

University of British Columbia
Department of Mathematics

COURSE OUTLINE	MATH267: MATHEMATICAL METHODS FOR EECE - S101	Winter T1, 2012
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INSTRUCTOR	Reinel Sospedra-Alfonso Email: sospedra@chem.ubc.ca
LECTURES	MWF 10:00-11:00 am in Chemistry Building C126
OFFICE HOURS	TBA
COURSE WEBPAGE	http://www.iam.ubc.ca/~sospedra/Math267
PREREQUISITES	One of MATH 215, 255, 256, 265 and one of MATH 152, 221, 223

TEXTBOOKS

There is no required textbook. I will post lectures notes online and we will use much of the material from Joel Feldman's lecture notes (see course webpage). Additional references are:

- *Elementary Differential Equations and Boundary Value Problems* by Boyce & DiPrima (Chapters 10 & 11 cover the first four weeks of course material)
- *Signals and Systems* by Oppenheim & Willsky (This is the course textbook for EECE 359, Chapters 4, 5 & 10 are relevant)
- *Partial Differential Equations*, Richard G. Froese (UBC M257/316 Lecture notes free on the Web at <http://www.math.ubc.ca/~rfroese/notes/Lecs316.pdf>)
- Schaum's Outlines of *Signals and Systems*, Second Edition, by Hwei Hsu (This book has over 500 worked-out examples. Several copies are available in the Library and it can be bought from Amazon at a cheap price.)

COURSE OVERVIEW

The core of this course is the study of Fourier series, the Fourier transform, and their discrete analogues. Applications to the wave equation, telegraph equation, circuits, and signal processing will be emphasized. See TENTATIVE SCHEDULE at the end of this document. Topics to be covered are:

1. Complex Numbers
2. Review of ordinary differential equations
3. Introduction to partial differential equations - wave and diffusion equations
4. Method of separation of variables
5. Introduction to Fourier Series
6. Applications of Fourier Series to circuits
7. The Fourier transform with applications
8. The Dirac delta function and convolutions
9. The telegraph equation
10. Discrete Fourier transform
11. The z-transform

ASSIGNMENTS

Homework assignments are due at the **beginning of lecture time** on FRIDAYS **Sept 14, 21, 28, Oct 12, 19, 26, Nov 2, 16, 23**. These assignments will be distributed one week in advance -normally by posting on the course web site-. Late assignments will NOT be accepted, unless there has been a case of illness, accident, or family affliction. In such a case, you MUST notify me as soon as possible, and provide a written request to be excused as well as supporting documentation.

EXAMINATIONS

There will be a 3 hours **Final Exam** scheduled by the University, and **two in-class tests**. The in-class tests will be held during lecture time on FRIDAY **Oct 5** and MONDAY **Nov 5**. Off-schedule final examinations are given only in accordance with the regulation on 'Deferred Status' in the UBC calendar. A deferral will NOT be granted if you have been absent from class for a substantial portion of the term, or have not completed most of the term work with reasonable success.

Missing a midterm normally results in a mark of 0. An exception may be granted in the case of a medical emergency. In such a case, you MUST notify me within 48 hours of the missed exam and present a doctor's note immediately upon return to UBC. No make-up exams will be given.

Calculators will NOT be permitted in examination rooms for the in-class tests or the final examination.

Students are strongly advised NOT to make final plans for travel or employment during the exam period since special arrangements will NOT be made when examinations conflict with such plans.

GRADING SCHEME

The grading scheme is summarized in the following table:

Component	Date	Weight
Assignments (9)	Sept 14, 21, 28, Oct 12, 19, 26, Nov 2, 16, 23	15%
Tests (2)	Oct 5, Nov 5	35%
Final Examination	TBA	50%

The numerical score will then be converted to a letter grade as per the following table:

Letter Grade	A+	A	A-	B+	B	B-	C+	C	C-	D
Lower Bound	90%	85%	80%	76%	72%	68%	64%	60%	55%	50%

The department reserves the right to alter this conversion scale if adhering to them would produce unfair grades.

POSTING GRADES

Grades will be posted by using the full student number. Students names will be stripped and students are given the option at the beginning of the course not to have their grades posted.

ACADEMIC INTEGRITY

The University of British Columbia has strict policies on academic integrity that I must and will enforce. You may find all the University's rules in the Student Conduct and Discipline section of the current academic calendar.

Discussing exercises -including graded homework problems- with your classmates is a useful and mathematically healthy practice. However, when it comes time to write up your solutions for submission, **YOU MUST WORK INDEPENDENTLY and PRESENT SOLUTIONS IN YOUR OWN WORDS.**

Our graders in the department will be given instructions to look for duplicate work in submitted papers, and/or other evidence of copying including use of online sources such as CRAMSTER. These practices will constitute clear violation of the University of British Columbia policy and will not be tolerated. Cheating on examinations, including copying of others work or bringing prohibited materials into the examination room is strictly forbidden, and, if observed will be dealt with promptly, publicly and rigorously.

MATH LEARNING CENTER

You are encouraged to visit the Math Learning Center (formerly the Math Tutorial Centre). It is now open in LSK 100, 9AM-7PM Monday-Thursday and 9AM-4PM on Friday.

TENTATIVE SCHEDULE

Entries refer to the Topics given in the COURSE OVERVIEW above:

	M	W	F	HWRK Due
Sept	3 No Class	5 T1	7 T2	No
	10 T2	12 T3	14 T3	Yes
	17 T4	19 T4	21 T4	Yes
	24 T5	26 T5	28 T5	Yes
Oct	1 T5	3 T6	5 Test 1	No
	8 No Class	10 T6	12 T6	Yes
	15 T7	17 T7	19 T7	Yes
	22 T7	24 T7	26 T8	Yes
	29 T8	31 T9	2 T10	Yes
Nov	5 Test 2	7 T10	9 T11	No
	12 No Class	14 T10	16 T10	Yes
	19 T11	21 T11	23 T11	Yes
	26 T11	28 T11	30 T11	No

IMPORTANT DATES

Sept 18	Last day to withdraw without a W standing
Oct 5	In-class Test 1 during lecture time
Oct 12	Last day to withdraw with a W standing
Nov 5	In-class Test 2 during lecture time
Nov 30	Last day of the term
Dec 5,19	First and Last possible date for the final exam