Department of Mathematics **Rice University**

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MATH PLACEMENT INFORMATION FOR NEW STUDENTS
August 2016

In general, transfer students, very advanced students and students interested in research opportunities in MATH should speak to a MATH advisor. MATH 499 is a non-traditional class that offers a research experience for undergraduates. The RTG program also supports research experiences in geometry for advanced undergraduate students and a mathematical lecture contest in the spring (see http://math.rice.edu/Research/Undergrad/RTG).

All the Science/Engineering majors require a number of calculus courses. By "calculus" we mean single-variable calculus, sequences and series, ODE's (ordinary differential equations), and multivariable calculus. Therefore the following sequence is quite common. Advice on where to start in this sequence is contained later in this document. F=fall, S=spring.

Science-Engineering Calculus Sequence:

MATH 101 - Single Variable Calculus I	(3 hours)
MATH 102 - Single Variable Calculus II	(3 hours)
MATH 211 - ODE's and Linear Algebra	(3 hours)
MATH 212 - Multivariable Calculus	(3 hours)

These four courses should be taken in sequence, although 211 and 212 are relatively interchangeable. Each of these courses is offered every semester, but the choice of times is limited in the "off" semester.

Honors Calculus Courses:

MATH 221 - Honors Calculus III (F)	(3 hours) Prof. Jones
MATH 222 - Honors Calculus IV (S)	(3 hours)

These courses stress theoretical aspects of multivariable calculus, although they also contain a considerable amount of problem solving. The MATH department encourages students to consider these courses if they have a strong math background and are either considering a major in an area with a substantial math component (such as CAAM, STAT, ECON, CS, ECE, PHYS), or just enjoy a challenge and want to go beyond just learning to solve problems. The MATH BA degree requires completion either of the sequence 211-212 **or** the sequence 221-222. However for other majors, successful completion of 221 and 222 satisfies requirements for MATH 212, but **not** for MATH 211. Students may not receive University credit for both 212 and 222, but it is possible to receive credit for both 212 and 221. Moreover, honors calculus students **are** allowed to take 211 for credit. Most students who take 221-222 also take MATH 211.

Other Calculus Courses (for Distribution):

MATH 111 - Fundamental Theorem of Calculus (F)	(3 hours)
MATH 112 - Calculus and Its Applications (S)	(3 hours)

These courses emphasize problem solving, and do not go as far as 101-102. They are not intended for science or engineering majors, but a student may take 111, 112, and 102 (or 111, 101, and 102).

More Advanced Courses

Students who have already taken some or all of the above courses should also consider the following courses. For even more courses see the Registrar's Course Schedule and Catalog. Speaking to a MATH advisor may be the best way to decide which course to take.

MATH 321	Intro. to Analysis I (F)	Dr. Wang
MATH 331	Honors Analysis (F)	Prof. Semmes
MATH 354	Honors Linear Algebra (F)	Prof. Várilly-Alvarado
MATH 355	Linear Algebra (F)	Dr. Shadrach
MATH 365	Number Theory (F)	TBA

Students who have taken multivariable calculus or differential equations should consider MATH 354 if they are interested in abstract math and might possibly be a MATH major or double major. This would serve as a first class wherein one is trained in and required to prove mathematical statements. If you are a first-year student, you should obtain permission of Prof. Várilly-Alvarado to enroll in MATH 354. MATH 365 can play a similar role. Enrolling in MATH 321 or MATH 331 requires credit for MATH 221 or MATH 302 or permission of the instructor.

Registration:

It is quite important that you enroll in the course for which you are best suited in light of your previous calculus instruction. There are several guiding principles you may find helpful. ***We are convinced that most science-engineering freshmen should skip at least MATH 101.***

1. **Basic principle:** ***If you want to take calculus, you should enroll in a course as advanced as you can possibly handle.*** If you find you are in over your head, you may easily drop down to a more elementary course with the approval of your instructor. (A transition in the other direction is obviously much more difficult to manage.)
2. **No calculus background at all:** You should begin with MATH 101 or 111.
3. **Advanced Placement and International Baccalaureate credit:**
    a. AP Grade of 4 or 5 on AB test: You have credit for MATH 101 and you may start with MATH 102.
    b. AP Grade of 4 or 5 on BC test: You have credit for MATH 101-102 and you may start with MATH 211 or 212. You should consider MATH 221 if you love math.
    c. IB Mathematics (HL): D3 - You have credit for MATH 101 and you may start with MATH 102.
4. **No advanced placement credit:** You may have taken some calculus, however, and probably should enroll in a course beyond MATH 101. Consult with a MATH professor for advice.
5. **Transfer credit from another university:** Consult with Prof. Jones for advice.
6. **Have taken multivariable calculus (but might not have credit):** Talk to a MATH advisor**.** You should strongly consider MATH 221-222 (see the discussion on the first page).

Textbooks:

You can search the campus bookstore for the required texts for each class at:
http://rice.bncollege.com/

Warning:

You need to be aware that various departments require their majors to have a minimum number of credit hours in MATH courses. If you skip MATH 101 but have no credit for it, for example, you probably will later have to take a MATH course to make up for the missing credit hours. Before you register you must consult with your department to understand its MATH requirement.