

Instructor: Dr. Jessica Kintner
Office: Galileo 106 B, zoom
Office Hours: TBD, and by appointment
E-mail: jkintner@stmarys-ca.edu

Text: **Introduction to Electrodynamics** (4th Edition) by David Griffiths.

Meetings: Lecture MWF 8:00-9:00am

Web page: Moodle

Slack:

- **Why take this course?:** Electrodynamics, or E&M as we often call it, is one of the most amazing—and complete—theories in all of Physics. I hope we can gain some appreciation of the theory. For those of you going in the Engineering direction, this theory forms the basis of almost every modern (technological) convenience. (OK, you might want some Solid State, too, see Phys 140 this semester.)
- **Course Description:** We will cover electrical and magnetic concepts using static and dynamic field concepts. Maxwell's equations will be emphasized. Topics include: Electrostatics, magnetostatics, and electromagnetic waves.
- **Course Goals:** To learn, at an intermediate level, electricity and magnetism; To develop stronger problem solving and critical thinking skills; To gain confidence in using previously learned material.
- **Homework:** Problems will be assigned during class each day. These problems will include traditional homework problems, example problems from the text, and filling in missing steps from derivations in the text. We will present and discuss some (or all) of these problems the very next class period, so it is very important that you attempt them in between each class meeting. Some days I will also add new problems based on the homework. (See the next section on In Class Work.)

Since homework with in class work is a fairly large percentage of your grade in this class, it is important how you work. I encourage you to *discuss* problems with each other, but write up your own solutions individually. Direct copying is prohibited and will be considered a violation of the Honor Code. You should also cite any sources and give credit to anyone you worked with. Exceptions to this are only work done by me, or perhaps in my office, or if we have all discussed the problem in class. Of course, if you use another source, you should credit that as well (just as if you were writing a paper.) You will not lose any points for this! You will, on the other hand, get in big trouble for plagiarism.

Doing the homework is the best way to learn the material. Please take it seriously and make every effort to do it on time.

Although I would like to put all the homework problems on the board, that probably won't happen: some will be too long, and doing all of them will take too much time. So I will collect and grade some problems.

I am not planning to make Slack a required part of the class, but I am prepared to possibly give credit for using it well—both asking good questions and answering them. So if we do like using that resource, it is another possible way for you to participate in the course.

- **In Class Work:** When you come into class, you should be prepared to put homework problems “on the board”* and/or ask questions about any problems you got stuck on or are confused about. You also might ask questions about the last lecture or sections of the book you've been reading.

(*We can experiment with what works best for a whiteboard in this class. I have tested lots of whiteboard apps, and I can share a couple with you. Or you can write on paper and use your phone as a document camera. This last would work well for you showing the class what you did, but not so much for collaborative work. Maybe we can make that work too.)

Studies show that lecture is the worst way for students to learn physics. Believe it or not, even spending the hour doing homework problems is more effective than pure lecture. We will use a variety of activities in class such as board work, small group work, and problem solving. Some of the problems we do in class will be homework problems, and some will be “new” to the class that day. For those, I will typically have you work in small groups (of two if at all possible) at the board while I come around and discuss them with you.

And some days, I will do lectures with every attempt to keep you involved.

- **Exams:** There will be two one-hour midterm exams and a final. The final exam will be two hours long, and it will be cumulative. The nature of the course is such that each exam will depend to some extent on the material before. The two hour-long exams will be: Friday, Sept 25 and Friday, Nov 6.

Final Exam: Monday, Nov 30, at 8am

- **Attendance:** Although attendance will not be taken each day, it is strongly recommended that you attend the synchronous zoom meetings. The text for this class is challenging. And your In Class grade will be affected by absences. You will be responsible for any material presented in class.

Exams cannot be made up without an approved excuse. Approved excuses are such things as illness and family or personal emergencies. If you must miss an exam, you must contact me prior to the exam.

Each student is responsible for all assignments, etc, which are given during class.

- **Grading:** The *approximate* weighting for the course is shown below.

Homework/in class work	40%
Exams	30%
Final Exam	30%

- **Technology Requirements:** Because this is an online course, there are several requirements.

1. An internet connection that is strong and stable and routine enough that you can participate in daily video conversations
2. A computer with speakers, microphone, and webcam. You might be able to do everything on a tablet, but a phone will almost certainly be too small. You will want to be able to run zoom and another app (like a google doc or google Jamboard) at the same time. (It is possible you could run one on the tablet and one on your phone, if you go that route.)
3. The ability to submit handwritten work to Moodle.

There are two main way to do this. Write on paper and then take pictures and then “scan” them with a phone app to clean up the view and turn the pictures into a pdf file. (if you have a smart phone this is easily done through Notes on an iPhone or Google Drive on an Android phone. There are tons of third party apps as well, my favorite is CamScanner.)

or

(I believe the department may be able to let you borrow the cheapest of these: A pencil-driven input device. A fancy option (iPad or SurfacePro) is great; cheaper options (Wacom Intuos Graphics Drawing Tablet CTL4100 for about \$80, even the Huion Inspiroy H640P for about \$40) are perfectly fine. If you have something like this, you can don’t need to take pics of hand-written work, and it makes it much easier to write/sketch on the whiteboard apps we will use.)

- **College Policies:** We will all agree to abide by all College policies including things like the Honor Code, Student Disability accommodations, and all the rest. Please see the Student Handbook for more details.