

Instructor: Michael Bergwell

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Office Hours: M 5-6 pm, T 4:30-6, W 3-3:30, R 4-5 and by appointment

Class Time: W 5:30-9:00

Course Location: D224

Pre-requisite: Calculus I, MAT 254

Text: Calculus, Early Transcendentals by James Stewart, 7E

Course Description: The course is continuation of Calculus I. The topics include: areas,

volumes, techniques of integration, applications of integration, parametric equations and polar coordinates, vectors and operations on vectors, sequences and series

Measurements: Quizzes - 20%, Each Exam – 20%, and Final Exam - 20%.

Grade equivalents: A 93 – 100, A- 90 – 93, B+ 87 -89, B 83 – 86,
B- 80 – 82, C+ 77 – 79, C 73 – 76, C- 70 – 72, D+ 67 – 69. D 63 – 66,
D- 60 – 62, F below 60.

Assignments: A quiz will be handed out each lecture. All quizzes are due exam day. Your lowest two quizzes will be dropped from your final grade. Homework will be assigned for each section but will not be collected for a grade. Problems will be made available at www.webassign.net for extra practice (optional). You will need to create an account and enter in your access code. The class key is **trcc.mohegan 6672 9890**. The institution code is trcc.mohegan. Exams will be open-note (textbook not allowed).

Attendance: It is very important that you attend **ALL** classes. Your attendance in the classroom, participation in classroom work /projects and preparation for each class is required and is essential to your success in the course.

Support Services: Tutorial services. Meeting with me for an extra help.

Class Cancellation: In case of inclement weather, check the college website for class Cancellations or call 860-886-0177 for recorded message on the college phone.

Plagiarism and

Academic Honesty: At TRCC, we expect the highest standards of academic honesty. The Board of Trustees' Proscribed Conduct Policy prohibits cheating on exams, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, plagiarism.

Disabilities

Statement: Students with disabilities, who may require special accommodations and support services, are encouraged to notify:

1. Chris Scarborough, who is coordinating services to students with disabilities.
2. The instructor during the first two weeks of class.

Course Outline, Schedule, Homework (Odd numbers. This is a guide only. Assignments and schedules may vary).

| Section | Topic | Exercises |
|------------------------------|--|------------------------------|
| Ch. 5 (Rev.) | | |
| 5.2 | The definite Integral | 382/5, 17-19, 33, 47, 49 |
| 5.3 | The Fundamental Theorem of Calculus | 394/19 – 37 |
| 5.4 | Indefinite Integrals | 403/5 - 15, 19 - 39 |
| 5.5 | The Substitution Rule | 413/7 – 35 |
| Ch. 6 | | |
| 6.1 | Areas Between Curves | 427/1 – 27 |
| 6.2 | Volumes | 438/1 – 17 |
| 6.3 | Volumes by cylindrical shelves | 444/1 – 13, 15 – 25 |
| 6.4 | Work | 449/3, 5, 7, 15 |
| 6.5 | Average value of the function | 453/ 3, 5 |
| Exam 2/19 | | |
| Ch. 7 | | |
| 7.1 | Integration by parts | 468/1 – 13, 17, 19, 37 |
| 7.2 | Trigonometric Integrals | 476/1 – 11, 15, 19, 21 - 25 |
| 7.3 | Trigonometric Substitution | 483/1 - 13 |
| 7.4 | Integration by Partial Fractions | 492/7 – 23 |
| 7.6 | Table of Integrals | 504/5, 7, 17 |
| 7.7 | Approximate Integration | 516/8 |
| 4.4 | Indeterminate Forms and L'Hospital's Rule | 307/7 – 25 |
| 7.8 | Improper integrals | 527/1, 5, 13, 21, 27,31 |
| Exam 3/26 | | |
| Ch. 9, 10 | | |
| 9.1 | Differential Equations | 584/1, 3, 5 |
| 9.3 | Separable Equations | 600/ 1 – 7, 11 – 15, 39 |
| 10.1 | Parametric Curves | 641/1 – 15, 19 |
| 10.2 | Calculus with parametric curves | 651/1-7, 11,13, 17,31,33 |
| 10.3 | Polar Coordinates | 662/1-5, 7-11, 15 - 25 |
| 10.4 | Areas and Lengths in Polar Coordinates | 668/1- 13 |
| Ch.11 | | |
| 11.1 | Sequences | 700/3 - 11,13 – 17,23 - 41 |
| 11.2 | Series | 711/3,5, 17 - 23, 27 - 31,43 |
| 11.3 | The integral test | 720/3 - 7,9 - 17 |
| 11.4 | The Comparison Tests | 726/3, 7, 9, 15 |
| Exam 4/23 | | |
| Ch. 11.8, 11.9, 11.10 | | |
| 11.8 | Power Series | 745/3, 7, 9 |
| 11.9 | Representations of functions as Power Series | 751/3 – 7, 11, 15 |
| 11.10 | Taylor and Maclaurin series | 765/5, 7, 9, 15 |
| Ch. 12 | | |
| 12.1 | Three Dimensional Coordinate System | 790/1, 3, 7, 9 |
| 12.2 | Vectors | 798/5 - 9, 19 - 21, 23 |
| 12.3 | The Dot Product | 806/3, 5, 9, 15 |
| 12.4 | The Cross Product | 814/1, 3, 5, 15 |

FINAL EXAM 5/14

Course Objectives:

Student should be able to:

1. Integrate the functions using substitution, integration by parts, the method of partial fractions, trigonometric substitutions, tables
2. Perform approximate integration
3. Show that the improper integral converges and find its value, or show that it diverges
4. Find the area bounded by the curves.
5. Find the volumes of revolution: disks, washers, and cylindrical shells.
6. Use integration on various applications to physics and engineering
7. Find general and particular solution of separable differential equations
8. Determine whether the sequence is convergent or divergent, and find the limit of the convergent sequences.
9. Determine whether the geometric series converges or diverges, and find the sum of each convergent series.
10. Use divergence test, limit comparison test, Integral test, ratio test and direct comparison test to determine whether the series is convergent or divergent.
11. Represent functions as power series, Taylor and Maclaurin series
12. Plot polar-form points.
13. Convert from polar to rectangular coordinates and from rectangular coordinates to polar
14. Find areas and lengths in polar coordinates
15. Graph in polar coordinates.
16. Find the derivative of equations of curves defined by parametric equations.
17. Find the area of a region bounded by curves defined by parametric equations.
18. Perform operations on vectors.
19. Find the standard representative of a vector.
20. Compute a resultant vector.
21. Find the dot and the cross product of two vectors.