integrity policy, please reach out to your instructor.

PROFESSIONAL & ETHICAL BEHAVIOR

Professional behavior is expected of the students in and out of the classroom. The classroom and online platforms provided to the students are learning tools. Unprofessional behavior on these platforms will result in punitive action as deemed by the instructor. Incidents will be escalated to the chair or the dean's office depending on the severity of the action.

II. COURSE GUIDELINES

DESCRIPTION

The course deals with the theories and principles of civil engineering systems as applied to real-world analysis and design problems. The course covers four important areas of civil engineering systems: linear programming, project scheduling, probability and statistics, and engineering economics. The course includes appropriate computer applications.

INSTRUCTOR

Jagadish Torlapati, Ph.D. (Discord: DrJT)

TEXTBOOK

Civil & Environmental Engineering Systems (2003)

Authors: Charles S. Revelle, Earl Whitlatch, Jeff R. Wright

Publisher: Pearson

ISBN 9780130478221 (Second Edition)

LEARNING OUTCOMES

1. Describe systems analysis as it relates to the civil engineering discipline.
2. Describe the concepts of basic engineering economics, linear regression, statistics & probability.
3. Apply the concepts of economics, regression, statistics & probability to various civil engineering applications.
4. Introduce the concepts of scheduling and critical path.
5. Describe the process of hypothesis testing

FINAL GRADING BREAKDOWN

Exam 1 & 2	– 40%	PRESENTATIONS	– 10%
FINAL EXAM	– 25%	CLASS & QUIZZES	– 25%

GRADING SCHEME

A	≥ 93	C	73 – 77
A-	90 – 93	C-	70 – 73
B+	87 – 90	D+	67 – 70
B	83 – 87	D	63 – 67
B-	80 – 83	D-	60 – 63
C+	77 – 80	F	≤ 60

EXAM POLICIES

Quizzes might be given throughout the semester. **No makeup exams or quizzes will be given for unexcused absences.** All quizzes will be open books and notes. Exams are closed books with formula sheets. The final exam will be comprehensive.

HOMEWORK ASSIGNMENT POLICY

Homework is due at the beginning of the class on the due date specified in the class. All homework problems should be solved on engineering paper using the Rowan Engineering Homework Format. An example can be found [here](http://users.rowan.edu/~jagadish/resources/Rowan_HW_Format.pdf). (http://users.rowan.edu/~jagadish/resources/Rowan_HW_Format.pdf) **Late homework submissions will not be accepted.**

EXPECTED TIME FOR GRADING

Exams & Quizzes	– 1 week
Homework assignments	– 1 to 2 weeks

III. LECTURE TOPICS

The following is a tentative lecture schedule for the semester.

TOPICS
Introduction
Basic Engineering Economics
Scheduling
Scheduling Optimization
Probability & Statistics
Linear Regression
Confidence Intervals
Hypothesis Testing

IV. OTHER INFORMATION

PRESENTATIONS

Students will prepare a short team presentation related to a civil engineering problem on a specific topic assigned by the instructor. The details of this will be given during the semester.

HELPFUL TIPS

Here are some useful tips to be successful in this course:

- Check weekly modules & figure out when things are due (write it down somewhere)
 - Watch the lecture videos every week and complete the problems.
 - Ask questions if you do not understand something in the videos during lecture meetings.
 - Figure out how to make PDFs for online submissions.
 - Submit things on time.
 - Do not hesitate to ask for help.
 - Most importantly, stay on top of things
-

USEFUL SOFTWARE/APPS

- Canvas Student App – Useful for keeping up with announcements, discussions & deadlines, etc.
 - Google Drive – for sharing files.
 - Discord
 - DocScan/Apple Notes – For Scanning things
 - Microsoft OneDrive – Scanning & sharing things
-