

**MA 1024. CALCULUS IV  
COURSE SYLLABUS  
D TERM, 2014**

1. BASIC INFORMATION

**Instructor:** Elissa Ross

*e-mail:* [eross2@wpi.edu](mailto:eross2@wpi.edu)

*Office:* 405A Salisbury Laboratories

*Office Hours:* Monday and Thursday, 3pm – 4pm

**Teaching Assistant:** Bill Sanguinet

*e-mail:* [wcsanguinet@wpi.edu](mailto:wcsanguinet@wpi.edu)

*Office:* 205 Stratton Hall

*Office Hours:* Wednesday 1pm – 2pm

*Math Help Center Hours:* Tuesday and Thursday, 1pm – 2pm

**Calendar description:** This course provides an introduction to multivariable calculus. Topics covered include: vector functions, partial derivatives and gradient, multivariable optimization, double and triple integrals, polar coordinates, other coordinate systems and applications. Recommended background: MA 1023. Although the course will make use of computers, no programming experience is assumed.

**Course materials.** All of the course information, including homework assignments, will be available on the course website.

*Website:* [www.wpi.edu/~eross2/MA1024.html](http://www.wpi.edu/~eross2/MA1024.html)

*Text:* “Calculus Early Transcendentals,” 7th edition. Edwards and Penney

**Coordinates.** Two sections:

SECTION D03:

*Class:* MT-RF 9:00 – 9:50am, HL202

*Conference:* M 11:00 – 11:50am, SH308

*Lab:* R 11:00 – 11:50am, SH003

SECTION D07:

*Class:* MT-RF 2:00 – 2:50pm, OH109

*Conference:* M 10:00 – 10:50am, SH106

*Lab:* R 10:00 – 10:50am, SH003

**Conferences.** The conferences will be used to review problems, and take quizzes. Attendance is mandatory. The conferences scheduled the day before the midterm and final exams will be used for review.

**Labs:** Labs are scheduled in SH003. You will develop a working understanding of Maple in applications of Calculus. You must attend the lab sessions to receive credit for your lab assignment. Instructor's assistant Dina Rassias ([drassias@wpi.edu](mailto:drassias@wpi.edu)) will provide instruction for labs.

## 2. EVALUATION

**Grades.** Your grade will be determined as follows:

Labs: 10%

Quizzes: 15% (best 3 of 4 quizzes, 5% each)

Homework and WebWork: 20%

Midterm Test 1 (April 8): 25%

Final Exam, cumulative (May 6): 30%

**Quizzes:** The quizzes will be administered during conference, and will be approximately 15 minutes. The questions will be identical or extremely similar to questions from the homework.

**Missed tests and quizzes:** There will be no make-up for missed tests or quizzes. Upon presentation of documentation of a valid excuse, the corresponding percentage of the final mark will be added to the final exam. With no presentation of such documentation, a grade of zero will be entered for the missed test or quiz.

**Homework:** There are three components to the homework assignments:

- (1) *Recommended problems.* I will assign a large number of recommended problems. You should try as many of these as possible, and while they will not be collected, about 50% of the questions on the quizzes and tests will be taken verbatim from these problems.
- (2) *Assigned problems.* I will collect some subset of the recommended problems weekly on Friday.
- (3) *WebWork problems.* Most weeks I will assign some number of WebWork problems, which will be considered part of the homework assignment due on Friday.

The recommended, assigned and WebWork problems will be listed on the course website.

## 3. OTHER INFORMATION

**Additional Resources.** Additional help is available in the Math Tutoring Centre, SH 002A, see the department website for details. Note Bill Sanguinet's hours in the help centre are listed above.

In addition, the M\*A\*S\*H program has a tutor assigned to this course. Kevin Ackerman is available at the following times:

- Monday, 7pm – 8pm in the EPC
- Tuesday, 7pm – 8pm in the EPC
- Thursday 2pm – 3pm in the ARC

**Academic Honesty.** Each student is expected to familiarize him/herself with WPI's Academic Honesty policies which can be found at

<http://www.wpi.edu/offices/policies/honesty/policy.html>

All acts of fabrication, plagiarism, cheating, and facilitation of cheating will be prosecuted according to the university's policy.

#### 4. SYLLABUS

We will cover the following sections of the text:

*Chapter 12:*

1. Functions of several variables (12.2)
2. Limits, continuity, partial derivatives (12.3, 12.4)
3. Multivariable optimization (12.5)
4. Linear approximation, differentials (12.6)
5. Chain rule (12.7)
6. Directional derivatives and the gradient (12.8)
7. Critical points (12.10)

*Chapter 13:*

8. Double integrals, iterated integrals, double integrals over non-rectangular regions (13.1-13.3)
9. Double integrals in polar coordinates (13.4)
10. Applications of double integrals (13.5)
11. Triple integrals (13.6)
12. Integration in cylindrical and spherical coordinates (13.7)
13. Surface area (13.8)
14. Change of variables (13.9)