

COURSE OUTLINE WINTER 2012

1. Course: AMAT 415 – Mathematical Methods
Lecture/Time: Lec 1: MWF 10:00am (SB148); Tut 1,2: Thurs 10:00am (MS515, MS521)
Instructor: Dr. Michael Lamoureux
Office/Phone/Email: MS514 403-220-8214 mikel@ucalgary.ca
Blackboard site: TBA

2. Prerequisites: One of MATH 331, 353, 381 or AMAT 307, 309, 311.
(see Section 3.5C of Faculty of Science www.ucalgary.ca/pubs/calendar/current/sc-3-5.html
and Course Descriptions: www.ucalgary.ca/pubs/calendar/current/course-desc-main.html)

3. Grading: The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course, the following weights will be used:

<i>Assignments</i>	[3 or 4]	40 %
<i>Midterm Test</i>	[1]	20 %
<i>Final Exam</i>	(scheduled by Registrar)	40 %

The various components above will be assigned a percentage score and will be combined with the indicated weights to produce an overall percentage in the course. The conversion table between course percentage and letter grade will be provided at least one week before the withdrawal deadline.

A passing grade in the Final Examination is essential for an overall grade of C- or better.

4. Missed Components of Term Work. The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in section 3.6: www.ucalgary.ca/pubs/calendar/current/sc-3-6.html. It is the student's responsibility to be familiar with these regulations. See also www.ucalgary.ca/pubs/calendar/current/e-3.html.

5. There are no class exercises held outside of class hours.

REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME ACTIVITY. If you have a conflict with any out of class time activity, please inform your instructor at least one week in advance of the activity so that other arrangements may be made for you.

6. Text. The first part of the course, on complex analysis, has no recommended text. There will be lecture notes posted on Blackboard. Optional references for this section include J. Marsden's *Basic Complex Analysis*, Wunsch's *Complex Variables with Applications*, or the Schaum series entitled *Complex Variables*.

The second part of the course will follow closely the book by Richard G. Lyons, *Understanding Digital Signal Processing, (Ed 3)* a required text available at the UC Bookstore.

In the past, we have used the text by John H. Karl, *An Introduction to Digital Signal Processing*. This is a good reference, but not required.

7. Examination Policy: Exams will be closed book. A non-graphing calculator may be used. Students should also read the Calendar, Section G, on Examinations: www.ucalgary.ca/pubs/calendar/current/g.html

8. Assignments. There will be up to four assignments in the course. Please note the department policies on the preparation of assignments, including presentation, neatness, stapling, lateness, and plagiarism.

9. Labs. There will be a lab every week, except in the first week of classes. Students will have access to the MATLAB programming language in the labs, in order to experiment with some of the numerical implementations of Fourier transforms, filters, and other mathematical ideas presented in class. If desired, any student may purchase an inexpensive, student version of MATLAB at the UC Microstore.

10. C A L E N D A R (approximate)

Week	Date	Topics	Notes
1	January 9 – 13	Complex numbers, series, functions	Appendices A,B in Lyons. No lab this week.
2	January 16 – 20	Real and complex integrals Cauchy Integral Theorem and Formula	Use complex analysis references
3	January 23 – 27	Integration by residues	Assignment #1 due (Friday)
4	January 30 – Feb 3	Chaps 1,2 (Lyons)	
5	February 6 – 10	Chaps 3 (Lyons)	
6	February 13 – 17	Chap 4 (Lyons)	Assignment #2 due (Friday)
7	February 20 – 24	Reading Week	No Lectures, No Lab.
8	February 27 – Mar 2	Chap 5 (Lyons)	Midterm
9	March 5 – 9	Chap 6 (Lyons)	
10	March 12 – 16	Chap 9 (Lyons)	
11	March 19 – 23	Chap 10,11 (Lyons)	Assignment #3 due (Friday)
12	March 26 – 30	Chap 13 (Lyons)	
13	April 2 – 6	Laplace transforms	No classes Friday, April 6
14	April 9 – 13	Wavelet transforms	Assignment #4 due (Friday)

10. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- (a) **ACADEMIC MISCONDUCT** (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under K. Student Misconduct (<http://www.ucalgary.ca/pubs/calendar/current/k.html>) to inform yourself of definitions, processes and penalties.
- (b) **ASSEMBLY POINTS** in case of emergency during class time. Be sure to **FAMILIARIZE YOURSELF** with the information at <http://www.ucalgary.ca/emergencyplan/assemblypoints>.
- (c) **ACADEMIC ACCOMMODATION POLICY.** Students with documentable disabilities are referred to the following links: Calendar entry on students with disabilities: <http://www.ucalgary.ca/pubs/calendar/current/b-1.html>
Disability Resource Centre: <http://www.ucalgary.ca/drc/>
- (d) **SAFEWALK:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- (e) **FREEDOM OF INFORMATION AND PRIVACY:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, **students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page.** For more information see also <http://www.ucalgary.ca/secretariat/privacy>.
- (f) **STUDENT UNION INFORMATION:** VP Academic Phone: 220-3911 Email: suypaca@ucalgary.ca.
SU Faculty Rep. Phone: 220-3913 Email: sciencerep@su.ucalgary.ca Website <http://www.su.ucalgary.ca/>
Student Ombudsman: <http://www.ucalgary.ca/provosti/students/ombuds>
- (g) **INTERNET and ELECTRONIC COMMUNICATION DEVICE Information.** You can assume that in all classes that you attend, **your cell phone should be turned off.** Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.