



CIVE 202: INTRODUCTION TO NUMERICAL MODELING AND OPTIMIZATION

INSTRUCTOR INFORMATION

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Office Hours: Tues/Thurs 10-10:50 in B212 Engineering

Communication Policy: Responses to emails will be provided within 36 hours, or 48 hours on weekends.

PREREQUISITES FOR COURSE

CIVE 103; MATH 159 or concurrent registration or MATH 160 or concurrent registration.

COURSE DESCRIPTION & OBJECTIVES

This class is an introduction to concepts of numerical modeling and optimization. Engineers are modelers, and in this class we will learn what that means and how engineers build and use models to solve problems. We will use Microsoft Excel, a widely used spreadsheet and programming software package, throughout the course and by the end of the semester you should be true Excel “power users!”

Upon the completion of this course, students will be able to:

1. Use spreadsheet software to manipulate data, perform calculations, and create charts
2. Use programming to perform calculations, automate tasks, and solve optimization problems
3. Construct numerical models of physical systems and apply them for simulation and optimization
4. Implement models in spreadsheet and programming environments
5. Assess model performance

TEXTBOOK / COURSE READINGS

We will not use a textbook in this course; rather, we will rely on course notes and materials distributed on the course website (canvas.colostate.edu).

COURSE MATERIALS & EQUIPMENT

Engineering account

To access to the Virtual Classroom (below), you will need to have an Engineering account (this is separate from your CSU EID). If you don't yet have an Engineering account, create one here: <https://www.engr.colostate.edu/ets/tools/create-account/>.

Virtual Classroom

Engineering Technology Services (ETS) uses portions of the Student Technology Fee to provide a service known as Virtual Classroom. This allows you to open a Virtual Desktop on your computer or tablet that simulates the environment on the lab PCs, including your U: drive and Excel. See <https://www.engr.colostate.edu/ets/virtual-classroom/> for more information on how to access this resource.

MS Office – personal copy

All assignments in this class will use Microsoft Excel 2019 (equivalent to Office 365), which is included in the Microsoft Office suite of applications. As a CSU student, you are able to download and install (free of charge!) the full version of Microsoft Office on up to five computers, for as long as you are a student at CSU. See <https://it.colostate.edu/m365-apps-and-csu-software/> for more information.

PARTICIPATION/BEHAVIORAL EXPECTATIONS AND COURSE POLICIES

Please review the [core rules of netiquette](#) for some guidelines and expectations on how to behave in an online learning environment.

This course consists of two 50-minute lecture sessions, plus one 100-minute lab session per week.

Lectures

Lectures will include a mix of content introduction, demonstrations, and interactive activities. Most lectures include demonstrations of key concepts in Excel, and I will distribute the files I work with on Canvas prior to lecture. I encourage you to download those files before the lecture and work with them along with me during the lecture.

Homework

- Homework is assigned weekly on Canvas, and submitted as Excel files on Canvas.
- An Excel template will be provided, and you must follow the template to build your solution. Show your work and clearly identify your answers.
- Homework is due on Mondays at 7pm, and late homework is not accepted.
- Solutions will be posted on Canvas after the due date.
- Your lowest homework grade of the semester will be dropped in the final grade calculations.

Exams

- The Midterm exam is given during the lecture period on Thursday, October 12.
- The Final exam is given during the scheduled final exam period on Tuesday, December 12, from 9:40-11:40 am.
- Make-up exams are given only for extreme cases.
- One 8.5-inch by 11-inch crib sheet (printed or handwritten, both sides okay) is allowed for each exam.

Projects

- There will be two multi-week laboratory projects assigned on Canvas.
- Laboratory sessions are meant to provide time for you to work on these projects, with GTA support for answering questions.
- An Excel template will be provided, and you must follow the template to build your solution.
- Submit your completed Excel file in Canvas by the deadline.
- Late projects can be emailed to the instructor for partial credit (<24 hr late: maximum of 67% credit; 24-48 hr late: maximum of 33% credit; >48 hr late: no credit).

Discussion Forums

- Discussion forums will be posted to Canvas to provide an opportunity for students to interact with each other and the instructors.
- I encourage you to ask and answer questions about the course material, homework, and projects in the Discussion forums. However, be aware of the academic integrity policy (described below) – do not post your answers or code!

GRADING POLICY

CSU does not use grades of C-, D+, or D-.

Grade	Range
A+	100% to 96.67%
A	<96.67% to 93.33%
A-	<93.33% to 90.0%
B+	<90.0% to 86.67%
B	<86.67% to 83.33%
B-	<83.33% to 80.0%
C+	<80.0% to 76.67%
C	<76.67% to 70.0%
D	<70.0% to 60.0%
F	<60.0% to 0.0%

As a student enrolled in this course, one of your responsibilities is to submit course work by the due dates listed in Canvas. With that said, I take my role as your instructor very seriously, and, in fact, I care about how well you do in this course and that you have a satisfying, rewarding experience.

To that end, it is my commitment to you to respond individually to the work you submit in this class and to return your work in a timely manner. Weekly homework assignments will be returned within 1 week and major assignments, exams, and essays will be returned within 3 weeks. (If, however, due to unforeseeable circumstances, the grading of your work takes longer than the times I have listed here, I will keep you informed of my progress and make every effort to return your work with feedback as soon as I can.)

ASSIGNMENT	GRADE PERCENTAGE
Homework assignments	32%
Lab project 1	16%
Lab project 2	16%
Midterm exam	16%
Final exam	16%
Canvas quizzes	4%
Total:	100 %

*Keep a copy of all work created for the course, including work submitted through Canvas course learning management system.

CSU RESOURCES AND POLICIES



The QR code above (<https://col.st/2FA2g>) links to a page providing policies relevant to your courses and resources to help with various challenges you may encounter while a student at CSU.

ACADEMIC INTEGRITY & CSU HONOR PLEDGE

This course will adhere to the CSU [Academic Integrity/Misconduct](#) policy as found in the General Catalog and the [Student Conduct Code](#).

Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, I will ask that you affirm the CSU Honor Pledge as part of completing your work in this course.



Further information about Academic Integrity is available at CSU's [Academic Integrity - Student Resources](#).

All course submissions must be your own individual work (every cell, every line of code, and every word of text must be written individually).

Providing your homework solution to someone is not allowed, but discussion with others is allowed.

What constitutes cheating in this class?

All submissions in this class including homework assignments, projects, and exams must be completed individually. Providing another student access to any part of a submission file or a solution file for any reason is forbidden. Accepting all or any part of a submission or solution file for any reason is forbidden. Students may only view problem solutions after submission deadlines. Directly copying work from another student or an old solution file is not allowed. Each student's submission must only represent their own understanding and effort in solving the problem. All these rules are strictly enforced, and any violation is considered cheating or academic dishonesty.

Does it really matter if I cheat?

YES! Academic and professional integrity is a serious matter at Colorado State University (CSU) and in the engineering profession. Students who cheat in their classes diminish their own educational experience at CSU. When they enter the profession unprepared, they also harm the reputation of CSU and reduce the value of a CSU degree for all students. Furthermore, they establish behavioral patterns that will likely persist into their professional careers, which can ultimately endanger public safety.

Do people who cheat ever get caught?

YES! Cheating is very obvious when it occurs in this class because all submissions are electronic and on file for the whole semester. University policy requires instructors to address cheating whenever it occurs. Sadly, we catch and penalize people who cheat in this class every year.

Are the consequences of cheating severe?



YES! Students will not receive credit for any submission that is not their own work, and they will be penalized (receive negative credit) for the total value of any submission where academic dishonesty occurs. In addition, by university rule, a record of the incident is supplied to Conflict Resolution and Student Conduct Services where it is considered for further sanctions (transcript notations, expulsion, etc.) and kept on file for future reference. So, for example, each project is worth 16% of the overall grade in the class. If a student is found cheating on a project, then they do not receive credit for that project because it is not their own work. That will lower their overall grade in the course by 16%, which is over one letter grade. In addition, they will be penalized (receive negative credit) for the value of the project because of the academic dishonesty. That will reduce their overall grade another 16% or another 1.6 letter grades.

How can I avoid cheating?

It's critical to know the rules, which are given above, and follow them. When in doubt, err on the side of caution and/or ask the instructor for guidance in advance. However, practically all students who cheat knew they were cheating when they did it. They usually made a bad choice under pressure. Remember, it is much better to not submit an assignment and receive a zero than to cheat and receive negative credit and potentially other longer-term consequences.