

GRAYS HARBOR COLLEGE

SYLLABUS [last modified 6/14/08]

MATH& 153

Calculus 3

5 credits. 5 lecture hours.

I. COURSE DESCRIPTION AND PREREQUISITES

Prerequisites: *A grade of "C" or better in MATH& 152 or appropriate placement score or instructor permission.*

Description: Topics include infinite sequences and series, vectors and the geometry of space, vector functions, and calculus of functions of several variables including differentiation and double integrals. Applications from the sciences and engineering. 5 lecture hours. Satisfies quantitative skills requirement or specified elective for the AA degree. or specified elective for the AA degree.

II. AIMS AND OBJECTIVES AND DESIRED STUDENT ABILITIES [DSAs]

The guiding principle of the design of MATH& 153 is that a student successful in MATH& 153 will have the prerequisite knowledge and skills required to compete successfully in courses requiring MATH& 153 as a prerequisite. Therefore, the driving aim and objective of the course is to provide ample opportunity for students to acquire that knowledge and build those skills.

The relation of these aims and objectives to the DSAs is explicated below.

DSA 1: Competency in the Disciplines Knowledge of content in prerequisite or transfer courses, as well as preparation for a career.

•MATH&153 is pretty much entirely about this DSA. Rating: 4.0

DSA 2: Literacy Skills in reading, writing, speaking, listening, and quantifying, as well as awareness and appreciation of learning styles and life-long learning options.

•MATH& 153 requires students to read problems accurately, take notes and read the textbook. There is little, if any, writing required and reading is not explicitly tested. Rating: 2.0

DSA 3: Critical Thinking Competency in analysis, synthesis, problem solving, decision making, creative exploration, and formulation of an aesthetic response.

•MATH& 153 will require a fair amount of Critical Thinking during the learning process, however, during testing, which is the basis for 80%-100% of the grade earned, well prepared students should not need to do much, if any critical thinking. Rating: 3.0

DSA 4: Social and Personal Responsibility Awareness of and responsiveness to diversity

and commonality among cultures, multiplicity of perspectives, ethical behaviors, and health and wellness issues.

•MATH& 153 includes little, if any, material on this. Some instructors devote a small percentage of the grade to Citizenship, but this is limited to be less than 5% of the grade. Rating: 1.0

DSA 5: **Information Use Skills** in accessing and evaluating information resources including campus resources, awareness of the role of information resources in making sound decisions, and command of the skills required to use appropriate technologies effectively.

MATH& 153 requires no information resources outside the lecture, textbook, instructor and calculator. These are not what DSA 5 is about. Rating: 0.0

III. TEXTBOOK

Information on the textbook in use any particular term can be found at the GHC bookstore and through the webpage of the GHC bookstore.

IV. OTHER INSTRUCTIONAL MATERIAL

1. Calculator: A scientific calculator is required for the course. The Texas Instruments TI-30X IIS [or IIB] is recommended. Based on several student surveys, the TI-30X IIS is very easy to use. It will also be used in all college level math courses at GHC. The instructor will use this calculator for examples in class. The instructor may or may not be able to help students using a different calculator. Graphing calculators are not allowed during testing in this course.

2. Other materials: Paper and pencil, straightedge/ruler, and graph paper.

3. Items that are NOT allowed: Graphing calculators, Cell phones, PDAs, PCs, any electronic device capable of recording, displaying, or transmitting audio and/or video information. Students who use such items during tests will be assumed to be cheating. Students who use such items during class will be assumed to have intentionally disrupted the learning environment.

V. TECHNIQUE OF INSTRUCTION

Classroom sessions will be structured around a combination of some or all of the following activities: lecture, testing, questions by students answered by the instructor, students working individually on problems while the instructor helps, and students working in groups while the instructor helps. Hybrid and online courses will include various internet based means of communication.

VI. ORGANIZATION OF COURSE CONTENT

- A. Infinite Sequences and Series, Convergence, Ratio and Root Tests
- B. Power series and Taylor series
- C. Vectors in the plane and 3-space, Dot and Cross products, Planes
- D. Calculus of Vector-valued Functions, Arc Length, Speed, Curvature and Motion in 3-Space
- E. Partial Derivatives, Linear Approximations and Tangent Planes

- F. Gradients, Directional Derivatives, Chain Rule, Optimization
- G. Double and Triple Integrals in Rectangular Coordinates
- H. Double and Triple Integrals in Polar and Cylindrical Coordinates

VII. METHODS OF EVALUATION

Students' grades will be based on the percentage of possible points they earn on graded activities during the course. Those activities will include all of the following: a comprehensive final exam [worth between 20% and 30% of total points], and one or more one hour exams, and quizzes. Some instructors may also require homework to be turned in [not to exceed 10% of total points], and/or assign graded value to projects, work done in class, and citizenship and/or participation [not to exceed 5% of total points each].

Note: In each section of MATH& 153, the various graded activities and their value will be clearly spelled out for students by the instructor at the start of the course.

Each instructor sets his or her own grading scale, an example would be:
[93.0,100] A, [90.0,93.0) A-, [87.0,90.0) B+, [83.0,87.0) B, [80.0,83.0) B-, [75.0,80.0) C+, [70.0,75.0) C, [65.0,70.0) C-, [60.0,65.0) D+, [55.0,60.0) D, [0,55.0) F. The scale will not be raised.

VIII. ATTENDANCE POLICY

Attendance is strongly recommended by all instructors of MATH& 153. Whether attendance is required is up to each instructor. Students are held accountable for the proceedings of class whether they attend or not. Some instructors of MATH courses at GHC include a behavior policy with a long list of proscribed activities that will cost students points if they engage in them.

IX. DISABILITIES STATEMENT

Any individual who has a documented disability that might interfere with his or her ability to fully participate in this class may be eligible for an accommodation. Contact the Disability Support Program located in Student Services [HUB], Room 119. Any information regarding disabilities will be kept confidential.