Syllabus for MTH U242: Calculus for Science and Engineering
Spring 2009

This course is a one semester continuation of the subject of Calculus, following the material covered by MTH U241. We will study *integral calculus* and will discuss some of its applications as well as *infinite series*, *power series*, and *vector calculus* in 3 dimensions.

Instructor: Marcus Fries, 521 LA, ext. 2706, fries.m@neu.edu

Office Hours: Monday and Wednesday 2:00-3:30.

Text: James Stewart, *Calculus Concepts and Contexts, Vol. 1 (and Vol. 2 later)*

Quizzes: There will be 10 quizzes. Quizzes will usually be given Thursday in class.

Grading: Course grades will be determined using

- Quizzes 60%
- Final exam 40%

and the following scale: $A = 93-100$, $A- = 90-92$, $B+ = 87-89$, $B = 83-86$, $B- = 80-82$, $C+ = 77-79$, $C = 73-76$, $C- = 70-72$, $D+ = 67-69$, $D = 63-66$, $D- = 60-62$, $F = 0-59$.

Various Policies:

- Except in cases of documented emergencies, there will be *no makeups* of quizzes.
- You are responsible for information conveyed in class (even if you are absent) or posted on Blackboard.
- If you have a concern about the course that cannot be resolved by speaking with me, please see the Math Department's Undergraduate Director, Alex Martsinkovsky, 471LA, x5510, alexmart@neu.edu
- Unless you have a legitimate conflict (approved by the course coordinator), all students must take the final exam at the scheduled time. Do not make travel plans that conflict with the final exam.
- It is University policy that no grade, including an Incomplete, can be changed after one year; exceptions must be authorized by the Academic Standing Committee.

Important Dates:

- No classes on January 19 (MLK Day), February 16 (Presidents' Day), March 1-8 (Spring Break), and April 20 (Patriots' Day).
- Final Exam: to be announced.

Order of Sections Covered and Exercises

- 5.5 The Substitution Rule: # 1-6, 7, 10, 11, 13, 14, 21, 22, 24
- 5.6 Integration by Parts: # 1-4, 8, 9, 11, 17, 21, 25, 28
- 5.7 Techniques of Integration: # 1-14 (odd), 17, 18, 19, 20
- 5.9 Numerical Integration: # 1, 7a, 7c, 8a, 8c, 25a, 25c
- 5.10 Improper Integrals: # 1, 2, 5, 9, 13, 17, 25, 27, 49
- 6.1 Areas between Curves: # 1-7, 11
- 6.2 Volumes: # 1-7, 13, 14, 29
- 6.3 Arc Length: # 1, 3-7
- 6.5 Applications of Integral Calculus: # 1, 3, 4, 7, 9, 13, 15, 17a
- 8.1 Sequences: # 2, 3, 5, 7, 9, 11,13, 14, 18, 37, 40, 41
- 8.2 Series: # 1-13, 17, 19, 21, 35, 48
- 8.3 Integral and Comparison Test: # 1, 3, 4, 6-8, 11, 15, 17, 19
- 8.4 Convergence Tests: # 2, 9, 13, 14, 19, 21, 23, 31, 33, 35
- 8.5 Power Series: # 3, 5, 7, 13, 17
- 8.6 Functions as Power Series: # 1, 2, 3, 5, 11, 21, 25
- 8.7 Taylor& Maclaurin Series: # 3-5, 7, 13, 15, 19, 22, 34, 37, 53
- 9.1 $3D$ coordinates: # 1, 3, 8, 13, 29
- 9.2 Vectors: # 4, 15, 16, 23, 26
- 9.3 The Dot Product: # 4, 5, 6, 7, 13, 15, 17, 24, 25
- 10.1 Vector Functions and Curves: # 1, 3, 7, 13, 17-22
- 10.2 Derivatives and Integrals of Vector Functions: # 3, 5, 9, 11, 15, 16
- 10.3 Arc Length, Tangent and Normal Vectors: # 1, 3, 7, 9, 10, 37
- 10.4 Motion in Space: # 1, 3, 7, 9, 11, 13-17

Note: The Final Exam will be cumulative, and will cover all above topics (unless otherwise announced).