McCormick School of Engineering Math Placement Exam 2009 Information
(This information only applies to students entering the McCormick School of Engineering – WCAS or other students should refer to the WCAS Math Department Placement Information)

Why does McCormick have its own math placement exam?
The Office of Undergraduate Engineering takes your preparation in calculus very seriously and has developed this exam as a resource for determining where you should start in the calculus sequence. Mathematics is a cornerstone in the foundation of engineering coursework. You will utilize concepts and problem solving techniques from calculus throughout your engineering studies at Northwestern. Given that fact, it is extremely important to make sure you have that solid foundation.
Remember that the main idea is not to get as far ahead in the sequence from the start as possible, but that you are placed into a course that will be the best fit for you. Starting out at a level too high above your ability could very easily result in high levels of frustration as you have to work that much harder to grasp the material which will take away time from your other courses and lead to poor grades. Starting out at a level too low may also result in poor study habits and poor grades as you will think you know the material already when you may not know it completely in the context the instructor is teaching.

What is covered on the exam?
The exam consists of a total of 53 multiple-choice questions divided into three areas: Algebra & Trigonometry - 25 questions, Differential Calculus - 15 questions, Integral Calculus - 13 questions. You will have 70 minutes to complete each section. No calculators are allowed. Any student with a documented disability needing accommodations should first contact the Office of Services for Students with Disabilities - see their web site for contact info: http://www.northwestern.edu/disability/.
The Algebra & Trigonometry section is not used in the placement recommendation process, but rather to help students identify if they need to brush up on those areas. Often students who have difficulty with calculus are actually having difficulty with algebra and trig more than calculus itself.

Do I need to take this exam?
Most incoming first-year McCormick students (even those with AP or IB credit) should take this exam. The exam is non-binding so it will not hurt anyone to take it. Find the situation below that best fits you and follow that procedure.
1. If you have not taken calculus before: Simply complete the first exam that covers algebra and trigonometry.
2. If you have taken one or more courses in calculus (this includes students who have taken AP/IB Calculus): Complete all three sections of the placement exam. If there are questions on the exam with material you have never seen, just leave those questions blank.
3. If you have taken advanced calculus - beyond that of AP/IB or beyond basic differential and integral calculus:
   E-mail ueoffice@northwestern.edu with further details of your situation. Someone will get back in touch
with you regarding your specific situation. You will ultimately submit material from these courses for
evaluation (either for credit or for placement purposes).

When is the exam and how do I take it?
The exam is on-line only and will be available Monday, July 13th and remain open through 11:55
p.m. on Tuesday, September 1. (All times are U.S. Central Time.) There is no administration of
the exam during Wildcat Welcome so students need to complete it prior to their arrival on
campus. You should visit the site before you are ready to take the exam to make sure you can
access the exam site properly. Please do not put this off until the very last minute!

How should I prepare for the exam?
To get the most out of this exam - that being an accurate assessment of your calculus skills and
abilities - you will need to and want to put some time into preparing for the exam. All test takers
should take some time reviewing basic algebra and trigonometry concepts. For those that have
taken calculus before, you will also want to review the basic concepts of differential and integral
calculus - including, but not limited to, topics such as limits, the chain rule, the product rule,
substitution, integration by parts, and trigonometric derivatives and integrals. You should not
attempt to learn any new material for this exam, but rather refresh yourself with what you already
know. This will eliminate the feeling of "if only I had reviewed I would have scored higher on the
exam." By 'some time' I am suggesting just a few hours of review - not weeks of study.

When will I get my recommendation and what will it say?
All students will receive their placement recommendations on Wednesday, September 16th. The
recommendation will include placement into a specific course based upon your performance on
the exam.
Possible Placement Recommendations
For incoming students, there are four possible starting points in the calculus sequence. (Students
with advanced Math backgrounds beyond the first two courses in Calculus - such as Vector and
Multivariable Calculus - will be advised on a case-by-case basis.) These four options are:

- **MATH 220** Differential Calculus of One Variable Functions
- **MATH 224** Integral Calculus of One Variable Functions
- **MATH 230** Differential Calculus of Multivariable Functions
- **ES_APPM 252-1** Honors Calculus for Engineers (offered through the Applied Math department in
  the School of Engineering - covers the same material as MATH 230 but in greater depth).

Implications of the Placement Exam Recommendation
The recommendation from this exam is non-binding. It is, however, a very strong
recommendation based on how you performed on the exam. This exam will also give you
feedback on what topics you may want to review on your own prior to the start of classes,
particularly algebra and trig.

How to access the on-line exam -
The Math Placement exam is actually 3 separate exams. You need not complete all three at one
sitting, however you will not be able to pause during a specific exam.

Exam #1 - 25 questions on Algebra and Trigonometry - time limit 65 minutes - Students who have never taken calculus can stop after Exam #1.

Exam #2 - 15 questions on differential calculus - time limit 65 minutes

Exam #3 - 13 questions on integral calculus - time limit 65 minutes

No calculators are to be used on the exam. You will only be able to access each exam once - so once you start that is your only opportunity to take the exam. You should plan on submitting your answers prior to the 65 minute time limit. If it takes time for your computer to submit the information and that puts it over the 65 minute mark, that is ok. You should also keep record of your answers on paper in the event there is a problem submitting answers. That way you can communicate directly with the Undergraduate Engineering Office with your answers if necessary to still get a solid recommendation. Any student needing an accommodation on the math placement exam or any other academic accommodation must be registered with Northwestern's Office of Services for Students with Disabilities (SSD). In order to be eligible for services from SSD, each student must provide SSD with a copy of specific documentation from a licensed professional. Documentation requirements can be obtained at www.northwestern.edu/disability/policies/documentation.html or you can contact SSD at ssd@northwestern.edu or 847-467-5530.

**TO TAKE EXAMS:** The exams will be available starting July 13th and will be up through 11:55 p.m. on Tuesday, September 1st. Click on the following link starting July 13th (it will open in a new window) [NORTHWESTERN UNIVERSITY COURSE MANAGEMENT SYSTEM](https://example.com).

Login with your NetID and password - any problems logging in would indicate a problem with your NetID/password and you should contact Information Technology - there is a link for login problems on the Blackboard homepage just under the login boxes.

Select the course "2009 MEAS PLACEMENT" under My Courses. Contact the Undergraduate Engineering Office [ueoffice@northwestern.edu](mailto:ueoffice@northwestern.edu) if you are an entering McCormick student but do not see this course listed.

When you are ready to take an exam, click on "Assignments" from the left menu. Once the exams are available all three will be listed separately. Click on any one to take it. Remember, you will only have one opportunity to complete the exam and have 65 minutes - so only click on a specific exam when you are ready to take it.

Complete the multiple choice exam and hit submit at the bottom of the exam. You are only able to access each exam one time - you are not able to ‘save’ your answers or pause and return to the exam. Remember, this is a placement test so you should not randomly guess any answers, though educated guessing is very appropriate.

If you have any technical problems or you have a documented need for additional time to take the exams, contact [ueoffice@northwestern.edu](mailto:ueoffice@northwestern.edu). Someone will get in contact with you. This may take
up to 24-48 hours depending upon the situation. Patience is appreciated.

Remember, this exam is non-binding and is simply a solid resource for you to take advantage of - plus it gives the Undergraduate Engineering Office good data as we plan course offerings each year.

Direct any questions or concerns you may have to the Undergraduate Engineering Office
ueoffice@northwestern.edu (847) 491-7379