

CM3120 Transport 2 Study Guide Project (Including Friday UO)

The Transport 2 Study Guide Project is similar to the Transport 1 Study Guide Project for those of you who took the class last semester. One difference is that the fifth Study Guide is composed of four worksheets on unit operations. Both the conventional Study Guide submission and the Friday UO Worksheet submission are described below. These five submissions count equally in determining the grade for the Study Guide Project.

Background

Online/remote courses have become commonplace, and in the current pandemic they are a necessity. The strengths and weaknesses of online courses have been widely debated by instructors and students, and I imagine each of you has an opinion about this. I've read up on online courses and even taken a course in online teaching and here are some observations I have.

In an online course:

1. It's easy for students to fall behind.
2. Instructors may ask too much (the course has too many and confusing requirements) or too little (the experience does not create valuable knowledge or skills).
3. It's hard to be engaged.

I would observe that all three of these observations can be true for face-to-face classes as well.

What to do? Or rather, what will *I* do in Spring 2021 CM3110 to avoid these pitfalls? Here's my plan.

Dr. Morrison's Plan (Modules-Based Submissions)

1. Use class time for problem solving and interaction between me and the class. We will use Fridays for this purpose.
2. Put you in charge of your learning by giving you Study Guides that tell you what knowledge and skill set you're aiming for. These Study Guides take the mystery out of what the expectations are for exams and for the course. The Study Guides tell you the knowledge and skills that you're seeking to obtain by taking this course.
3. Give you many resources to aid in your learning. Provided are: lectures (will be recorded), recommended books, homework, problem sessions, student office hours. You choose what to use to learn what you need to learn. The knowledge and skills you need to learn are listed in the Study Guides.
4. Assess the degree to which you have learned what you need to learn. There will be four modules and four exams (including the final exam).
5. Help you to keep up. I have provided Planning Calendars to show you how everything fits together with the academic schedule. To encourage "keeping up," at the end of

each module you'll submit evidence that you are keeping up. This evidence will be based on the Study Guide for the module. This evidence is the **Modules-Based Study Guide Project**.

The Modules-Based Study Guide Project

All four Study Guides are available now on the [syllabus web page](https://pages.mtu.edu/~fmorriso/cm310/schedule.html), <https://pages.mtu.edu/~fmorriso/cm310/schedule.html>. The syllabus indicates which topic is associated with which module and with which week of the course. Also indicated on the syllabus are 1) the lecture topics and 2) the dates of the exams.

Beginning with Module 1, by Friday of the week in which there is an exam, each student will submit a memo of evidence (to Canvas) indicating their knowledge and skills with respect to the tasks listed in the Study Guide (see example memo attached). Think of the evidence as completed (or attempted) homework problems. You may also explain how you would exhibit mastery of a skill; this is also considered evidence.

Details

When learning something new, it always helps to have an example, so here is how I would see each Module progressing.

1. Module 1 begins today. As an introduction to the module we go over the Study Guide for Module 1. I will help you to identify lectures, chapters, homework problems, and handouts that will be helpful during Module 1. I will answer questions; remaining time will be spent on solving problems from Module 1. Since Module 1 is on prerequisite material, you likely are already confident of most (all) of the skills listed in Module 1.
2. Outside of class and following the Study Guide, you will, as needed, watch videos, read the book sections, and attempt homework problems associated with the learning objectives of Module 1. The Study Guide can act as a checklist for the module. As you watch a lecture, note down when some items on the Study Guide are mentioned. As you attempt homework problems, note down which of the numbered bits of knowledge or skills from the Study Guide are addressed by each homework problem. If you have difficulty with homework problems, bring your questions to the next Friday problem session or to student office hours. It will be helpful to form a study group.
3. Your work on homework problems is what I am calling "evidence." Direct answers to knowledge objectives on the Study Guide are also "evidence." When you have evidence that you can perform the skills (or have the knowledge) numbered on the Study Guide, the remaining task is to compile that evidence into your Study Guide memo. Your memo is a cover memo that transmits the evidence (your work on problems associated with the objectives). Thus, the memo is short and explains what is attached. For Module 2, for example, the cover memo could be similar to the one attached at the end of this handout. If you cannot do something that is on the Study Guide or if you did not have the time needed to finish, please just say so in your memo. For Module 1, you may use work you performed in prerequisite classes as evidence for the Study Guide.

4. Once you have the memo and the attachments, upload this as a submission for your Study Guide Module submission. The submitted work will not be graded in detail; the course credit for the Study Guide project will be apportioned based on an estimate of your engagement with the Study Guide process. If you are giving it a serious try, you are meeting my expectations for the Study Guide project. You must indicate in your memo that you have addressed, or you must assert expertise in, all the Study Guide objectives.
5. The deadline for the submission of each Study Guide memo/attachments is the Friday of a week in which there is an exam. If you cannot make that deadline, we will accept your memo, *with a slight deduction (10%)*, up until Friday of week 14. We would judge that timely submission is reflection of better engagement than consistently late submissions.

Only submit your own work; i.e. never submit someone else's work as your work. If you work collaboratively with others (that is, you do the problem but your coworkers help you occasionally and you occasionally help them) indicate this process in your memo. If you find the solution to a problem in the literature or scoop, that's like having a friend who is helping you out and that's allowed. You still need to produce your own solution and indicate that you got help from a solution in the literature. If you run out of time and will not be providing evidence, please indicate that in the Study Guide memo.

Friday Unit Operations (UO) Project

Four Fridays during the semester our teaching assistant Titilayo Akinseye will make a presentation on a unit operation. The assignment for this material is for each student to submit a completed worksheet for each of the four topics. A [template for the worksheet](#) is provided on the course website. The completed worksheets are to be uploaded into Canvas by the due dates listed in the syllabus and in Canvas. You may discuss your submissions with classmates and members of your study group; you may use the internet and library resources to complete your worksheets. You may not submit identical worksheets with any other classmates, however; the work on your submission must be your own. The four UO worksheets together comprise the "fifth" Study Guide submission.

Summary of Submissions

1. Study Guide 1
2. Study Guide 2
3. Study Guide 3
4. Study Guide 4
5. Study Guide 5=Worksheet 1+Worksheet 2+Worksheet 3+Worksheet 4 (no cover memo required)

Memo

To: Dr. Faith Morrison
From: Jeanette Rankin
Subject: Module 2 Study Guide Submission
Date: 19 February 2021

Attached you will find my submission for the Module 2 Study Guide Evidence. The submission is my own work, in accordance with the Study Guide Project rules. I worked on some of these solutions (objectives 8-19) with my study partners Doris Miller and Kim-Ark Wong.

There are 25 module learning objectives in the Module 2 Study Guide. My submission is organized as follows:

- Knowledge—I have submitted my answers to learning objectives 1-9, 14-15, and 18
- Skills—To develop my skills with the microscopic momentum balance, I have chosen the steady laminar flow down an incline plane problem, which addresses learning objectives 10-13, 16-17, and 19-22.
- Skills—To develop my skills with fluid mechanics troubleshooting, I have submitted some discussion that addresses learning objectives 24 and 25.
- Developing—I do not understand torque calculations very well; I will pursue this during office hours if time allows.

If you have any questions about this submission, please contact me at jrankin@mtu.edu or 906-555-1212.