

Engineering

2009-2010

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Washington University in St. Louis

Engineering



2009 Registration Guide
for Freshmen

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engineering.wustl.edu

Engineering Student Services includes admissions, advising and registrar services. The office, located in 303 Lopata Hall, serves as a general resource for potential and current students, faculty, staff and parents. Engineering Student Services strives to provide a supportive environment that fosters the academic success of students in the School of Engineering & Applied Science.

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E-MAIL

The primary method of communication within Washington University is e-mail. Engineering IT provides computer and e-mail support through the Engineering IT Help Center at (314) 935-5097 or support@seas.wustl.edu. The Help Center, located in Sever Hall, Room 214, also offers a library of computer and application manuals and color, large-scale printing.

PERSONAL CELL PHONE USAGE

Since many students rely on cell phones as their primary means of telephone communication, we strongly encourage you to provide the University with your cell phone number. Please enter a cell phone number in the personal information section of **WEBSTAC**.

PENDAFLEX SYSTEM

Each student is given an individual folder, or pendaflex, located in Lopata Hall. Students are encouraged to check pendaflex folders on a regular basis.

EMERGENCY NOTIFICATION SYSTEM

You are already registered to receive e-mails with important information in the event of a campus emergency. When you add your cell phone number to **WEBSTAC**, you will automatically be signed-up for the emergency text message option.

ENGINEERING E-NEWS

You will receive *Engineering E-news*, the School's electronic newsletter. The newsletter includes important information about School news and events.

STUDENT COMPUTER LAB & HELP DESK HOURS

The EIT student labs are generally open twenty-four hours a day, seven days a week during the spring and fall semesters (except certain holidays). For a list of lab hours and locations, visit eit.engineering.wustl.edu.

CAMPUS TELEPHONE SYSTEM

Students in campus housing are provided with a telephone. This phone number is listed in all campus directories. Faculty and staff may try to reach you by this phone number.

On Monday, August 3, at 7:30 AM (CST), you can begin registering for fall classes on WEBSTAC at **acadinfo.wustl.edu**; to access the site, use your WUSTL KEY and password.

WUSTL KEY

You will access University-wide web applications, such as WEBSTAC, using your WUSTL KEY. You should have received instructions regarding WEBSTAC by mail. Please log into WEBSTAC before August 3 to ensure you can access it without problems. If you have questions about WEBSTAC or your WUSTL KEY please call the Office of Student Records at (314) 935-5908.

WEBSTAC

At this website, you can register for classes, see your grades, check your meal plan points, review your account activity, and more.

For the registration process, you will be assisted by a member of Engineering Student Services (listed at the right), and his/her name will be listed on WEBSTAC as your advisor. Directions on how to access WEBSTAC are listed on pages 4 and 17. After you have logged into WEBSTAC, you can see the name of your advisor by clicking on the “Advisor” link on the left side of the screen. Please feel free to contact the person assigned to you if you have any questions about course selection or registration.

Some questions and issues cannot be resolved until you arrive on campus for orientation. There is sufficient time to resolve all issues and be fully registered before classes begin. For example, lab sections in chemistry and physics do not meet until the second week of classes. It is normal for students to be “waitlisted” in these sections while the chemistry and physics departments determine how many total lab sections will be needed.

On August 21, as listed in the orientation schedule, you will meet with an engineering faculty advisor from an academic department based upon your primary area of expressed interest. The name of your engineering faculty academic advisor will be sent to your university e-mail address by August 18.

Engineering Student Services Registration Advisors

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HUMANITIES & SOCIAL SCIENCES COURSE REQUIREMENTS

To earn any bachelor's degree from the School of Engineering, students must complete at least 18 units of humanities and social sciences. At least 6 units of the 18 must be in the humanities, and at least 6 units must be in the social sciences. Also, at least 3 units of the 18 units completed must be from one or more courses numbered 300 or higher. The School of Engineering categorizes Washington University courses as "humanities" or "social sciences" using the College of Arts and Sciences course classification system. Courses that are labeled "TH" (Textual and Historical Studies) and "LA" (Language and the Arts) satisfy the humanities requirement. Courses that are labeled "SS" (Social Science) satisfy the social science requirement. Also, College of Art courses, coded as "F10" and "F20" courses, will count toward the humanities requirement.

PHYSICAL EDUCATION COURSES

Physical Education courses carry no academic credit for engineering students.

UNIVERSITY COLLEGE "U" COURSES

These courses are treated as transfer courses and must be approved by the registrar in **Engineering Student Services** to count toward degree requirements.

The information on the following four pages will help you decide which courses to take during the first semester. Most engineering freshmen take a mathematics and physics course in the fall semester, but a student's course selection may vary depending on the area of interest, previous credits, and academic plans. Students interested in pursuing computer science may not need to enroll in a physics course first semester.

With these charts as general guidelines, students can begin the registration process on **Monday, August 3**. Please contact **Engineering Student Services** at (314) 935-6100 or your ESS advisor with any specific questions. During orientation, students will meet with academic advisors to review course schedules and make changes or additions if necessary.

We offer a number of introduction to engineering courses—typically taken during your first year—that are designed to convey the excitement of and challenges that characterize engineering.

A few examples include:*

Freshman Engineering Seminar
E6o 12o

This weekly seminar provides an opportunity for engineering freshmen to meet other students, learn about the School of Engineering, and discover the many resources located throughout the University. Freshmen focus on effective methods of collaboration and communication while doing projects in small groups, which will help them work more effectively with faculty and peers. It also spotlights key skills, behaviors, and attitudes helpful for students to be successful. The seminar is facilitated by upper-class engineering students with faculty and staff guidance.

Introduction to Biomedical Engineering
BME (E62) 14o

This course offers a historical perspective of biomedical engineering including elements of human anatomy and physiology; key vocabulary and definitions; major organ systems of the body and some of the defects remediable through biomedical engineering. Students will be required to apply the basic principles of physics, chemistry, and engineering science to the quantitative analysis of physiological systems.

Computer Science I
CSE (E81) 131

This course provides an introduction to software concepts and implementation, emphasizing problem solving through abstraction and decomposition. Concepts and skills are mastered through programming projects, many of which employ graphics to enhance conceptual understanding. Java, an object-oriented programming language, is the vehicle of exploration.

Introduction to Energy, Environmental & Chemical Engineering
ChE (E63) 146A

Students will examine and discuss key technical issues of our society as an introduction to energy, environment, and chemical engineering. Some emerging technologies which hold promise for the future and the relationship to chemical engineering principles are outlined.

Introduction to Mechanical, Aerospace & Structural Engineering
MASE (E37) 1o1

This course is an introduction to engineering design in the context of mechanical and structural engineering. Students complete a series of experiments that introduce physical phenomena (loading, stress, strain, vibration, energy, power, hydrostatics, etc.) related to mechanical and structural engineering. The course

includes a design contest in which students design and build machines and structures from a kit of prescribed materials. The course is divided into two sections, with one emphasizing structural engineering topics, and the other mechanical engineering topics. *(offered only in spring 2o1o)*

Computer Aided Design
MASE (E37) 2o2

An introduction to computer aided engineering design in the context of mechanical and structural engineering. Students learn the fundamentals of spatial reasoning and graphical representation. *(offered in fall 2oog & spring 2o1o)*

Introduction to Electrical Engineering
ESE 1o3

A hands-on introduction to electrical engineering to put the FUN into the electrical engineering FUNdamentals. Experiments are designed to be easy to conduct and understand. Students will examine some of the technologies used in a variety of applications including the iPod, Ultrasound Imaging, Radar, and Credit Card Readers. Students will also hear presentations from the EE faculty about their research.

**Some courses have prerequisites or corequisites. Consult the Course Listings book for details.*

MAJORS IN THE SCHOOL OF ENGINEERING

BIOMEDICAL	CHEMICAL	COMPUTER ENGINEERING
<p>In the biomedical engineering major, students will learn the principles of engineering and biology to solve problems at molecular to whole body levels, both in biology and medicine.</p>	<p>Students will develop and operate systems involving chemical and biological reactions as a chemical engineering major. Studies will particularly focus on using multi-scale aspects of generating clean energy, producing novel and advanced materials, and utilizing the biological revolutions in manufacturing</p>	<p>As a computer engineering major, students will gain theoretical foundations and practical experience in the design and implementation of computer hardware and software systems.</p>
COMPUTER SCIENCE	ELECTRICAL ENGINEERING	MECHANICAL ENGINEERING
<p>The computer science program teaches students how to develop algorithmic solutions to computational problems and to design and implement practical software systems.</p>	<p>As an electrical engineering student, students will learn how to use electrical phenomena to solve problems in many facets including medicine, communications and defense.</p>	<p>Students who study mechanical engineering will work on concerns in energy conservation and machine design, manufacturing, instrumentation, environmental control, and biomechanics.</p>
SYSTEMS SCIENCE	<p><i>Students are asked to formally declare a major during their sophomore year.</i></p>	
<p>In systems science and engineering, students will learn how to design control schemes for high-tech systems, such as fighter airplanes, missiles, sports cars, and medical robots. Students will also learn techniques to manage manufacturing and business operations including financial, electric power and supply-chain networks.</p>		

RECOMMENDED COURSES BY AREA OF INTEREST (FIRST SEMESTER)

BIOMEDICAL	CHEMICAL	COMPUTER ENGINEERING
<p>Chemistry Courses Chem (L07) 111A: <i>General Chemistry I</i> (3 units) -and- Chem (L07) 151: <i>General Chemistry Lab I</i> (2 units)</p> <p>Biomedical Engineering Course BME (E62) 140: <i>Intro to Biomedical Engineering</i> (3 units)</p> <p>Mathematics Courses see page 11 for course details</p> <p>Physics Courses see page 12 for course details</p>	<p>Chemistry Courses Chem (L07) 111A: <i>General Chemistry I</i> (3 units) -and- Chem (L07) 151: <i>General Chemistry Lab I</i> (2 units)</p> <p>Chemical Engineering Course ChE (E63) 146A: <i>Intro to Energy, Environmental, & Chemical Engineering</i> (2 units)</p> <p>Mathematics Courses see page 11 for course details</p> <p>Physics Courses see page 12 for course details</p>	<p>Computer Science Course CSE (E81) 131: <i>Computer Science I</i> (3 units, fall)</p> <p>CSE (E81) 131R: <i>Computer Science I Seminar</i> (1 unit, fall)</p> <p>Additional Elective Course(s) Humanities/Social Science or Engineering</p> <p>Mathematics Courses see page 11 for course details</p> <p>Physics Courses see page 12 for course details</p>
COMPUTER SCIENCE	ELECTRICAL ENGINEERING	MECHANICAL ENGINEERING
<p>Computer Science Course CSE (E81) 131: <i>Computer Science I</i> (4 units, fall)</p> <p>CSE (E81) 131R: <i>Computer Science I Seminar</i> (1 unit, fall)</p> <p>Physics Courses see page 12 for course details</p> <p>Additional Elective Course(s) Humanities/Social Science or Engineering</p> <p>Mathematics Courses see page 11 for course details</p>	<p>Electrical Engineering Courses ESE (E45) 103: <i>Introduction to Electrical Engineering</i> (1 unit)</p> <p>CSE (E81) 131: <i>Computer Science I</i> (4 units, Fall)</p> <p>CSE (E81) 131R: <i>Computer Science I Seminar</i> (1 unit, fall)</p> <p>Additional Elective Course(s) Humanities/Social Science or Engineering</p> <p>Mathematics Courses see page 11 for course details</p> <p>Physics Courses see page 12 for course details</p>	<p>Mechanical, Aerospace & Structural Engineering Courses MASE (E37) 202: <i>Computer Aided Design</i> (3 units, fall)</p> <p>MASE (E37) 101: <i>Intro to Mechanical, Aerospace and Structural Engineering</i> (3 units, <i>SPRING only</i>)</p> <p>Additional Elective Course(s) Humanities/Social Science or Engineering</p> <p>Mathematics Courses see page 11 for course details</p> <p>Physics Courses see page 12 for course details</p>
SYSTEMS SCIENCE	UNDECIDED	<p>This page provides a summary of recommended courses to take for the first semester. Your selection of courses depends on which engineering degree you will pursue.</p> <p>If you are undecided about your major, you should take a math and a physics course, as well as one of our introductory courses that sounds interesting to you.</p>
<p>Systems Science & Engineering Courses ESE (E45) 103: <i>Introduction to Electrical Engineering</i> (1 unit)</p> <p>CSE (E81) 131: <i>Computer Science I</i> (4 units, fall)</p> <p>CSE (E81) 131R: <i>Computer Science I Seminar</i> (1 unit, fall)</p> <p>ESE (E35) 309: <i>Matrix Algebra</i> (3 units)</p> <p>Additional Elective Course(s) Humanities/Social Science or Engineering</p> <p>Mathematics Courses see page 11 for course details</p> <p>Physics Courses see page 12 for course details</p>	<p>Mathematics Courses see page 11 for course details</p> <p>Physics Courses see page 12 for course details</p> <p>Intro Course of your choice (see page 7)</p> <p>Additional Elective Course Humanities/Social Science or Engineering</p>	

NOTE: These courses are recommended for most students. Please contact your advisor if you have questions.

	REQUIREMENTS	AP CREDIT	PLACEMENT TEST	NOTES
<p>MATH</p> <p><i>*Differential equations is not necessarily required for computer science majors.</i></p>	<p>completion of a sequence of calculus courses, which includes a course in ordinary differential equations</p> <p>Math 131: Calculus I Math 132: Calculus II Math 233: Calculus III Math 217: Differential Equations</p>	<p>(5) on Calculus AB Exam: 3 units credit for Math 131; placement into Math 132</p> <p>(5) on Calculus BC Exam: 6 units credit for Math 131 and 132; placement into Math 233</p>	<p>math.wustl.edu/placement</p> <p><i>Calculus students must complete the algebra tutorial by September 18, 2009</i></p>	<p>Ideally Math 233 should be completed before your sophomore year.</p>
<p>PHYSICS</p> <p><i>*Physics is not necessarily required for computer science majors.</i></p>	<p>completion of a two-semester (two course) sequence in calculus-based physics</p> <ul style="list-style-type: none"> • Physics 117A/118A -or- • Physics 197/198 -or- • place out of intro physics with AP credit 	<p>(5) on Physics B Exam: 3 units of credit for Physics 113 (does not satisfy Physics requirement)</p> <p>(5) on Physics C Exam (Mechanics): 4 units of credit for Physics 117A</p> <p>(5) on Physics C Exam (Electricity & Magnetism): 4 units of credit for Physics 118A</p>	<p>There is no placement test.</p>	<p>Please see pages 12 & 13 for additional information.</p>
<p>CHEMISTRY</p> <p><i>*Chemistry is not necessarily required for computer science majors.</i></p>	<p>Chemistry 111A, 112A, & 151</p> <p>Completion of the 111A-112A-151 sequence satisfies the requirements for many degrees. However, please consult your advisor for more information.</p>	<p>(5) on Chemistry Exam: 6 units of elective chemistry credit. Proficiency for Chemistry 111A, 112A, 151, & 152</p> <p>(4) on Chemistry Exam: 6 units of elective chemistry credit that do not correspond to any specific course or satisfy the chemistry requirements</p>	<p>Students who plan to take chemistry during their first semester should take the chemistry diagnostic exam before August 14.</p> <p>www.chemistry.wustl.edu/diagnostic</p>	<p>If you are considering biomedical or chemical engineering you should take Chemistry 111A and 151 during your first semester. See page 14 for additional information.</p>
<p>COMPUTER SCIENCE</p>	<p>Most engineering programs require CSE 131 or another computer science course.</p>	<p>(4 or 5) on AB Computer Science AP Exam: 3 units of credit for CSE 131</p> <p>(4 or 5) on A Computer Science AP Exam: 3 units of credit for CSE 131 with successful completion of placement exam</p>	<p>Students interested in beginning with a course beyond CSE 131 should take a placement exam.</p> <p>August 24 (MON) 10 A.M. Cupples II, Room 217</p>	<p>CSE 131 is only offered during the fall semester.</p>
<p>WRITING 1</p>	<p>completion of Writing I or its equivalent</p>	<p>(5) on AP English Exam, 36 on ACT English exam, 7 on international baccalaureate exam, score of 750 or higher on the SAT W exam are considered proficient</p>	<p>Unless you have earned one of the scores noted, you MUST take the Engineering English Proficiency Placement Examination during orientation.</p> <p>August 22 (Sat) Whitaker Hall, Room 100 9 a.m. (Arrive by 8:45 a.m.)</p>	<p>Engineering students required to take Writing I should take the course the second semester of freshman year or during sophomore year. After that time, space in Writing I cannot be guaranteed.</p>

MATHEMATICS COURSES

5 “5” score on Mathematics AP Exam AB: MATHEMATICS (L24) - AB TEST (TEST: MAB):
 Students will receive 3 units of credit for Math 131 (Calculus I) and be placed in Math 132 (Calculus II), if they choose. For proper placement, engineering students should take the placement exam regardless of the AP score.

4 3 “4, 3, 2, or 1” score on Mathematics AP Exam AB: MATHEMATICS (L24)
2 1 - AB TEST (TEST: MAB):
 No credit awarded. Take the placement exam.

5 “5” score on Mathematics AP Exam BC: MATHEMATICS (L24) - BC TEST (TEST: MBC):
 Students will receive 6 units of credit for Math 131 (3 units for Calculus I) and 132 (3 units for Calculus II) and be placed in Math 233 (Calculus III), if they choose. For proper placement, engineering students should take the placement exam regardless of the AP score.

4 3 “4” score on Mathematics AP Exam BC: MATHEMATICS (L24) - BC TEST (TEST: MBC):
2 1 No credit awarded. Take the placement exam.

COURSE INFORMATION

Nearly all Engineering freshmen will take one of the following math courses during their first semester (listed in sequential order):

- **MATH (L24) 131:** *Calculus I (3 units)*
- **MATH (L24) 132:** *Calculus II (3 units)*
- **MATH (L24) 233:** *Calculus III (4 units)*
- **MATH (L24) 217:** *Differential Equations (4 units)*
- **ESE (L35) 317:** *Engineering Mathematics (4 units)*

MATHEMATICS DIAGNOSTIC EXAM

Students should take the online calculus placement exam prior to registration. Online exam: math.wustl.edu/placement/

This exam is scored immediately after you complete it, and suggests which math course students should take for the first semester. You are strongly encouraged not to do any preparation before the exam.

ALEKS ASSESSMENT

Freshmen taking calculus should take the ALEKS assessment. ALEKS is a web-based teaching tool that assesses what you know and provides an individualized tutorial to ensure that you understand the algebra that you will need to know to succeed in calculus.

Students should complete the Learning Portion by August 20. Completion of ALEKS will ensure that 10% of “A” is averaged into your final calculus grade.

To access ALEKS, go to aleks.com and use this course code: KE6YQ-DLPCK

If you have any questions about ALEKS, please contact Dr. Blake Thornton: 314-935-6301, blake@math.wustl.edu

AP CREDIT FOR MATHEMATICS

The purpose of high school AP classes is not solely to accumulate advanced credit, but to build a sturdy foundation for college work. A strong, solid start to university course work is essential to your college career. In fact, our research shows that your performance in your first math class is a strong indicator of your future success in engineering.

For this reason, we advise all students to take the online mathematics placement exam. If your AP results are at odds with your placement results, please defer to the online placement exam or discuss the results with your advisor. It is better to start strong than to skip into a course for which you may not be prepared.

PHYSICS COURSES

Registration Notes

The Physics department reserves approximately half of the seats in Physics 197 for incoming freshmen.

In fall 2009, the department anticipates being able to accommodate 150 students in the three lecture sections of Physics 197.

In order to ensure freshmen have an opportunity to take the course, the Physics department manually enrolls students off a waitlist, giving priority to incoming freshmen. During registration, if you are prompted to add yourself to the waitlist, please do so. Students on the waitlist will be informed by e-mail prior to the start of classes if a seat in Physics 197 is available. If you are unable to enroll in Physics 197, the Physics department will assist you in registering for Physics 117A. Please do not simultaneously waitlist Physics 197 and enroll in Physics 117A.

COURSE INFORMATION

- **PHYSICS (L31) 117A:** Previous or concurrent enrollment in Calculus I (Math 131) required. FALL only.
- **PHYSICS (L31) 118A:** Previous enrollment in Physics 117A or Physics 197 required. Previous or concurrent enrollment in Calculus II (Math 132) recommended. SPRING only.
- **PHYSICS (L31) 197:** Previous or concurrent enrollment in Calculus II (Math 132) required. FALL only.
- **PHYSICS (L31) 198:** Previous enrollment in Physics 197 required. AP, transfer, or course credit for Physics 117A is not a sufficient substitute for the Physics 197 pre-requisite. SPRING only.

The standard calculus-based physics sequence is Physics 117A and Physics 118A, a traditional lecture-based sequence with weekly homework assignments that provides a survey of classical physics and an overview of selected topics in modern physics.

Students may elect to take Physics 197 and 198 instead of Physics 117 and 118. Physics 197/198 is an advanced, calculus-based introduction to physics that provides an in depth study of classical and modern physics, including an emphasis on relativity and quantum mechanics. Independent study, daily reading, daily and weekly homework assignments, and active class participation are integral components of this course sequence. More information about the structure of the Physics 197/198 sequence can be found on tbwustl.pageout.net/.

REQUIREMENT NOTES

Two semesters of calculus-based physics with lab are required for School of Engineering students. This requirement may be met in one of three ways:

- 1) Place out of introductory physics with AP credit
- 2) Complete the Physics 117A/118A course sequence
- 3) Complete the Physics 197/198 course sequence

PHYSICS B EXAM		PHYSICS C EXAM (ELECTRICITY & MAGNETISM)		Notes for Online Registration for Introductory Physics
5	“5” score on the Physics B Exam: Students will receive 3 units of elective credit for Physics 113. This corresponds to the first semester in a two semester, (algebra-based) introductory physics sequence. Physics 113 does not fulfill the physics requirements for engineering students. Students should enroll in Physics 117A or Physics 197 in the fall semester.	5	“5” score on the Physics C Exam: Students will receive 4 units of credit for Physics 118A. This corresponds to the second semester in a two semester (calculus-based) introductory physics sequence. Students interested in an advanced treatment of introductory physics should enroll in Physics 197 in the fall semester, followed by Physics 198 in the spring semester.	
4 3 2 1	“4, 3, 2 or 1” score on Physics B Exam: No credit awarded.			
PHYSICS C EXAM (MECHANICS)		4	“4” score on the Physics C Exam EM: Students will receive 3 units of elective credit for Physics 114. This corresponds to the second semester in a two semester (algebra-based) introductory physics sequence. Physics 114 does not fulfill the physics requirements for engineering students. Students should enroll in Physics 117A or Physics 197 in the fall semester. Students who have a strong interest in physics are encouraged to enroll in Physics 197.	
5	“5” score on the Physics C Exam: Students will receive 4 units of credit for Physics 117A. This corresponds to the first semester in a two semester, (calculus-based) introductory physics sequence. Students may enroll in Physics 118A, the second semester of this introductory calculus-based physics sequence, in the spring semester. Students interested in an advanced treatment of introductory physics should enroll in Physics 197 in the fall semester, followed by Physics 198 in the spring semester. Students may not enroll in Physics 198 without first taking Physics 197.	3 2 1	“3, 2, or 1” score on the Physics C Exam – EM: No credit awarded.	
4	“4” score on the Physics C Exam: Students will receive 3 units of elective credit for Physics 113. This corresponds to the first semester in a two semester, (algebra-based) introductory physics sequence. Physics 113 does not fulfill the physics requirements for engineering students. Students should enroll in Physics 117A or Physics 197 in the fall semester. Students who have a strong interest in physics are encouraged to enroll in Physics 197.			
3 2 1	“3, 2 or 1” score on the Physics C Exam: No credit awarded.			

CHEMISTRY COURSES

5

"5" score on the Chemistry AP Exam:

Students will receive 6 units of elective chemistry credit and proficiency for Chemistry 111A, 151, 112A, & 152.

4

"4" score on the Chemistry AP Exam:

Students will receive 3 units of elective chemistry credit that do not correspond to any specific course. This elective credit will not satisfy engineering degree program requirements for Chemistry 111A and 112A, or the prerequisite requirement for Organic Chemistry. Students who receive a "4" must take Chemistry 111A and 112A as required by their respective engineering degree program. The elective credit will count as "free elective" credit toward degree requirements.

3
2
1

"3, 2, or 1" score on the Chemistry AP Exam:

No credit rewarded.

Note for Pre-Medical Students

There are some medical schools that do not accept AP or any other placement credit. And there are medical schools that insist on upper level coursework in the same discipline for students who have received placement credit. Students anticipating a career in medicine who take Chemistry 111A and 112A as freshmen, even if they have an AP score of "5", will probably increase their options on schools because they will not be limited by the non-acceptance of AP credit. If you have further questions regarding this, please e-mail Dr. Richard Brand, Health Professions Advisor for the School of Engineering. (rbrand@wustl.edu)

COURSE INFORMATION

- **CHEM (Lo7) 111A:** *General Chemistry I (3 units) – FALL only.*
- **CHEM (Lo7) 151:** *General Chemistry Laboratory I (2 units) – FALL only.*
- **CHEM (Lo7) 112A:** *General Chemistry II (3 units) – SPRING only.*
- **CHEM (Lo7) 152:** *General Chemistry Laboratory II (2 units) – SPRING only.*

REQUIREMENT NOTES

Most undergraduate engineering degrees require a minimum sequence of chemistry courses.

Normally, only biomedical and chemical engineering students take chemistry during their first year. Undecided students considering biomedical or chemical engineering should also take chemistry during the first semester.

Students majoring in other areas of engineering take chemistry during their sophomore year.

CHEMISTRY DIAGNOSTIC EXAM

Students who plan to take chemistry during the first semester should take the chemistry diagnostic exam before August 14. The tutorial, practice problems and quizzes, and the diagnostic exam are accessible online: chemistry.wustl.edu/diagnostic. Students need to use the assigned WU student ID number to access this Web site, but no password is required.

Students should review the online tutorial, including practice problems and practice quiz questions, before the exam. This is a diagnostic exam, so you cannot fail. The test questions have been designed to identify areas where you might need help and to suggest how to get help early in the semester. The results of this exam do not impact your ability to register for Chemistry 111A. The two-hour exam consists of 28 multiple-choice test items covering basic material taught in high school general chemistry courses.

Chemistry Diagnostic Exam contact:

Dr. Shawn Shields
spshields@wuchem.wustl.edu
(314) 935-7432

The academic policy of Washington University permits the transfer of credit earned at other colleges and universities prior to graduation from high school if these four conditions about the course are true:

- 1) *taught on the campus of a college or university*
- 2) *enrolled primarily by duly matriculated college students (i.e., high school graduates)*
- 3) *taught by a regular college faculty member*
- 4) *did not count towards high school graduation requirements*

If you would like to receive transfer credit, please complete and submit the Transfer Credit Application which is available on our website:

[engineering.wustl.edu/OrgCustomFiles/File/Transfer_Credit_Form\(1\).pdf](http://engineering.wustl.edu/OrgCustomFiles/File/Transfer_Credit_Form(1).pdf)

HELPFUL WORKSHEETS

WEBSTAC includes a “Registration Worksheet” that can be helpful. It alerts students to conflicts and overlapping class times. **NOTE: Entering courses in this worksheet does not register you for these classes.** The worksheet is a planning tool and additional steps are required for registration.

Students can also use the “Class Selections For Registration” worksheet located in the back of the course listings book. This worksheet is helpful as it requires students to list the specific information for each course you will need in order to register online, such as department number, course number, section number, and lab section (if required). Also, the “Weekly Schedule” worksheet (located in the back of the Course Listings book) can be used to help plan your class schedules.

NOTE YOUR FINAL EXAM SCHEDULE

Make a note of final exam schedules as soon as possible. When students register on WEBSTAC, a final exam schedule is immediately available. This information can help plan for studying and travel home. During the first week of class, students are encouraged to double-check with each professor regarding the final exam date and time.

WU “7 MINUTE RULE”

Most Washington University classes begin seven minutes after the hour. If the schedule says a class begins at 10:00 AM, it actually begins at 10:07 AM. Class concludes on the hour.

Once you decide which courses to take the first semester, check the Course Listings book to determine the dates/times each course is offered. The course listings book is published each semester and lists courses offered for the upcoming semester.

NOTE: *Course offerings may have changed since the book was printed. The online version is up-to-date and displays which courses/sections are still open.*
Online course listings: courses.wustl.edu/WUCrsL.asp

Class Selections For Registration

Use this sheet to plan your course selections for online registration.

The first six columns of information will be necessary for system input.

The additional columns are provided for your record maintenance.

You need this information to register on WebSTAC.

The information in these columns are NOT needed for WebSTAC.

1	2	3	4	5	6				
Dept. No. (LO1, E68, etc.)	Course No. (121, 1421, etc.)	Sect. No. (01, 05, etc.)	Lab, Disc., Subject. (A, D, etc.)	Grade Option (Audit, Credit, P or F)	Units of Credit If Variable (1.5, 3, etc.)	Class Meeting Days Times	Building/Room	Course Title	Instructor
E81	131	01	B	C	4.0			Comp Science 1	
E60	120	03		P	1.0			Fresh Seminar	

● **“C”** = credit grade (A, B, C, D, F)
“P” = Pass/Fail

● Many classes do not have this. If so, leave it blank.

- 1 Connect to the WEBSTAC system at acadinfo.wustl.edu by using your WUSTL KEY and password.
- 2 Once logged into WEBSTAC, select “Registration” on the left menu, choose “FL2009” and click the “Submit” button.
- 3 For each course, input course information and click the “add” button. Students will need the following information to register for a course:

Sample course listings

● **Dept Code** (example: L07)

● **Course Number** (example: 111A)

GENERAL CHEMISTRY I **L07 111A CHEM**

Systematic treatment of fundamental chemical and physical principles and their applications to the properties and transformations of materials, including the concept of energy and its uses, gas laws, kinetic molecular theory, laws of chemical combination, atomic and molecular structure, periodic classification of the elements, and chemical bonding. Prereq: two years of high school mathematics, one of high school chemistry, and one year of high school physics, or PERMISSION of instructor. Students who register for Chem 111A are required to register for one of the subsections. Exams at which attendance is required will be given from 6:30 to 8:00 p.m. on October 10, November 7, December 5. 3 units.

GENERAL CHEMISTRY LABORATORY I **L07 151 CHEM**

This course provides an introduction into basic laboratory techniques and the experimental method, as well as direct experience with chemical principles and the properties and reactions of substances. The topics and experiments in this course complement the material covered in Chem 111A. Students attend one lab lecture per week and perform the experiments as scheduled. Prereq: concurrent enrollment in Chem 111A or permission of the instructor. All students must register for a **lab section** as well as either **lecture section 1 or 2**. The first lab lecture class meeting will be Monday, September 10. The lab sessions will convene for the first time beginning on Tuesday, September 8 through Saturday, September 22. A mid-term exam, at which attendance is required, is scheduled for October 18 from 6:30 to 8:30 p.m. 2 units.

● **Lab Section** (example: A)

Note: Not all courses have a lab section (sometimes called a discussion section or sub-section). If a course has lab sections, then you are required to enter an open lab section when you register for the course (WebSTAC will not let you register if you don't also input a lab section). If a course has no lab sections, then you can leave that field blank when you register.

● **Section Number** (example: 01)

Note: To successfully register for Chemistry 111A or 151, students must choose a lecture section (examples: “01” or “02”) and a subsection or laboratory section (examples: “A” or “B”).

The most common registration error arises when students try to enroll in a section that is full. Both the lecture and the subsection/laboratory section must have seats available. Please refer to the online course listings to view the enrollment limits and available seats in each section.

CHEMISTRY COURSES

If you are unable to register for a subsection or laboratory section that you truly need, register in an open laboratory section (even if it poses a conflict with your schedule). If you have such a conflict, e-mail **Ed Hiss in Chemistry** immediately (hiss@wustl.edu), and tell him why you need to be enrolled in a specific closed section. He will assist you and put you on his “wait list” queue for a section.

MATH COURSES

If you are unable to register for a discussion section that you truly need, still register in an open discussion section (even if it poses a conflict with your schedule). If you have such a conflict, e-mail **Blake Thornton in Mathematics** immediately (BThornton@wustl.edu), and tell him why you need to be enrolled in a specific closed section.

PHYSICS COURSES

If you are unable to register for a lab section that fits your schedule, select an open lab (even if it poses a conflict with your schedule). If a seat opens up in a lab section you prefer, you can modify your enrollment on WebSTAC. Be sure to select the Change (CHG) option and not the Drop option, so you don't lose your lecture section enrollment in the process of making a change to your lab section. Lab sections will not begin until the second week of the semester, so there will be time to resolve any scheduling conflicts once you arrive on campus. Details will be provided in lecture on the first day of class. If you have additional questions, e-mail **Becky Trousil in Physics** (trousil@wustl.edu).

GENERAL TUTORING

Engineering undergraduate students may receive up to 4 hours per week of free one-on-one tutoring for each engineering course. The School also provides free tutoring for the math, chemistry, and physics courses required for an engineering degree.*

PROBLEM SOLVING TEAMS (PST)

Engineering students have the opportunity to participate in Problem Solving Teams for specific introduction to engineering courses, including BME 140, CSE 131, and ChE 146A. PSTs consist of up to seven students, meet once a week, and are facilitated by an upper-class student.

To request tutoring or join a PST e-mail **Ron Laue** (ron.laue@wustl.edu).

CALCULUS HELP ROOM

Located in Lopata Hall, Room 323, the Calculus Help Room is staffed by Graduate Teaching Assistants for calculus courses (131,132, 233) and differential equations. Students who need help with homework during the evening may also visit the Calculus Help Desk in Cornerstone.

CORNERSTONE: THE CENTER FOR ADVANCED LEARNING

This campus center is available to all Washington University undergraduate students. Cornerstone offers active and collaborative learning opportunities to help students make the transition to college, master class materials, and prepare for advanced courses.

Students may choose from a broad range of programs and activities, including: mentor-led study groups, workshops and help sessions; one-on-one academic mentoring and coaching; time-management and study skills instruction; evening help-desks and residential hall-based peer mentors. Engineering students may be particularly interested in Cornerstone's peer-led, team-learning groups. This program pairs trained upper-class students with small groups of students who work on group exercises directly connected to coursework.

Cornerstone: The Center for Advanced Learning

(314) 935-5970
cornerstone.wustl.edu

**Tutoring should not be viewed as a last resort to salvage a grade. Signing up for a tutor at the start of class can help you review your work while learning more about the course and the professor from the upper-class students who serve as tutors.*

FRESHMAN READING PROGRAM

Each year, as part of the Freshman Reading Program, Washington University brings together faculty and first year students for discussion and programs centered on a common text. As a new student, you will participate in a discussion of the book, *When the Emperor was Divine* by Julie Otsuka. This book will be mailed to your home address over the summer.

This vivid and haunting novel follows a family sent away to a Japanese internment camp in the spring of 1942, after the attack on Pearl Harbor. It explores themes of identity, loss, racial profiling and injustice. You will have a chance to discuss your views and hear the perspectives of your classmates on Monday, August 24, during the freshman Reading Program's faculty-led group discussions, and throughout the semester as speakers and other on-campus events help to continue the dialogue. Author, Julie Otsuka, will be visiting Washington University and giving a campus-wide talk on September 15.

INTERNSHIPS & CO-OPS

Students can choose from a host of work experience opportunities to blend theory and practice, develop critical work place skills and earn a salary. For more information about summer internships and co-ops, students should contact the Career Center.

STUDENT ORGANIZATIONS

The School of Engineering encourages and supports student involvement in co-curricular activities and organizations that add to the undergraduate experience, both academically and socially. Membership and involvement in organizations can help students explore new ideas and develop leadership skills. A complete list of engineering student organizations can be found at engineering.wustl.edu/studentorganizations.aspx.



STUDY ABROAD & INTERNATIONAL EXPERIENCE

The School of Engineering & Applied Science views international study as an integral part of today's college experience. Experiencing an academic program in another country and culture can be both career-enhancing and life-transforming. Students have the opportunity to study abroad through the College of Arts & Sciences Overseas Programs, but there are also many opportunities available only to engineering students—including summer, semester- or year-long study programs, and other specialized programs. To learn more about international experience opportunities, please attend the study abroad session during orientation or e-mail **Melanie Osborn** (osborn@wustl.edu).

UNDERGRADUATE RESEARCH

Students will have numerous opportunities to participate with faculty on research projects. Students interested in undergraduate research should e-mail **Ron Laue** (ron.laue@wustl.edu).

IMPORTANT ORIENTATION EVENTS

THU, AUGUST 20

Engineering Welcome Table

9 AM–5 PM

South 40 Clocktower

Thursday, August 21

Students are invited to stop by for refreshments and meet representatives from the School of Engineering.

FRI, AUGUST 21

Associate Dean's Meeting

8:30–10:30 AM

Brown Hall, Room 100

REQUIRED EVENT

Associate Dean Chris Kroeger will review registration procedures and academic policies in the School of Engineering.

Lunch with Peer & Faculty Advisors

10:45 AM–NOON

Lopata Gallery or Whitaker Atrium

Enjoy a pizza lunch and discuss registration, academics, and campus life with advisors. At this time, students may schedule individual appointments to meet with faculty advisors on Monday or Tuesday.

Please attend any or all department presentations of interest. See below.

Overview: Biomedical Engineering

NOON–1:00 PM

Whitaker Hall, Room 100

Overview: Computer Engineering & Computer Science

1 P.M. – 2 P.M.

Lopata Hall, Room 101

Overview: Chemical Engineering (and students with an interest in Environmental Engineering)

2–3 PM

Whitaker Hall, Room 100

Overview: Electrical Engineering & Systems Engineering

3–4 PM

Lopata Hall, Room 101

Overview: Mechanical Engineering

4–5 PM

Whitaker Hall, Room 100

SAT, AUGUST 22

Engineering Writing Placement Exam

9–11:30 AM (required for some students)

Whitaker Hall, Room 100

Engineering students who have not satisfied the English Composition proficiency requirement are required to take this writing placement exam. Please arrive 10–15 minutes early to check-in and bring pens or sharpened pencils. See p. 10 for details.

NOTE: This is different from the Arts & Sciences placement exam.

Dean's Meeting

1–2:30 PM

Brown Hall, Room 100

Dean Sutera will give an overview of the School and discuss current and future directions in undergraduate education.

Combined Studies Meeting

2:45–3:30 PM

Simon Hall, May Auditorium

A general information meeting for students interested in learning more about combined studies (i.e. degrees from two schools or majors in two schools). To be followed by breakout sessions with presentations by each of the five undergraduate schools.

Study Abroad Meeting

3:45 – 4:45 PM

Rebstock Hall, Room 215

Learn more about international opportunities in the School of Engineering as well as the guidelines and eligibility requirements for these programs.

Engineering Induction Ceremony

10:30 PM – MIDNIGHT

Brookings Quad

Join the tradition as you officially become a Washington University Engineer. This journey will take you through a series of fun team challenges as you learn who we are and what we do. Please note: Skirts, sandals, and non-washable clothes not recommended due to a paint activity.

SUN, AUGUST 23

Engineering Pre-Med Meeting

1-3 PM

Whitaker Hall, Room 100

Students interested in pursuing admission to medical school should attend this meeting to learn how the undergraduate experience can prepare students for success. Biomedical Engineering Department Chair Dr. Frank Yin will present. Dr. Richard Brand, Health Professions Advisor for the School of Engineering, will also attend to answer questions.

Peer Advising Outing

5-7 PM

Meet at the Clock Tower, South 40

Join peer advisors and fellow engineering students for dinner out on the town. Please be sure to bring your U-Pass.

MON, AUGUST 24

Individual Faculty Advising Meeting

10 AM-NOON

Advisor's Office

Do you have specific questions for your faculty advisor? Do you need a little more time to get things worked out? This is your time to meet one-on-one with your advisor.

Computer Science Placement Exam

10 AM-NOON

Cupples II, Room 217

This exam is for students with significant computer science background and programming experience, regardless of intended major. See the chart on page 12 for more details.

ENQUEST

3-4 PM

Lopata Gallery

Join your peer advisor and EnCouncil representatives for a team scavenger hunt to learn your way around the School of Engineering.

Engineering Student Services and EnCouncil Activities Fair

4-5 PM

Engineering Complex

Learn more about engineering student groups and meet members of Engineering Student Services while you enjoy a treat from the ice cream truck. Be sure to pick up your t-shirt at this event.

TUE, AUGUST 25

Individual Faculty Advising Meeting

10 AM-2 PM

Advisor's Office

Do you have specific questions for your faculty advisor? Do you need a little more time to get things worked out? This is your time to meet one-on-one with your advisor.

It Is Dishonest and a Violation of Student Academic Integrity If You:

Plagiarize, cheat on an examination, copy or collaborate on assignments without permission, fabricate or falsify data or records or engage in other forms of deceit or dishonesty.

Plagiarize: You commit plagiarism by taking someone else's ideas, words, or other types of work product and presenting them as your own. You can avoid plagiarism by using proper methods of documentation and acknowledgement.

- Enclose every quotation in quotation marks, and acknowledge its source.
- Cite the source of every summary, paraphrase, abstraction or adaptation of material originally prepared by another person, and any factual data that is not considered common knowledge. Include the name of author, title of work, publication information, and page reference.
- Acknowledge material obtained from lectures, interviews, or other oral communication by citing the source (name of the speaker, the occasion, the place, and the date).
- Cite material from the internet just as if it were from more traditionally published sources. Follow the citation style or requirements of your instructor.

Cheat: You must not receive or provide any unauthorized assistance on an examination.

- During an examination you may use only materials authorized by the faculty.

Copy or collaborate on assignments

without permission: Unless the instructor explicitly states otherwise, it is dishonest to collaborate with others when completing graded assignments or tests, performing laboratory experiments, writing and/or documenting computer programs, writing papers or reports, and completing problem sets.

- Never use, copy or paraphrase the results of another person's work and represent them as your own, regardless of the circumstances.
- When you submit work with your name on it, you are in effect stating the work is yours and only yours, unless you acknowledge in an endorsement all the help of persons who have contributed to the completion of the assignment.
- If the instructor allows group work, you must be sure you understand the degree of acceptable collaboration.
- It is never appropriate to simply copy another's work, or to permit another student to copy your work.
- If you have any questions regarding the instructor's definition of allowable behavior, it is your responsibility to ask for clarification prior to engaging in the collaboration.

It is dishonest to turn in work as a collaborative effort if you did not contribute your fair share of the effort.

Fabricate or falsify data or records:

It is dishonest to fabricate or falsify data in laboratory experiments, research papers, reports or other circumstances; fabricate source material in a bibliography or "works cited" list; or provide false information on a resume or other document in connection with academic efforts.

It is also dishonest to take data developed by someone else and present them as your own.

Engage in other forms of deceit or dishonesty:

Do not submit the same work for more than one course without explicitly obtaining permission from all instructors. When a paper or project builds on work completed earlier in your academic career, you must bring that fact to the attention of the instructor.

- Do not request any academic benefit, including an extension of time, a better grade, or a recommendation, from an instructor when the request is based on false information or deception.
 - Do not make any changes (including adding material or erasing material) on any test paper, problem set, or class assignment being submitted for a re-grade.
 - Do not willfully damage the efforts or work product of other students.
 - Do not steal, deface, or damage academic facilities or materials.
 - Do not collaborate with other students planning or engaging in any form of academic misconduct.
 - Do not engage in any other form of academic misconduct not covered here (since no list is necessarily exhaustive). If you are in doubt, ask the professor or teaching assistant for guidance.
- wustl.edu/policies lists more information on the University's academic integrity policies including faculty responsibility, student rights, sanctions, appeals, reporting misconduct by others and administrative procedures.



Washington
University in St. Louis

SCHOOL OF ENGINEERING
& APPLIED SCIENCE