

SYLLABUS: Math 115 PRECALCULUS

Don Faust

We will carefully explore the many areas of elementary mathematics which converge to form the substantial tool-box of understanding upon which The Calculus can be constructed.

MAJOR LEARNING OUTCOMES IN THIS COURSE, WHICH FLOW FROM THE ABOVE PARAGRAPH, INCLUDE (BUT ARE NOT LIMITED TO) THE FOLLOWING:

The student will be able to

1. Exhibit, in all written and oral mathematical work, a clear understanding of the basics of logical and analytical argumentation fundamental to processes of evidence- and deduction-based scientific methods;
2. Utilize and clearly explain the full range of function-related, algebraic, graphical, and trigonometric machinery prerequisite to The Calculus;
3. Utilize and clearly explain the mathematical rule of inference called MATHEMATICAL INDUCTION to prove that typical formulas $P(n)$ are true for all $n = 1, 2, 3, \dots$; and
4. Utilize and clearly explain elementary matrix machinery, including the use of matrix methods to solve systems of equations.

More generally, the following broad perspective may be helpful to you. The fundamental tools of continuous mathematics provide a rich storehouse of models for the representation and solution of many problems. Making intelligent use of these models involves both (1) developing a facility for analyzing problems and casting them in ways which, where appropriate, make good use of these models of mathematics, and (2) developing a facility for working with these models themselves. Our course will take us through a representative sample of these tools of mathematics, and will concentrate on both aspects (1) and (2) delineated above. It can be a very exciting journey (if your involvement is sincere and includes both good class attendance and a parallel daily commitment to hammering things out on your own through daily study and problem-solving), at the end of which you will find not only that your mathematical maturity has been

substantially enriched, but also that the general analytical skills you bring to bear in the broader arena of your daily life will be substantially enriched as well.

Text: PRECALCULUS by Stewart

Assessment:

The assessments will consist of two mid-semester exams, a semester-long sequence of SUBMITTED ASSIGNMENTS (SAs), and a final exam. Only egregiously exceptional circumstances can justify missing a mid-semester exam. In such rare cases, permission to miss the mid-semester exam must be requested in advance, and a make-up exam (usually oral) would occur on the Friday or Saturday before final exam week.

The assessment framework is as follows: (please note especially the dates, already fixed, when the two mid-semester exams will take place):

Exam 1: Wednesday 13 Feb 200 points

Exam 2: Wednesday 27 Mar 200 points

SUBMITTED ASSIGNMENTS:

to be finally submitted en masse,
before or on Friday 19 Apr at
5 PM, for grade recording 200 points

Final Exam: 400 points

Total: 1000 points

Mastery:

First, in addition to ungraded daily assignments, there will be a sequence of graded SUBMITTED ASSIGNMENTS each of which can be recomposed and resubmitted repeatedly (with a limit of the deadline stipulated above) until a joyous mastery level is achieved (and a check-mark is placed at the top of the mastery level solution). During the semester, while this process unfolds, no recording will be made of the mastery level achievement of individual SAs; hence the need, when ALL of them are completed (or brought to the level of a student-determined 'last submission') before Friday 19 Apr or on Friday 19 Apr before or at 5 PM, to re-submit **all of the Submitted Assignments collated and clipped together.**

Second, in regard to the two mid-semester exams, an 11-day MASTERY PERIOD will follow the return of each exam, during which time each student with an exam score less than 200 points can repeatedly submit attempts to compose complete solutions to ALL questions only partially answered during that class exam. If complete solutions to ALL such questions are composed by the deadline, then

“the least integer greater than or equal to $(1/2)*(200 - (\text{exam score}))$ ”

points are earned; if complete solutions to ALL such questions are not composed by the deadline, then none of these additional points are earned.

Note on Assessment and Mastery:

Please see the syllabus page

“ASSESSMENT AND MASTERY COMPONENTS: SCHEDULE”
for a schedule of both of these processes.

Grading:

90-100%, A; 80-89%, B; 70-79%, C; 60-69%, D; 0-59%, F. The grading may be less stringent, but not more stringent, than this.

Note regarding special needs:

If you have a need for disability-related accommodations or services, please inform the Coordinator of Disability Services in the Dean of Students Office at 2001 C. B. Hedgcock Building (227-1700). Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.

Further note:

This course satisfies the Foundation of Natural Sciences/Mathematics requirement. Students who complete this course should be able to demonstrate a basic understanding of mathematical logic; use mathematics to solve scientific or mathematical problems in college classes; express relationships in the symbolic language of mathematics; and appreciate the role of mathematics in analyzing natural phenomena.

ASSESSMENT AND MASTERY COMPONENTS: SCHEDULE

MID-SEMESTER EXAMS AND MASTERY SCHEDULE

Feb 06	Wednesday	Exam 1 delineation
Feb 13	Wednesday	<u>Exam 1</u>
Feb 18	Monday	Exam 1 returned; Exam 1 mastery period begins
Mar 1	Friday	Exam 1 mastery period submission deadline is 5:00 P.M.
Mar 11	Monday	Exam 1 solutions published
Mar 20	Wednesday	Exam 2 delineation
Mar 27	Wednesday	<u>Exam 2</u>
Apr 01	Monday	Exam 2 returned; Exam 1 mastery period begins
Apr 12	Friday	Exam 2 mastery period submission deadline is 5:00 P.M.
Apr 15	Monday	Exam 2 solutions published

SUBMITTED ASSIGNMENTS MASTERY SCHEDULE

After your instructor makes Submitted Assignments available to the class, each Submitted Assignment solution can be composed/recomposed and submitted/resubmitted repeatedly 'throughout the semester' as needed before the deadline of 5:00 P.M. on April 19. Each submission made at a joyous level of mastery will receive a checkmark at the top of the submission.

Apr 19	Friday	Submission deadline for <u>all Submitted Assignments</u> <u>collated and clipped together</u> , for grade recording, is 5:00 P.M.
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