



**DEPARTMENT OF SCIENCE**

**COURSE OUTLINE – FALL 2011**

**MA 1130 C2**

**ELEMENTARY CALCULUS I**

**INSTRUCTOR:** Tom McLeister

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**OFFICE**

**HOURS:** M 13:00 – 14:20 T R 10:00 -11:30 F 11:30 – 12:50

**PREREQUISITE:** Pure Mathematics 30

**REQUIRED TEXT/RESOURCE MATERIALS:**

Stewart: Single Variable Calculus, 7E, Brooks/Cole 2012.

**CALENDAR DESCRIPTION:**

The course will include a review of analytic geometry; functions, limits, continuity; differentiation of elementary functions; applications to maxima, minima and rates; introduction to integration; Fundamental Theorem; numerical integration; and areas and other applications of the definite integral to areas.

**CREDIT/CONTACT HOURS:** 3 (3-2-0) UT

**DELIVERY MODE(S):**

|          |                 |     |      |
|----------|-----------------|-----|------|
| Lecture: | 8:30 – 9:50     | T R | J203 |
| Seminar: | CS1 14:30-16:20 | W   | J203 |
|          | CS2 14:30-16:20 | M   | J203 |

## **COURSE OBJECTIVES:**

At the end of this course, students should be able to...

- State the definition of a function and describe the various ways a function can be represented;
- Find the domain and range of a function;
- Compose functions;
- Calculate limits of functions, including rational and trigonometry functions, using the limit laws;
- Identify points or intervals where a function is continuous/discontinuous;
- Calculate derivatives of functions using the limit definition and the differentiation rules;
- Estimate the value of a function at a point using the tangent line (linear) approximation or differentials;
- Calculate derivatives implicitly and solve related rates problems;
- Sketch the graph of a function and indicate the extreme values, points of inflection, vertical and horizontal asymptotes, and intervals of concavity;
- Apply calculus to solve optimization problems;
- Calculate definite integrals using Riemann sums and the Fundamental Theorem of Calculus;
- Calculate definite and indefinite integrals using tables of integrals and substitution;
- Use the definite integral to find the area between curves.

## **TRANSFERABILITY:**

UA, UC, UL, AU, GMU, Other. Consult the Alberta Transfer Guide for more information.

Note: Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.

## GRADING CRITERIA:

| GRANDE PRAIRIE REGIONAL COLLEGE |                    |                       |                                     |
|---------------------------------|--------------------|-----------------------|-------------------------------------|
| GRADING CONVERSION CHART        |                    |                       |                                     |
| Alpha Grade                     | 4-point Equivalent | Percentage Guidelines | Designation                         |
| A <sup>+</sup>                  | 4.0                | 90 – 100              | EXCELLENT                           |
| A                               | 4.0                | 85 – 89               |                                     |
| A <sup>-</sup>                  | 3.7                | 80 – 84               | FIRST CLASS STANDING                |
| B <sup>+</sup>                  | 3.3                | 77 – 79               |                                     |
| B                               | 3.0                | 73 – 76               | GOOD                                |
| B <sup>-</sup>                  | 2.7                | 70 – 72               |                                     |
| C <sup>+</sup>                  | 2.3                | 67 – 69               | SATISFACTORY                        |
| C                               | 2.0                | 63 – 66               |                                     |
| C <sup>-</sup>                  | 1.7                | 60 – 62               |                                     |
| D <sup>+</sup>                  | 1.3                | 55 – 59               | MINIMAL PASS                        |
| D                               | 1.0                | 50 – 54               |                                     |
| F                               | 0.0                | 0 – 49                | FAIL                                |
| WF                              | 0.0                | 0                     | FAIL, withdrawal after the deadline |

## EVALUATIONS:

Assignments: 10%

Quizzes: 15%

Midterm: 25% (Tuesday, October 25, 2011)

Final Exam: 50% (Cumulative and scheduled during exam period, TBA)

Note: There will be no make-up quizzes or exams. If a quiz/test is missed for a valid reason and proper documentation is provided, then the weight of the quiz/test will be transferred to another component. Late assignments will not be accepted.

## STUDENT RESPONSIBILITIES:

Attend all lectures and seminars. If a lecture or seminar is missed, it is the student's responsibility to catch up on the material and obtain the missing lecture notes.

## STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the Student Conduct section of the College Admission Guide at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at [www.gprc.ab.ca/about/administration/policies/](http://www.gprc.ab.ca/about/administration/policies/)

## COURSE SCHEDULE/TENTATIVE TIMELINE:

| Week               | Topics   | Notes  |
|--------------------|--|--|
| 1. Sept. 5-9       | Precalculus Review   | First class: Thurs, Sept. 8                  |
| 2. Sept. 12-16     | Functions, Limits & Continuity<br>§1.1-1.6,1.8                     |  |
| 3. Sept. 19-23     |  |  |
| 4. Sept. 26-30     |  |  |
| 5. Oct. 3-7        | Differentiation<br>§2.1-2.9  |  |
| 6. Oct. 10-14      |  | Thanksgiving, Monday Oct. 10 – no classes    |
| 7. Oct. 17-21      |  |  |
| 8. Oct. 24-28      | Applications of Differentiation<br>§3.1-3.5,3.7<br>§3.8 (optional) | <b>Midterm (Tues. Oct. 25<sup>th</sup>)</b>  |
| 9. Oct. 31-Nov.4   |  | Nov. 2, last day to withdraw                 |
| 10. Nov. 7-11      |  | Remembrance Day, Friday Nov. 11 – no classes |
| 11. Nov. 14-18     | Integration<br>§3.9,4.1-4.5  |  |
| 12. Nov. 21-25     |  |  |
| 13. Nov. 28-Dec. 2 |  |  |
| 14. Dec. 5-9       | Applications of Integration/Review<br>§5.1                         |  |
| 15. Dec. 12-21     |  | Final Exams                                  |