In the BYU Catalog, Physics 318 is called “Introduction to Classical Field Theory.” When you think of classical fields, what probably comes to mind are electric and magnetic fields. But 318 is not a course in electricity and magnetism. On the departmental flow charts, the course is called “Math Physics.” This is perhaps a more accurate description. The flow chart shows that 318 is a prerequisite for most of the upper division courses: 430, 441, 442, 451, 452, and recommended for 471. Physics 318 seems important because it is important. Unlike most of the courses we teach in physics, 318 is not a “topic” course; it is a “tool” course. As you will soon discover, physicists like to couch ideas in terms of differential equations, and since the real world always involves many variables, the differential equations of physics are almost invariably partial differential equations. Perhaps 318 is best described as a course in partial differential equations with physics applications. We will concentrate on series solutions of these equations with different types of initial and boundary conditions, and will learn about some of the properties of the functions that are solutions to commonly encountered partial differential equations.

Prerequisites: You should have completed or be currently enrolled in Math 434. The flow charts also show Physics 230 as a prerequisite. Since we will be using MAPLE extensively, some familiarity with MAPLE will make your life easier. If you are not already familiar with MAPLE, you will need to learn some Maple basics as we go.

What to do now:

1) Buy the text, *Partial Differential Equations and Boundary Value Problems, 2nd Edition* by Nakhlé Asmar. If you have the first edition, you will be able to get by, but some problems may be different. (Let me know and I’ll give you a set of problem numbers from the old text.) We will use the text extensively.

2) Get a department computer account, if you don’t already have one. This can be done by logging onto the department web site. Also look through the “Department Computer Policy” on this web site.

3) Log onto the computers in N-212. Become familiar with what is available on these machines. If you do not know the combination to get into the room, please get a form from the secretaries. I’ll gladly sign it for you.

4) Log onto the class web site and be familiar with the material available there. The URL is: [http://www.physics.byu.edu/faculty/rees/318](http://www.physics.byu.edu/faculty/rees/318).

5) Sign up for a CID from the course web page.

If you have not taken Physics 230, then:

1) Download the Physics 230 MAPLE Disk (one file, about 500 kb).

2) Familiarize yourself with the basics of MAPLE. Try using the short tutorial (available as a PDF file on the class web site). Then look over the Physics 230 disk.
What to expect:

Class: Each class period, you should come to class with your assigned reading completed. There will probably be things in the reading that are not completely clear. The purpose of the lectures is to help you through the difficult parts. Come prepared to work through parts of problems in class in small groups. You will be graded on your contribution to group work done in class. This will count for 10% of your total grade.

Homework: After each lecture, you should reread the text as necessary and work through the homework problems. Homework for Monday’s lecture will be due Wednesday at 12 midnight, and so forth. You will turn homework in to the distribution center located across from N-375 ESC. There is a slot labeled “Physics 318.” Since I do not believe in using homework as a method of evaluating your mastery of the material, I will give you a grade for homework based only on completion of the assignments. If you have clearly put time and effort into your work, you will receive full credit. If you do not understand how to do a problem, then make a complete statement of where you are having problems. Do not expect to get full credit for a problem that is hastily and incorrectly done. Homework will count 30% of your total grade.

Exams: There will be two midterm exams administered in the testing center and a final exam given in the classroom. Each exam will consist of three problems and one essay question. There will be no time limits on the midterms, but the final will be limited to the designated three-hour block. The final exam and each midterm will count 20% of your total grade. The final exam will be given in the classroom on Monday, December 12 from 11:00 a.m. – 2:00 p.m. Please note that university policy requires you to take the final exam at the scheduled time. Please do not ask me to let you take the final exam at any other time unless there is a genuine emergency.

Grading:

Your grade will be based on my perception of your mastery of the material. I expect the average grade to be a “B+” or higher. You will receive the following letter grades (or better, if I am merciful and conditions warrant) if your overall percentage is in the indicated range:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>94 -100%</td>
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<tr>
<td>A–</td>
<td>90 - 94%</td>
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<tr>
<td>B+</td>
<td>87 - 90%</td>
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<tr>
<td>B</td>
<td>84 - 87%</td>
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<tr>
<td>B–</td>
<td>80 - 84%</td>
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<tr>
<td>C+</td>
<td>77 - 80%</td>
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etc.
LEGAL NOTICES:

The University suggests that the following statements be included in all course outlines. Please note that I fully endorse these policies.

Honor Code Standards

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university.

Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university’s expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

Preventing Sexual Discrimination or Harassment

Sexual discrimination or harassment (including student-to-student harassment) is prohibited both by the law and by Brigham Young University policy. If you feel you are being subjected to sexual discrimination or harassment, please bring your concerns to the professor. Alternatively, you may lodge a complaint with the Equal Employment Office (D-240C ASB) or with the Honor Code Office (4440).

Students with Disabilities

If you have a disability that may affect your performance in this course, you should get in touch with the office of Services for Students with Disabilities (1520 WSC). This office can evaluate your disability and assist the professor in arranging for reasonable accommodations.