

**UBC Course Outline: Mathematics 267**  
**Mathematical Methods for Electrical and Computer Engineering**  
**Sept - Dec, 2009**

**Prerequisites:**

One of MATH 215, 255, 256, 265 and one of MATH 152, 221, 223.

**Instructor:** Tuoc Van Phan

*Office:* Math 209, Tel: 604-822-3742; *E-mail:* phan At math.ubc.ca

*Web course:* <http://www.math.ubc.ca/~phan/m267.html/>

*Office Hour:* **Time:** Tuesday and Thursday: 9:00-10:00 and Friday 4:00-5:00; **Location:** LSK 202B

**Text(Optional):**

William E. Boyce and Richard C. DiPrima, *Elementary Differential Equations and Boundary Value Problems*, Ninth Edition, New York: John Wiley & Sons, 2009.

**Other References:**

1. Alan Oppenheim, Alan Willsky with S. Hamid Nawab, *Signals and Systems*, second edition, Prentice Hall, 1997.
2. Richard G. Froese, *Partial Differential Equations*, UBC M257/316 Lecture notes free on the Web at <http://www.math.ubc.ca/~rfroese/notes/Lecs316.pdf>
3. Lecture Notes of Professor Joel Feldman at <http://www.math.ubc.ca/~feldman/m267/>

**Topics:**

1. Review of ordinary differential equations. ( 1 hour)
2. Introduction to partial differential equations - wave and diffusion equations. ( 1 hour)
3. Method of separation of variables. ( 2 hours)
4. Introduction to Fourier Series. ( 4 hours)
5. Complex Numbers. ( 1 hour)
6. Applications of Fourier Series to circuits. ( 4 hours)
7. The Fourier transform with applications. ( 4 hours)

8. The Dirac delta function and convolutions.	( 2 hours)
9. The telegraph equation.	( 2 hours)
10. Discrete Fourier transform.	( 5 hours)
11. The z-transform.	( 4 hours)
Midterms:	( 3 hours)
Review:	<u>( 2 hours)</u>
Total:	36 hours

### Grading:

- There will be three 50 minute midterms on **Wednesday, Sep 30, Friday, Oct 23 and Friday, Nov 20**. All three midterms together counts for 50% of the course grade.
- *Homework will not be handed in.* You are strongly advised to work out the homework problems in detail as they will give you practice in the techniques learned in class and provide an essential help in preparing for midterm and final examinations. The suggested homework problems will be posted.
- The final exam will account for 50% of the course grade.
- In order to make course grade standards consistent across sections the raw final grade will be scaled.

### Policies:

- The midterms and final examination will be strictly closed book: no books, notes, formula sheets or calculators will be allowed.
- There is no supplemental examination in this course.
- Missing a midterm normally results in a mark of 0. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency. In the latter case, the instructor must be notified within 48 hours of the missed test, and presented with a doctor's note immediately upon the student's return to UBC.
- No make-up exams will be given.