Course Syllabus

Math 221 - Calculus & Analytic Geometry III

Spring Semester 2001
Sect 01: 8:00 - 8:50, MF, S137; TR, S208
Instructor: James Jones
Phone: 875-7211, ext 490

Office: C223
email: james@richland.cc.il.us
Web: http://www.richland.cc.il.us/james/

Text:

> *Calculus: A New Horizon, 6th edition..* Howard Anton. Copyright 1999, John Wiley & Sons, Inc. (Required)
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> *The Calculus Companion to Accompany Anton Calculus / 6E.* William H. Barker and James E. Ward. Copyright 1999, John Wiley & Sons, Inc. (Optional)
>
> *Student Solutions Manual to Accompany Anton Calculus / 6E.* Albert Herr. Copyright 1999, John Wiley & Sons, Inc. (Optional)

Student Audience:

> Transfer students. Students pursuing degrees in engineering, mathematics, life sciences.

Prerequisite:

> Successful completion (C or better grade) of Math 122, Calculus and Analytic Geometry II.

Course Description:

> Mathematics 221, Calculus and Analytic Geometry III, includes instruction in Calculus topics common to the standard college third semester Calculus course. It begins with the rectangular coordinate system in three-dimensional space, vectors, and operations with vectors. Lines, planes, quadratic surfaces, spherical and cylindrical coordinates, vector-valued functions, curvature, Kepler's Laws of Planetary Motion, partial derivatives, relative extrema of functions of two or more variables, centroid, Lagrange Multipliers, and multiple integrals in different coordinate systems will be introduced. At the end, students will learn integrals of functions over a curve or a surface, Green's theorem, the divergence theorem, and Stoke's theorem.
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> - Applicable toward graduation where program structure permits.
> - Certificate or degree: All certificates and all degrees.
> - Group requirement: Mathematics
> - Area of Concentration: Mathematics.

Illinois Articulation Initiative (IAI)

> The mathematics component of general education focuses on quantitative reasoning to provide a base for developing a quantitatively literate college graduate. Every college graduate should be able to apply simple mathematical methods to the solution of real-world problems. A quantitatively literate college graduate should be able to:
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> "   interpret mathematical models such as formulas, graphs, tables, and schematics, and draw inferences from them;
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> "   represent mathematical information symbolically, visually, numerically, and verbally;
>
> "   use arithmetic, algebraic, geometric, and statistical methods to solve problems;

     "   estimate and check answers to mathematical problems in order to determine reasonableness, identify alternatives, and select optimal results; and

     "   recognize the limitations of mathematical and statistical models.

Courses accepted in fulfilling the general education mathematics requirement emphasize the development of the student's capability to do mathematical reasoning and problem solving in settings the college graduate may encounter in the future. General education mathematics courses should not lead simply to an appreciation of the place of mathematics in society, nor should they be merely mechanical or computational in character.

To accomplish this purpose, students should have at least one course at the lower-division level that emphasizes the foundations of quantitative literacy and, preferably, a second course that solidifies and deepens this foundation to enable the student to internalize these habits of thought.

Math 221, Calculus & Analytic Geometry III, satisfies the Illinois Articulation Initiative Definition of a General Education Mathematics Course. It corresponds to M1 900, College-level Calculus.

General Course Objective:

To provide necessary statistical background for analyzing data and drawing inferences from that analysis. To increase the student's mastery of the deductive nature of reasoning. To understand the nature of critical thinking. To increase the student's ability in problem solving. To increase the student's ability to work with others towards a common goal.

Type of Instruction:

Discussion, problem solving, student questions, student participation, and lecture. Students are strongly encouraged to come to class with a list of questions and to ask these questions.

Method of Evaluation:

Could include any of the following: problem solving exams, objective exams, essays, research papers, oral presentations, group projects, quizzes, homework.

Grading Policy:

There will be several one hour examinations and a comprehensive final examination. Announced and unannounced quizzes may be given. Various homework exercises (to be announced) may be used in grading. Note: Homework, whether collected or not, is essential to the study of mathematics. Letter grades will be assigned to final adjusted scores as follows:

- A - 90 - 100%
- B - 80 - 89%
- C - 70 - 79%
- D - 60 - 69%
- F - below 60%

Consideration will be given to such qualities as attendance, class participation, attentiveness, attitude in class, and cooperation to produce the maximum learning situation for everyone.

Any student who is not attending regularly at midterm will be dropped administratively. However, the student should verify their status if they are concerned.

Any student who stops attending after midterm but does not drop the course will receive a grade of F.

Attendance Policy:

Regular attendance is essential for satisfactory completion of this course. If you have excessive absences, you cannot develop to your fullest potential in the course. Students who, because of excessive absences, cannot complete the course successfully, will be administratively dropped from the class at midterm. If a student stops attending after midterm, it is the student's responsibility to withdraw to avoid an "F".

The student is responsible for all assignments, changes in assignments, or other verbal information given in the class, whether in attendance or not.

If a student must miss class, a call to the instructor (RCC's phone system has an answering system) is to be made, or an email message sent. When a test is going to be missed, the student should contact the instructor ahead of time if at all possible. Under certain circumstances, arrangements can be made to take the test before the scheduled time. If circumstances arise where arrangements cannot be made ahead of time, the instructor should be notified and a brief explanation of why given by either voice or email. This notification must occur before the next class period begins. At the instructors discretion, the score on the final exam may be substituted for the missed exam.

Calculators:

A TI-92 calculator is recommended for this course. There are computers in the classroom with Derive on them, and these may be used by students who don't have the TI-92 calculator. Calculators may be used to do homework. Calculators may be used on exams and/or quizzes in class unless otherwise announced.

Additional Supplies:

The student should have a red pen, ruler, graph paper, stapler, and paper punch. The student is expected to bring calculators and supplies as needed to class. The calculator should be brought daily. There will be a paper punch and stapler in the classroom.

Additional Help:

Office hours will be announced. The student is encouraged to seek additional help when the material is not comprehended. Mathematics is a cumulative subject; therefore, getting behind is a very difficult situation for the student.

If your class(es) leave you puzzled, the Student Learning Center, in room S116, is a service that Richland Community College offers you. It is available free of charge to all RCC students.

Be sure to get help before it is too late.

Homework:

Homework out of the book is not collected for a grade. However, success in the class is correlated to the amount of homework done. Do not expect to master the subject without doing homework.