Undergraduate Student Handbook
2004 - 2005

Name_________________________________________________________________________

Please keep this handbook. It contains information that will be helpful to you during your college career.

(Revised: 10/18/04)
Dear Civil and Environmental Engineering Students,

On behalf of the Department of Civil and Environmental Engineering (CIE), I welcome all of you to the Syracuse University (SU) campus. I hope your academic experience at SU will be a rewarding one. This handbook has been designed to be your guide through the Civil and Environmental Engineering programs. It contains important information that will answer questions you might have during your academic career at SU. This handbook was developed based on comments and suggestions by undergraduate and graduate students, as well as faculty and staff members of the Department. Please help improve this handbook by expressing your likes, dislikes, wants, and needs to either myself or any of the staff members.

A full-time faculty member will be assigned to act as your academic advisor. Your advisor can be a great resource to you. Academic advising is an essential component of a Syracuse University education. The University is committed to providing the individual advice and assistance that students need at every step throughout their degree programs. A successful system of academic advising is highly dependent upon a shared commitment of students, faculty, and staff to the process and the availability of timely, accurate information. Students should be aware of their own responsibility towards advising, as well as that of the advisor and the University.

- Students are responsible for scheduling, preparing for, and keeping advising appointments; for seeking out contacts and information, and for knowing the basic requirements of their individual degree programs. Students bear the final responsibility for making their own decisions based on the best information and advice available and, ultimately, on their own judgment.

- Advisors are responsible for developing a thorough knowledge of the degree requirements within the students' program of study and a working knowledge of academic options and resources throughout the University. Advisors are expected to involve students by encouraging them to ask questions, gather information, and explore options so that they may develop a meaningful academic plan. Advisors will be available to students on a regular basis, will monitor their advisees’ progress, assist in considering career options, and will make appropriate referrals to other campus offices.

The University, through its schools and colleges, pledges to support a campus-wide network of faculty, staff, and student peer advisors by providing them with a clear and firm foundation of information regarding policies, procedures, resources, and programs. The University is committed to assisting faculty and staff develop effective advising skills, evaluating its system of academic advising and support services, and to making improvements where necessary. The University also acknowledges the important contribution advisors make to the community through appropriate recognition within the institutional reward system.

In addition to advising responsibilities, students should know the Department's mission statement, goal statement, and educational objectives. The curriculum has been designed to incorporate these elements. Students, faculty, alumni, and the Department's Advisory Board are all involved with ensuring that these elements are incorporated into every student's education.

I hope that you find the information in this handbook valuable. If the information you need is not in this handbook, or you have other questions or concerns, please consult your advisor or a member of the Department.

Best Wishes,

Eric M. Lui
Chair, Department of Civil and Environmental Engineering
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The Department of Civil and Environmental Engineering

MISSION STATEMENT
To promote learning and the creation, dissemination, and application of knowledge in Civil and Environmental Engineering through integration of teaching, scholarship, and service.

GOAL STATEMENT
The goal of the Department is to prepare students for engineering practice, advanced study, and life-long learning in Civil and Environmental Engineering. Graduates are expected to be proficient in the fundamentals of engineering analysis and design, and to understand the importance and methods of effective communication. Students are encouraged to use the extensive educational resources of Syracuse University and the Syracuse University community to broaden and enhance the quality of their university education.

EDUCATIONAL OBJECTIVES
The educational objectives of the programs in Civil and Environmental Engineering can be summarized in eleven major curricula areas. These eleven program objectives and how they are achieved in the curricula are as follows:

1. **Engineering Fundamentals**: Engineering fundamentals, taught in a series of nine to ten courses in the first three years, give students a solid understanding and appreciation of the fundamentals of civil and environmental engineering. Courses include: ECS 101, ECS 104, ECS 221, CIE272, ECS 325, ECS 326, MAE 341, CIE 337, and CIE 341.

2. **Technical Knowledge**: Students are required to augment their basic engineering skills and enhance their technical knowledge in selected disciplines by taking additional required courses and technical/professional electives. Courses may include: ECS 222/ELE 231/MAE 251/CHE 346, CIE 331, CIE 332, CIE 338, CIE 441, CIE 471, CIE 472, CIE 352, and two technical and two professional electives.

3. **Design Experience**: Design experience is acquired through course assignments and projects associated with various design courses available throughout the curricula. The knowledge and experience gained in these courses is used in the Capstone Design course, CIE 475, where students in their final semester solve a comprehensive, open-ended design problem and present their results before a panel of peers, faculty, and practitioners from the local engineering community.

4. **Math and Science Education**: As part of the degree requirements, all students are required to complete a minimum of 15 credit hours in mathematics, as well as 6 credit hours in chemistry and 6 credit hours in physics.
5. **Liberal Arts Education**: A liberal arts core of 18 credit hours of social sciences (SS) and humanities (HUM) courses is required of every student. To ensure that students gain both breadth and depth in their liberal arts education, a minimum of 12 credit hours must be completed in either social sciences or humanities, with the remaining 6 credit hours being completed in the other field. Therefore, each student must take either 12 credit hours of SS and 6 credit hours of HUM, or 12 credit hours of HUM and 6 credit hours of SS. A student may take 9 credit hours of SS and 9 credit hours of HUM by petition.

6. **Ethics**: Engineering ethics are discussed throughout the curriculum. A unit of engineering ethics is an important part of the senior Capstone Design course (CIE 475) and addresses moral and ethical issues in engineering practice. Practicing engineers from the Syracuse area assist the faculty in presenting this material.

7. **Computer Skills**: The use of a computer as a tool to collect, analyze, compute, interpret, and present data is encouraged starting in the freshman year and continuing through the senior year. Several computer laboratories are located in the engineering buildings to provide the necessary state-of-the-art hardware and software for student use.

8. **Communication Skills**: Both oral and written communication skills are emphasized in the curricula. Students acquire written communication skills in three writing classes: WRT 105, WRT 205, WRT 307, and in courses where laboratory or written reports are required. Oral communication skills are emphasized in several engineering design courses, e.g., ECS 101 and CIE 475, in which students are required to present their work to an audience of peers, faculty, and practicing engineers.

9. **Team Work**: Students work in groups in design and laboratory projects, learning that cooperation with and respect for their peers is a vital component for success in the engineering profession.

10. **Laboratory and Field Experience**: Hands-on laboratory and field experience is gained in a number of courses such as: CHE 107, CHE 117, PHY 221, PHY 222, CIE 272, CIE 332, CIE 337, CIE 342, CIE 352, CIE 471, and CIE 472.

11. **Minors**: To broaden and enhance their educational experience, all students are encouraged to include a minor in their program of study. In most cases, the courses in the minor can be scheduled so that the program of study can be completed in four years.
Department Advisory Board

The role of the Department Advisory Board, currently made up of six prominent civil/environmental engineers and educators from industry and academia, is to advise the Department Chair on all matters that relate to undergraduate and graduate education. The Board normally meets once or twice a year to discuss issues germane to program accreditation, curriculum revisions, job prospects, and other specific needs of the Department.

Faculty

Aboutaha, Riyad S. - Associate Professor; Ph.D. 1994, University of Texas at Austin
   Teaching and Research Interests - Structural rehabilitation of civil infrastructure, analysis and design of concrete and steel structures, experimental investigation of structural elements and systems, behavior of existing buildings and bridges, and rehabilitation with fiber reinforced polymer composites.

Bhatia, Shobha K. - Laura J. and L. Douglas Meredith Professor; Ph.D. 1980, University of British Columbia
   Teaching and Research Interests - Hydraulic and mechanical properties of geosynthetics, seismic design of waste containments, soil behavior under cyclic loading, digital image processing, microstructure analysis of soil fabric, and site remediation.

Clemence, Samuel P. - Laura J. and L. Douglas Meredith Professor; Ph.D. 1973 Georgia Institute of Technology
   Teaching and Research Interests - Geotechnical engineering, foundation design, uplift and bearing capacity of helical anchors, in-situ testing, properties of collapsible soils, and slurry containment systems.

Costello, Andria M. - Assistant Professor; Ph.D. 1999, California Institute of Technology
   Teaching and Research Interests - Biomolecular engineering, applied environmental microbiology, and bioremediation.

Driscoll, Charles T. - University Professor of Environmental Systems Engineering; Ph.D. 1979, Cornell University
   Teaching and Research Interests - Chemical processes occurring in the environment, aquatic chemistry, biogeochemistry, environmental quality modeling, limnology, and soil chemistry.
**Johnson, Chris E.** - Associate Professor; Ph.D. 1989, University of Pennsylvania

**Teaching and Research Interests** - The terrestrial processes which influence and control the chemistry of natural waters, soils and soil chemistry, weathering, ion exchange processes, and organic matter chemistry.

**Letterman, Raymond D.** - Professor; Ph.D. 1972, Northwestern University

**Teaching and Research Interests** - Environmental engineering with an emphasis on water resources and drinking water treatment, physical/chemical transformations in water, applied surface chemistry, coagulation, flocculation, filtration, and corrosion control.

**Lui, Eric M.** - Associate Professor and Chair; Ph.D. 1985, Purdue University

**Teaching and Research Interests** - Structural engineering with an emphasis on structural stability, structural dynamics, structural materials, numerical methods, computer-aided analysis and design, and high performance computing.

**Negussey, Dawit** - Associate Professor; Ph.D. 1985, University of British Columbia

**Teaching and Research Interests** - Geotechnical engineering, experimental soil mechanics, and stress-strain behavior.

**Emeritus Faculty**

**Friedman, Alexander A.** - Professor Emeritus; Research Faculty; D.Eng. 1970, UC-Davis

**Teaching and Research Interests** - Water and wastewater treatment.

**Mandel, James A.** - Professor Emeritus; Research Faculty; Ph.D. 1967, Syracuse University

**Teaching and Research Interests** - Fiber reinforced materials, fracture mechanics, finite element analysis, structural engineering.

**Adjunct Faculty**

**Cleckner, Lisa** – Research Faculty; Ph.D., University of Michigan

**Teaching and Research Interests** - Environmental Health Sciences and Engineering

**Driscoll, Kimberly** – Research Faculty; M.S.E.E, 1991, Syracuse University

**Teaching and Research Interests** – Environmental Engineering

**Gilligan, Eileen** - Adjunct Faculty; Ph.D. 1983, Syracuse University

**Teaching and Research Interests** - Engineering geology
Kaczmar, Swiatoslav W. - Adjunct Faculty; Ph.D. 1983, Michigan State University
  Teaching and Research Interests - Toxiology and environmental disposition of chemical and physical contaminants.

Lake, Donald W. - Adjunct Faculty; B.S. 1970, SUNY-Buffalo
  Teaching and Research Interests - Hydrology, stormwater quality, and BMP removal efficiencies.

Mousa, Belal - Adjunct Faculty; Ph.D. 1993, Syracuse University
  Teaching and Research Interests - Structural analysis and design, reinforced concrete, mechanics of deformable bodies.

Napoleon, James - Adjunct Faculty; M.S. 1974, Newark College of Engineering
  Teaching and Research Interests - Transportation engineering, traffic design and operation.

Owens, Emmet M. - Adjunct Faculty; M.S.C.E. 1977, Colorado State University
  Teaching and Research Interests - Hydraulics, environmental fluid mechanics, and water quality modeling.

Plumley, Peter – Research Faculty; Ph.D. 1984, U. of California, Santa Cruz
  Teaching and Research Interests – Geology, computing and media services, science education, K-12 outreach

Santanam, Suresh - Adjunct Faculty; Sc.D. Harvard University
  Teaching and Research Interests - Air pollution, environmental regulations, control system design, industrial toxicology.

Wazenkewitz, David - Adjunct Faculty; P.E.; B.S. Syracuse University
  Teaching and Research Interests - Solid waste management.
Advisor Information

Your advisor is a full-time faculty member to whom you have been assigned. Advisors take their roles seriously and are dedicated to enhancing your educational experience at Syracuse University.

You should see your advisor:

- Before registration to plan your schedule;
- If you are changing your schedule (Adding, dropping, withdrawing a class);
- When declaring a minor;
- When having problems, concerns, or questions;
- When exploring co-op, internship, and job opportunities;
- Whenever you need someone to listen and/or give advice

Your advisor can, and should be, more than just the person that signs your SCORE card. Your advisor is offering you access to their experiences and knowledge. Utilize that opportunity. You might learn more through your relationship with your advisor than you do in any course.

Occasionally it will be necessary to change advisors. This can occur for the following reasons:

- Student Request- A student may prefer another advisor and may request a change.
- Student Change of Major- Students are assigned faculty advisors from their program of study.
- Advisor Departure- If a faculty member leaves their academic unit or the University, their advisees are reassigned.
- Advisor Leave of Absence- If a faculty member is unable to meet with his/her advisees during registration or the academic year, his/her advisees are temporarily assigned to another faculty member.
**Important Dates To Remember***

<table>
<thead>
<tr>
<th>Event</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule Adjustment</td>
<td>First two weeks of the semester</td>
</tr>
<tr>
<td>Add Deadline</td>
<td>Two weeks after the first day of classes</td>
</tr>
<tr>
<td>Deadline to elect or rescind Pass/fail or audit option</td>
<td></td>
</tr>
<tr>
<td>Financial Drop Deadline</td>
<td>Three weeks after the first day of classes</td>
</tr>
<tr>
<td>Academic Drop Deadline</td>
<td>Six weeks before the last day of classes</td>
</tr>
<tr>
<td>Withdrawal Deadline</td>
<td>Fall- Three weeks before the last day of classes</td>
</tr>
<tr>
<td></td>
<td>Spring- Two weeks before the last day of classes</td>
</tr>
<tr>
<td>Registration</td>
<td>Begins ten weeks after the first day of classes and lasts four weeks</td>
</tr>
</tbody>
</table>

* Please refer to the time schedule of classes for the exact deadline dates.

**The Registration Process**

1. After receiving your Registration information form:
   - Check to make sure your personal information is correct
   - Resolve any holds---
     Advising Hold- See ECS department and your advisor
     Financial Hold- Contact office indicated on your information form
     Health Center Hold- Contact Health Center and submit proof of immunization
     Judicial Affairs Hold- Contact the Office of Judicial Affairs
     Nondeclared Plan (major) Hold- See ECS department to declare major
     OIS Hold- Contact the Office of International Services
   - Make a note of your initial access date and time

2. Plan your schedule and complete the Registration Course Worksheet, which is available in the time schedule of classes and online at [http://cms.syr.edu/score/worksheet.pdf](http://cms.syr.edu/score/worksheet.pdf) (you must have Acrobat Reader to print the worksheet).

3. Meet with your advisor to review your schedule. Do this BEFORE registration begins! This will give you plenty of time to change your schedule if necessary.

4. Assemble all needed enrollment items (including your pin and any permission numbers) and register over the web at [http://sumweb.syr.edu/registrar/](http://sumweb.syr.edu/registrar/).
Registration Terms and Definitions

Schedule Adjustment:
Schedule adjustment is the two-week time period at the beginning of the semester when students can change their class schedules. The procedure for adjusting your schedule is the same as during registration. The information necessary for registration is also needed for schedule adjustment. You can adjust your schedule on the web.

Add deadline:
The last day that a student can add a class. The deadline is approximately two weeks after the first day of classes.*

Financial deadline:
Three weeks after the first day of classes, it is the last day a student can drop a class and receive a full refund of tuition charges. No refunds will be given for classes dropped by students whom are registered for 12 to 19 credit hours.

Academic drop deadline:
The last day a student can drop a class (it does not appear on the student’s transcript record). The deadline is approximately six weeks before the last day of classes. The procedure for dropping a class after the schedule adjustment period is:
1. Fill out the Add/Drop form*,
2. Obtain the required signatures (ECS requires Instructor, Department Chair, and Advisor),
3. Obtain an approval stamp from the dean’s office, and
4. Submit the completed form to the Registrar’s Office, 106 Steele Hall.

Withdrawal deadline:
The last day a student can withdraw from a class. In fall, the deadline is approximately three weeks before the last day of classes. In spring, the deadline is approximately two weeks before the last day of classes. A WD appears on the student’s transcript record, but the student's grade point average is not affected. The procedure to withdrawal from a course is:
1. Complete the petition*, including course prefix, number, section, and title,
2. Obtain the required signatures, and
3. Submit the completed form to the Registrar’s Office, 106 Steele Hall.

* Add/Drop form is available in the office of the Civil and Environmental Engineering Department.
* Withdrawal Petition is available in both the dean's office and the office of the Civil and Environmental Engineering Department.
Grading Options

Audit grading option:
Audited classes do not calculate toward the student's GPA, do not earn academic credit, and do not fulfill any degree requirements. They do not count as credits carried for the determination of enrollment status (students are not charged for them). Students can register for the course and then fill out the Grading Option Application*, obtain the signature of the course instructor, and submit the form to the Registrar’s Office. However, if registration for the course will bring the total number of credits to more than 19, students should submit the Grading Option Application to the Registrar’s Office and will be enrolled in the course subject to space availability.

Pass/fail grading option:
In some courses students may elect a pass/fail grading option instead of the letter grading option. A course taken pass/fail cannot count towards a student's major or minor. Students register for the course, complete the Grading Option Application*, obtain the required signatures, and submit the completed form to the Registrar’s Office.

Incomplete grading option:
Students who cannot complete a course within the normal time limits because of exceptional circumstances (severe illness, death of parent/sibling, etc.) can request an incomplete grade. The student and instructor complete the Request for Incomplete Grade Form*, deciding the conditions and time limit for removing the incomplete. An incomplete is calculated as an F in the GPA until it is removed.

* Grading Option Application is available in the office of the Civil and Environmental Engineering Department.
* Request for Incomplete Grade Form is available in the office of the Civil and Environmental Engineering Department.
Curriculum

All ECS students are required to complete 18 credits in the Social Science/Humanities using one of the following options:

1. Complete the social sciences division (min 12 credits) AND complete 6 credits of humanities courses.
2. Complete the humanities division (min 12 credits) AND complete 6 credits of social sciences courses.
3. Complete the social sciences division (min 12 credits) AND complete 6 credits of foreign language courses (Not the student’s native language).
4. Complete 18 credits of social sciences and humanities courses by petition. All students must complete at least 6 credits in social sciences AND 6 credits in humanities.

Social sciences courses include ANT (except ANT131), ECN, GEO (except GEO155), HST, MAX, PAF, PSC, PSY (except PSY223), SOC, and WSP.
Humanities courses include AAS, ETS, FIA, LIN, LIT, PHI, REL, and upper level foreign language courses.

Not every course offered through the departments listed above will fulfill your liberal arts requirement. Check with your advisor/ECS department to make sure the course you’ve selected will fulfill your degree requirements.

The credits can, and are encouraged to, be used towards the completion of a minor.

The curriculum is designed to allow students to specialize in an area by selecting electives carefully.

Technical Electives MUST be CIE courses. Professional Electives can be used towards a minor, must be approved by your advisor, and include courses numbered 300 or above in the following programs: Architecture, Computer Engineering, Computer Science, Construction Management (SUNY-ESF), Economics, Electrical Engineering, Geography, Geology, Information Management and Technology (IST), Mathematics, Policy Studies, Management Studies (SOM), and Public Communication Studies (Newhouse).
Civil Engineering Curriculum

**First Year**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 295</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHE 106</td>
<td>General Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHE 107</td>
<td>Gen. Chem. Lab</td>
<td>1</td>
</tr>
<tr>
<td>ECS 101</td>
<td>Intro Eng./Comp. Sc.</td>
<td>3</td>
</tr>
<tr>
<td>WRT 105</td>
<td>Writing Studio I</td>
<td>3</td>
</tr>
<tr>
<td>MAT 296</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>CHE 116</td>
<td>General Chemistry</td>
<td>3</td>
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<td>CHE 117</td>
<td>Gen. Chem. Lab</td>
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</tr>
<tr>
<td>ECS 104</td>
<td>Intro to Computing</td>
<td>3</td>
</tr>
<tr>
<td>PHY 211</td>
<td>General Physics</td>
<td>3</td>
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<tr>
<td>PHY 221</td>
<td>Gen. Physics Lab</td>
<td>1</td>
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<tr>
<td>SS/HUM</td>
<td></td>
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**Second Year**

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<tbody>
<tr>
<td>MAT 397</td>
<td>Calculus III</td>
<td>4</td>
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<tr>
<td>PHY 212</td>
<td>General Physics II</td>
<td>3</td>
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<tr>
<td>PHY 222</td>
<td>Gen. Physics Lab II</td>
<td>1</td>
</tr>
<tr>
<td>ECS 221</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>CIE 272</td>
<td>Civil Eng. Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ELE 231</td>
<td>Elec. Eng. (EE) Fund I</td>
<td>3(4) opt lab inc. or*</td>
</tr>
<tr>
<td>MAE 251</td>
<td>Thermodynamics</td>
<td>4*</td>
</tr>
<tr>
<td>CIE 327</td>
<td>Prin. Of Fluid. Mech.</td>
<td>4 or *</td>
</tr>
<tr>
<td>MAE 341</td>
<td>Fluid Mechanics</td>
<td>4*</td>
</tr>
<tr>
<td>SS/HUM</td>
<td></td>
<td>3</td>
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**Third Year**

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<thead>
<tr>
<th>Course</th>
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</tr>
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<tbody>
<tr>
<td>CIE 331</td>
<td>Structures I</td>
<td>4</td>
</tr>
<tr>
<td>CIE 337</td>
<td>Soil Mech. &amp; Found. I</td>
<td>4</td>
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<tr>
<td>CIE 341</td>
<td>Environmental Eng. I</td>
<td>3</td>
</tr>
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<td>CIE 327</td>
<td>Prin. Of Fluid. Mech.</td>
<td>4 or *</td>
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<td>MAE 341</td>
<td>Fluid Mechanics</td>
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<tr>
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**Fourth Year**

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<tr>
<td>CIE 352</td>
<td>Water Resources Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CIE 441</td>
<td>Transportation Eng.</td>
<td>3</td>
</tr>
<tr>
<td>WRT 307</td>
<td>Technical Writing</td>
<td>3</td>
</tr>
<tr>
<td>SS/HUM</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total Credits</td>
<td>16</td>
</tr>
</tbody>
</table>

* Take one from the group.

Technical Electives must be CIE courses. Professional elective courses should be minimum 300 level courses from the professional schools and should be selected in consultation with the advisors.

Total Credits Required: 123/124
### Environmental Engineering Curriculum

#### First Year

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<td>PHY 222</td>
<td>Gen. Physics Lab II</td>
<td>1</td>
</tr>
<tr>
<td>ECS 221</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>CIE 272</td>
<td>Civil Eng. Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SS/HUM</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>MAT 485</td>
<td>Diff. Eq. &amp; Mat. Algebra</td>
<td>3</td>
</tr>
<tr>
<td>ECS 222</td>
<td>Dynamics</td>
<td>3 or*</td>
</tr>
<tr>
<td>ELE 231</td>
<td>Elec. Eng. (EE) Fund I</td>
<td>3(4) opt lab inc. or*</td>
</tr>
<tr>
<td>MAE 251</td>
<td>Thermodynamics</td>
<td>4 or*</td>
</tr>
<tr>
<td>CHE 346</td>
<td>Physical Chemistry</td>
<td>3*</td>
</tr>
<tr>
<td>ECS 325</td>
<td>Mech. of Materials</td>
<td>3</td>
</tr>
<tr>
<td>WRT 205</td>
<td>Writing Studio II</td>
<td>3</td>
</tr>
<tr>
<td>SS/HUM</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

#### Third Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 337</td>
<td>Soil Mech. &amp; Found. I</td>
<td>4</td>
</tr>
<tr>
<td>CIE 341</td>
<td>Environ. Eng. I</td>
<td>3</td>
</tr>
<tr>
<td>CIE 327</td>
<td>Prin. Of Fluid. Mech.</td>
<td>4 or*</td>
</tr>
<tr>
<td>MAE 341</td>
<td>Fluid Mechanics</td>
<td>4*</td>
</tr>
<tr>
<td>SS/HUM</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

#### Fourth Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 352</td>
<td>Water Resources Engineering</td>
<td>4</td>
</tr>
<tr>
<td>CIE 471</td>
<td>Env. Chem. &amp; Anal.</td>
<td>3</td>
</tr>
<tr>
<td>CIE 472</td>
<td>Applied Env. Micro</td>
<td>3</td>
</tr>
<tr>
<td>CIE 555</td>
<td>Haz. Waste Mgt.</td>
<td>3 or*</td>
</tr>
<tr>
<td>CIE 558</td>
<td>Solid Wastes</td>
<td>3 or*</td>
</tr>
<tr>
<td>CIE 561</td>
<td>Air Resources I</td>
<td>3*</td>
</tr>
<tr>
<td>SS/HUM</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Credits</strong></td>
<td></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**Total Credits Required:** 123/124  
* Take one from the group. 
Technical Electives must be CIE courses. Professional elective courses should be minimum 300 level courses from the professional schools and should be selected in consultation with the advisors.
CIVIL ENGINEERING

PREREQUISITE

COREQUISITE

YEAR 1

MAT 295 CALC I
(4)

MAT 296 CALC II
(4)

YEAR 2

MAT 397 CALC III
(4)

MAT 485 DIF. EQ.
(3)

YEAR 3

MAE 341 or CIE 327 FLUID MECH
(4)

ECES 328 ENG. MAT.
(3)

YEAR 4

TECH ELECT.
(3)

PROF. ELECT.
(3)

ECS101
(3)

ECES 104
(3)

CIE 272
(3)

ECS 325 MECH. OF MAT.
(3)

CIE 331 STRUCT. I
(4)

CIE 332 STRUCT. II
(3)

WRT 105
(3)

SS/HUM ELECT.
(3)

PHY 212/222
(4)

SS/HUM ELECT.
(3)

CHE 106/107
(4)

CHE 116/117
(4)

SS/HUM ELECT.
(3)

WRT 205
(3)

SS/HUM ELECT.
(3)

WRT 307
(3)

Effective Fall 1998
(updated 7/15/02)

- Engrg. Science
- Engrg. Core
- Prof. Elective
- Writing

**Course
ECES 222
ELEC 231
MAE 251

Prerequisite
MAT 295
MAT 296
PHY 211

TOTAL CREDITS 123/124
Minors

All Civil and Environmental Engineering students are strongly encouraged to pursue a minor. Many practicing engineers have recently expressed the need for engineering students to diversify their curriculum in order to successfully compete in the job market. Minors broaden and enhance your educational experience, as well as increase your employability. Minors can easily fit into your schedule. In many cases minors can be obtained without a great deal of additional credit hours.

In order to declare a minor:
1. Obtain a Declaration of a Minor petition*,
2. Obtain the signatures of your advisor, the department or college offering the minor, and your home college dean's office, and
3. Return the completed petition to your home college dean's office.

Official Minors
All current official minors are listed below. Detailed descriptions of requirements may be found in the Undergraduate Course Catalog.

<table>
<thead>
<tr>
<th>Accounting</th>
<th>Italian</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American Studies</td>
<td>Judaic Studies</td>
</tr>
<tr>
<td>American Studies</td>
<td>Landscape Architecture Studies (ESF)</td>
</tr>
<tr>
<td>Anthropology</td>
<td>Latin American Studies</td>
</tr>
<tr>
<td>Applied Statistics</td>
<td>Leadership Communication</td>
</tr>
<tr>
<td>Architecture</td>
<td>Linguistic Studies</td>
</tr>
<tr>
<td>Biology</td>
<td>Logic</td>
</tr>
<tr>
<td>Chemistry</td>
<td>Management Studies</td>
</tr>
<tr>
<td>Child and Family Studies</td>
<td>Marketing</td>
</tr>
<tr>
<td>Classics</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Cognitive Science</td>
<td>Music Industry</td>
</tr>
<tr>
<td>Communication Sciences and Disorders</td>
<td>Natural Resources and Environmental Policy (ESF)</td>
</tr>
<tr>
<td>Communications Photography</td>
<td>Neuroscience Nonviolent Conflict and Change</td>
</tr>
<tr>
<td>Computational Science</td>
<td>Nutrition</td>
</tr>
<tr>
<td>Computer Engineering</td>
<td>Nutrition Science</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Outdoor Recreation and Tourism Management (ESF)</td>
</tr>
<tr>
<td>Construction Management (ESF)</td>
<td>Philosophy</td>
</tr>
<tr>
<td>Early Childhood</td>
<td>Physics</td>
</tr>
<tr>
<td>Economics</td>
<td>Policy Studies</td>
</tr>
<tr>
<td>Education Studies</td>
<td>Political Science</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>Professional Skills</td>
</tr>
<tr>
<td>Engineering and Computer Science Management</td>
<td>Psychology</td>
</tr>
</tbody>
</table>

* Declaration of a Minor petition is available in the ECS dean's office.
The following minors are thought to be complementary to the Civil or Environmental Engineering major. The courses required for completion of the following minors can also be used to fulfill the professional elective and, in some cases, the Social Sciences/Humanities requirements for your major. This is indicated after the credit requirement for each minor listed, as is any additional credits necessary for completion of the minor.

<table>
<thead>
<tr>
<th>School of Architecture</th>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architecture</strong></td>
<td><strong>ARC/NAS 133</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC/NAS 134</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 194</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 181 or 182</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 393 or ARC/NAS 107</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 394 or ARC/NAS 108</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Two of the following:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC/FIA 331</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 332/FIA 332</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 335/FIA 358</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 336/FIA 359</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 337/FIA 455</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 338/FIA 456</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 431/FIA 454</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 432/FIA 552</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 433/FIA 451</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 435/FIA 457</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 436/FIA 336</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 566</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ARC 500</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>College of Arts and Sciences</th>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economics</strong></td>
<td><strong>Plan One</strong></td>
</tr>
<tr>
<td>18 Credits- 6 credits taken as Professional Electives, 12 credits taken as Social Science Electives.</td>
<td><strong>ECN 101</strong></td>
</tr>
<tr>
<td>The Economics program emphasizes the application of economics to the study of public policy issues and the role of the government in a market economy.</td>
<td><strong>ECN 102</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ECN 301 or ECN 311</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ECN 302</strong></td>
</tr>
<tr>
<td></td>
<td><strong>6 Upper Division Credits</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Plan Two</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ECN 203</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ECN 301 or 311</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ECN 302</strong></td>
</tr>
<tr>
<td></td>
<td>9 Upper Division Credits</td>
</tr>
<tr>
<td>Geography</td>
<td>18 credits of Geography courses, 12 of which must be courses numbered above 300.</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>18 Credits- 6 credits taken as Professional Electives, 12 credits taken as Social Sciences Electives.</td>
<td>This program offers a unique approach to understanding the world by studying people, environments, and problems.</td>
</tr>
<tr>
<td>Geology</td>
<td>19 credits of Geology courses, chosen from courses offered in Earth Systems, Environmental Geology, Paleobiology, and Solid Earth Geology. 12 credits must be courses numbered above 300. GEO 101 (recommended)</td>
</tr>
<tr>
<td>19 Credits- 6 credits taken as Professional Electives, 13 additional credits taken Second, Third, and Fourth Year.</td>
<td>The Geology program allows students to obtain a general education in the science of the Earth.</td>
</tr>
<tr>
<td>Mathematics</td>
<td>MAT 295 MAT 296 MAT 397 MAT 485 Two courses from one of the following subject areas:</td>
</tr>
<tr>
<td></td>
<td>• Algebra- MAT 531 One of MAT 534, MAT 541, or MAT/CIS 545</td>
</tr>
<tr>
<td></td>
<td>• Analysis- Two of MAT 511, MAT 512, MAT 513, or MAT 562</td>
</tr>
<tr>
<td></td>
<td>• Applied Mathematics- Two of MAT 517, MAT 518, or MAT 532</td>
</tr>
<tr>
<td></td>
<td>• Differential Equations: MAT 514,517</td>
</tr>
<tr>
<td></td>
<td>• Geometry- MAT 531, 551 or MAT 551, 554</td>
</tr>
<tr>
<td></td>
<td>• Probability and Statistics- MAT 521, 525 or MAT 521, 526</td>
</tr>
<tr>
<td>21 Credits- 6 credits taken as Professional Electives, 15 credits included in Civil and Environmental Curriculum.</td>
<td>The minor in Mathematics allows students to broaden their mathematical knowledge, while improving their mathematical skills. This minor has a four course, 15 credit core with a two course, 6 credit elective component.</td>
</tr>
<tr>
<td>Policy Studies</td>
<td>PAF 101 ECN 102 or ECN 203 PAF 410</td>
</tr>
<tr>
<td>18 Credits- 6 credits taken as Professional Electives, 6 credits taken as Social Sciences Electives, remaining 6 credits depend on courses chosen from specialization, but can be taken as Social Sciences or Humanities Electives or as additional credits in Fourth Year.</td>
<td>The Policy Studies minor allows students to develop skills in social science research, computer applications, written and oral communications, interpersonal relations, planning management, and problem solving.</td>
</tr>
<tr>
<td></td>
<td>9 Upper Division Credits from Specialization</td>
</tr>
<tr>
<td></td>
<td>• Environment</td>
</tr>
<tr>
<td></td>
<td>• Government and Business</td>
</tr>
<tr>
<td></td>
<td>• Health, Education, and Human Services</td>
</tr>
<tr>
<td></td>
<td>• Society and the Legal System</td>
</tr>
</tbody>
</table>
# Writing

The Writing Program requires 18 credits of coursework for the minor: 15 credits in upper-division writing courses (WRT prefix at the 300 and 400 level), and 3 credits from any course designated as Writing Intensive by the College of Arts & Sciences, or 3 credits from student electives. Writing Intensive courses and elective courses must be approved by the Minor Advocate.

<table>
<thead>
<tr>
<th>Core Courses (9 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRT 301</td>
</tr>
<tr>
<td>WRT 302</td>
</tr>
<tr>
<td>WRT 303</td>
</tr>
<tr>
<td>WRT 307</td>
</tr>
<tr>
<td>WRT 308</td>
</tr>
<tr>
<td>WRT 331</td>
</tr>
<tr>
<td>WRT 340</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Advanced Courses (6 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRT 400</td>
</tr>
<tr>
<td>WRT 407</td>
</tr>
<tr>
<td>WRT 419</td>
</tr>
<tr>
<td>WRT 422</td>
</tr>
<tr>
<td>WRT 424</td>
</tr>
<tr>
<td>WRT 426</td>
</tr>
<tr>
<td>WRT 428</td>
</tr>
<tr>
<td>WRT 440</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Internship or Writing Intensive Course (3 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WRT 331</td>
</tr>
<tr>
<td>WRT 340</td>
</tr>
<tr>
<td>WRT 419</td>
</tr>
<tr>
<td>WRT 430</td>
</tr>
</tbody>
</table>

# L.C. Smith College of Engineering and Computer Science

## Computer Engineering

18 Credits- 6 credits taken as Professional Electives, 3 credits included in Civil and Environmental Curriculum, 9 additional credits taken Second and Fourth Year.

Computer Engineering is a relatively new and expanding discipline. The program gives students a general background in the fields of digital systems, software engineering, and design automation.

<table>
<thead>
<tr>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECS 102</td>
</tr>
<tr>
<td>CSE 281</td>
</tr>
<tr>
<td>CSE 381</td>
</tr>
<tr>
<td>CSE 382</td>
</tr>
<tr>
<td>CSE 482</td>
</tr>
<tr>
<td>CSE 581 or CSE 585</td>
</tr>
</tbody>
</table>

## Computer Science

18 Credits- 6 credits taken as Professional Electives, 3 credits included in Civil and Environmental Curriculum, 9 additional credits taken Second and Fourth Year.

This program weaves together an emphasis on fundamental principles with new developments in computing.

<table>
<thead>
<tr>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 252</td>
</tr>
<tr>
<td>CIS 351</td>
</tr>
</tbody>
</table>

Courses numbered below 199 or between 290 and 299 cannot be included in this minor except for ECS 102, which may be used as part of this minor.

12 Upper Division Credits
### Electrical Engineering

20 Credits- 6 credits taken as Professional Electives, 3 credits included in Civil and Environmental Curriculum, 11 additional credits taken Second and Fourth Year.

Electrical engineering is based on scientific principles governing the motion of charged particles through conductors, semiconductors, or even a vacuum. This program allows students to either choose electives for a broad-based minor or complete a track in a specific concentration area.

<table>
<thead>
<tr>
<th>Course Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ELE 231</td>
</tr>
<tr>
<td>ELE 291</td>
</tr>
<tr>
<td>ELE 232</td>
</tr>
<tr>
<td>ELE 292</td>
</tr>
</tbody>
</table>

12 Credits of junior/senior ELE electives or completion of one of the following tracks:
- VLSI Track
- Electromagnetics Track
- Communications Track
- Controls Track

### Engineering and Computer Science Management

18 Credits- If ECN 101 and ECN 102 are taken- 6 credits taken as Professional Electives, 6 credits as Social Sciences, 6 additional credits taken Third and Fourth Year.

If ACC 204 and ACC 252 are taken- 6 credits taken as Professional Electives, 12 additional credits taken Second, Third and Fourth Year.

This minor is designed to provide ECS students with a relevant non-technical minor.

<table>
<thead>
<tr>
<th>Course Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECS 391</td>
</tr>
<tr>
<td>ECS 392</td>
</tr>
</tbody>
</table>

Two of the following:
- EEE 370
- FIN 301
- SHR 355
- MAR 355

Two of the following:
- ECN 101
- ECN 102
- ACC 204
- ACC 252
- SHR 247

### State University of New York College of Environmental Science and Forestry

#### Construction Management

18 Credits- 6 credits taken as Professional Electives, 12 additional credits taken Second, Third, and Fourth Year.

This minor’s objective is to provide a fundamental understanding of the various methods used to take the design into the field and construct a quality structure in the most effective and efficient manner with minimal environmental impacts.

<table>
<thead>
<tr>
<th>Course Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>WPE 342</td>
</tr>
<tr>
<td>WPE 343</td>
</tr>
<tr>
<td>WPE 453</td>
</tr>
<tr>
<td>WPE 454</td>
</tr>
</tbody>
</table>

Two additional courses chosen from the following (3 credits each)
- WPE 330
- WPE 331
- WPE 335
- WPE 350
- WPE 455

### School of Information Studies

#### Information Management and Technology

18 Credits- 6 credits taken as Professional Electives, 12 additional credits taken Second, Third, and Fourth Year.

<table>
<thead>
<tr>
<th>Course Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IST 195</td>
</tr>
<tr>
<td>IST 335</td>
</tr>
<tr>
<td>IST 355</td>
</tr>
</tbody>
</table>

9 Credits of additional IST courses
This minor increases students’ understanding of information resources and information technology.

### School of Management

#### Management Studies

18 Credits- 6 credits taken as Professional Electives, 12 additional credits taken Second, Third, and Fourth Year.

This program gives students a broad knowledge of the functional areas of management.

<table>
<thead>
<tr>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 204</td>
</tr>
<tr>
<td>FIN 301</td>
</tr>
<tr>
<td>LPP 255</td>
</tr>
<tr>
<td>SHR 355</td>
</tr>
<tr>
<td>MAR 355</td>
</tr>
<tr>
<td>EEE 370</td>
</tr>
</tbody>
</table>

### S.I. Newhouse School of Public Communications

#### Public Communication Studies

18 Credits- 6 credits taken as Professional Electives, 12 additional credits taken Second, Third, and Fourth Year.

This minor allows students to examine how the process of public communications affects society.

<table>
<thead>
<tr>
<th>Required Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM 107</td>
</tr>
<tr>
<td>COM 505 or COM 506</td>
</tr>
<tr>
<td>Four courses from the following categories:</td>
</tr>
<tr>
<td>• Gateway to the Disciplines-</td>
</tr>
<tr>
<td>ADV 206</td>
</tr>
<tr>
<td>PRL 206</td>
</tr>
<tr>
<td>MAG 205</td>
</tr>
<tr>
<td>TRF 235</td>
</tr>
<tr>
<td>• Critical Issues-</td>
</tr>
<tr>
<td>ADV 345</td>
</tr>
<tr>
<td>COM 345</td>
</tr>
<tr>
<td>COM 346</td>
</tr>
<tr>
<td>COM 347</td>
</tr>
<tr>
<td>PRL 345</td>
</tr>
<tr>
<td>RTN/NEW 345</td>
</tr>
<tr>
<td>TRF 345</td>
</tr>
<tr>
<td>• History of Public Communications-</td>
</tr>
<tr>
<td>COM 515</td>
</tr>
<tr>
<td>• Public Communications, Politics, and Society-</td>
</tr>
<tr>
<td>TRF 436</td>
</tr>
<tr>
<td>• Global Public Communications-</td>
</tr>
<tr>
<td>PRL 400</td>
</tr>
<tr>
<td>COM 527</td>
</tr>
<tr>
<td>TRF 560</td>
</tr>
<tr>
<td>• Creators of Public Communications</td>
</tr>
<tr>
<td>TRF 530</td>
</tr>
<tr>
<td>• Open Choice (only one course) any Newhouse course that the student has taken the prerequisites</td>
</tr>
</tbody>
</table>
Co-op and Internship Programs

Cooperative Education Program (Co-op)-
This program offers qualified students the opportunity to combine on-campus study with professional work experience related to their field of study while earning a competitive salary.

Students are eligible if they are enrolled full-time, have completed the sophomore core courses, and have a cumulative grade point average of 2.5 or better. Co-op students work two work blocks during the summer of their sophomore/junior and junior/senior years.

Students work closely with the co-op office staff to identify skills and interests. The staff also works with employers to develop positions that match student interests and education. Past employers include Niagara Mohawk Power Corporation, New York State Department of Transportation, Blasland, Bouck & Lee, and O’Brien & Gere Engineers, Inc.

The co-op program reinforces students’ education while providing practical experience and often leads to a full-time employment offer.

Internship Program-
Internships provide students with learning and hands-on experience in their field. Internships improve both a student’s education and employability. In addition, opportunities exist for monetary compensation during internships.

Internships can be taken for credit through SUIP (Syracuse University Internship Program). More information can be found at http://sumweb.syr.edu:80/suip/fintern.htm or by visiting their office, located at 113 Euclid Avenue.

The Soling Program, located at 113 Euclid Avenue, involves undergraduates in team-oriented problem solving by helping businesses, as well as community and campus organizations with various projects.

The Center for Career Services also has a great deal of internship information, as well as career counselors that can help students find the right position. They are located in 23S Schine Student Center.

Alumni Points of Contact-
Many of our alumni have agreed to serve as points of contact for current students. Points of contact are alumni that are willing to talk with students about internships, careers, and their engineering expertise. All faculty and staff members have the Points of Contact book and would be happy to share it with interested students.
Undergraduate Research Opportunities

Research Experience for Undergraduates (REU)-
The National Science Foundation provides funding for undergraduate students to be given the opportunity to become involved with research projects each summer.

There are REU sites across the country from Maine to California. Each site consists of a group of undergraduates, each of whom are assigned to work on a specific research project at the host institution.

The students work closely with the faculty, post-docs, and graduate students, while socializing with each other at seminars, lunch meetings, and social functions.

Students are granted stipends, and in some cases assistance with housing and travel. More information can be found at http://www.nsf.gov/home/crssprgm/reu/start.htm.

Independent Study-
Students can also create their own research opportunities. Students are encouraged to discuss research opportunities with faculty members.
Study Abroad Opportunities

Syracuse University, through the Division of International Programs Abroad (DIPA) and the College of Engineering and Computer Science offers students in both civil and environmental engineering programs the opportunity to study abroad. Opportunities are also offered through the Global Engineering Education Exchange (Global E³). These opportunities offer students a chance to explore other cultures, through both interaction and travel, while earning academic credits. There are full year, semester, and summer programs available. More information can be found at http://sumweb.syr.edu/dipa/ for DIPA programs, or http://www.iie.org/pgms/global-e3/ for Global E³ programs. Additional information may be obtained by contacting Dr. John LaGraff at jlagraff@syr.edu.

DIPA/ECS

Full Year Program
England- Civil and environmental engineering students earn 32 credits, taking classes at either the City University or University College in London. Students either locate their own housing or live in University assigned flats. The British University year has three terms, beginning the first week of October and ending in late June, with up to four weeks of study and vacation time between terms.

Summer Programs
France- Civil and environmental engineering students can spend a summer at ENSAIS in Strasbourg, France. Engineering courses are offered and students participate in independent study projects in cooperation with the French engineering school.

Italy- Environmental engineering students can spend a summer studying environmental design in Florence, Italy. The program combines studio work and field trips, within and outside of Florence.

Spain- Civil engineering students can spend a summer at Universidad Polytechnica de Madrid. Engineering courses are offered and students participate in independent study projects in cooperation with the Spanish engineering department.

GLOBAL E³

Students studying in Austria, France, or Germany must prove a fluency in German or French or attend an intensive language and culture course before the beginning of the semester. The course is approximately one month long and meets five days a week for five hours a day. The program fee includes food (breakfast and dinner Monday through Friday for the French program), lodging, instruction, and field trips (most trips for the French program). Costs for the language program can be waived for students demonstrating financial need.
**Semester/Full Year Programs**

Germany- Students are enrolled full time at one of eight universities. The academic year begins in October and ends in July.

Austria- Students attend the Technische Universitat Wien. The academic year begins in October and ends in June.

France- Students attend one of four universities. The academic year begins in September and ends in June.
Student Group Activities

Student Advisory Council-
Faculty Advisor- Dr. Eric Lui
Members- 2 student representatives from each class

The student advisory council was formed in 1999.
The role of the student advisory council, comprised of two members from each class, is to
provide feedback to the Department on curriculum, advising, extracurricular activities, and
students' likes, dislikes, wants, and needs. The council meets with the chair of the Department
several times during the school year.

WISE- Women in Science and Engineering-
Faculty Advisors- Dr. Shobha Bhatia and Dr. Cathryn Newton

WISE is a new student group that was formed in 1998.
WISE is dedicated to enhancing the educational experience of women in science and
engineering. Members of WISE organize seminars, featuring prominent women in the fields of
science and engineering. WISE also offers mentoring and advising programs to undergraduate
students in science and engineering.

SWE- Society of Women Engineers-
Faculty Advisor- Dr. Andria Costello
http://web.syr.edu/~swe
Mission: To strengthen and empower women engineering students by:
• educating women about the difficulties facing female engineers,
• creating a sense of identity and community,
• providing resources for women engineers, and
• enhancing leadership and professional skills.

SWE was founded in 1950 and represents 16,000 engineers (both male and female) in the United
States and Puerto Rico.

Students in SWE interact with women engineers through a Her-Stories Speaker series, in which
professional engineers speak about their experiences and offer advice. SWE members also
attend banquets as guests of local companies, which provide excellent networking opportunities.

Female members of SWE are eligible for $150,000 in scholarships.

SWE has organized several workshops to benefit its members. Past topics include stress
management (with a masseur), resume writing and interviewing skills, and applying to graduate
school.
ASCE- American Society of Civil Engineers-
Faculty Advisor- Dr. Eric Lui
www.ecs.syr.edu/organizations/suasce
Mission: ASCE advances professional knowledge and improves the practice of civil engineering as:
- the lead professional organization serving civil engineers and those in related disciplines;
- the focal point for development and transfer of research results, and technical, policy, and managerial information; and
- the catalyst for effective and efficient service through cooperation with other engineering and related organizations.

Founded in 1852, ASCE represents more than 120,000 civil engineers worldwide, and is America’s oldest national engineering society.

Students in ASCE interact with professionals in the Syracuse area to sponsor professional seminars, coordinate field trips to local projects, and cultivate resume writing and job interviewing skills.

Members in ASCE are eligible for $75,000 in fellowships/scholarships.

ASCE’s members put their knowledge to the test through involvement in the Annual Steel Bridge Competition.

ASCE also has many social functions, including dances and mixers.

NSBE- National Society of Black Engineers-
http://web.syr.edu/~nsbesu
Mission: To increase the number of culturally responsible Black engineers who excel academically, succeed professionally, and positively impact the community.

The NSBE, founded in 1975, represents more than 10,000 engineers worldwide, and is the largest student run organization in the country.

The NSBE interacts with professionals in the Syracuse area through professional presentations.

Members of NSBE are eligible for over $300,000 in scholarships and awards.

NSBE members organize workshops, including topics such as time management, financial planning, and stress relief, as well as social activities, including bowling, roller skating, and movie nights.
**SHPE- Society of Hispanic Professional Engineers**  
Mission: Our mission is to achieve educational, economic, and social equality for Hispanic people by supporting the development of Hispanic engineers and scientists.

The Society of Hispanic Professional Engineers (SHPE) was founded in 1974.

SHPE provides both financial and academic aid through scholarship information, tutoring, and access to old exam files.

**Chi Epsilon- National Civil and Environmental Honor Society-**  
Faculty Advisor- Dr. Dawit Negussey  
*http://uplink.syr.edu/CIE/chi.html*  
Chi Epsilon promotes exemplary character, scholarship, practicality, and sociability as essential elements in the training and development of civil and environmental engineering professionals.

Chi Epsilon was founded in 1952 and has initiated over 65,000 members.

Students with junior or senior standing and an outstanding academic record, as well as leadership potential, are eligible to become members of Chi Epsilon.

Members of Chi Epsilon are eligible for both scholarships and district awards, which are sponsored by the national chapter.

Chi Epsilon offers free tutoring to students of all engineering disciplines, as well as sponsors tours to local engineering firms and guest speakers.

**Theta Tau- Professional Engineering Fraternity-**  
*http://www.mame.syr.edu/~theatatau*  
Theta Tau stresses the importance of high professional ethics and exemplary practices, as well as a strong fraternal bond.

Theta Tau was founded in 1904 and has initiated over 28,000 members.

Male students in any branch of engineering are eligible for membership in Theta Tau.

The fraternity presents awards for both outstanding personal and chapter achievement.

Theta Tau organizes many activities, including brother bonding experiences and the annual Halloween party with Alpha Omega Epsilon, Theta Tau’s sister sorority.
Alpha Omega Epsilon- Professional and Social Engineering Sorority-
http://www.angrifire.com/ny/ZETA
Mission: To provide friendship, leadership, and professionalism to all members of Alpha Omega Epsilon.

Alpha Omega Epsilon was founded in 1983 and has eight chapters.

Female students in any branch of engineering are eligible for membership in Alpha Omega Epsilon.

Alpha Omega Epsilon is involved in both social and community service activities in the Syracuse area. Many of their activities are coordinated with their brother fraternity, Theta Tau.
Scholarships and Awards

University Scholarships-
Remembrance Scholarship-
In December 1988, the Syracuse University community suffered a tragic loss when 35 of its undergraduate students perished in a terrorist bombing over Lockerbie, Scotland. Each year, these students are memorialized through the selection of 35 Remembrance Scholars. Selected in a University-wide competition, scholars represent the best and brightest of Syracuse University with outstanding accomplishments in scholarship, service, leadership activities, and citizenship.

Outside Scholarships-
There are many scholarships available to students from outside the University. These scholarship awards vary, as do the eligibility requirements.

Students interested in applying for outside scholarships can receive assistance in their search from the Scholarship Office located at 216 Archbold. The scholarship office staff has compiled binders grouped by major. They also have scholarship books that students can browse. Students can sign up for the Scholarship listserv and search for scholarships online at http://sumweb.syr.edu/financial_aid/fscholarship.htm.

Students can also research scholarships over the Internet. There are many sites listing available scholarships. At www.freschinfo.com you can fill out a PowerSearch information form. PowerSearch then searches through the database for scholarships that match your information. A personal scholarship homepage is set up for you that you can bookmark. New and updated scholarships are automatically added to your personal homepage. For chosen scholarships, Freschinfo will send you a reminder email 30 days before the scholarship deadline.

Senior Awards-
ECS Class Marshal-
Two seniors are selected each year as Class Marshals to lead the academic procession of ECS graduates at Commencement. Both students represent the ideals of the graduating class and are selected on the basis of their academic achievements, scholarly activities, service to others, extracurricular activities, and collegiality.

The George M. Berry Award for Best All-Around Senior-
Every year, the college community is proud to honor the ECS student who best combines excellence in academics with distinguished contributions to the University and college community through leadership, service, and extracurricular activities.

The George M. Berry Award for Outstanding Design Achievement-
This award is presented to the ECS student who has demonstrated outstanding creativity and tenacity in developing an original design solution to a technical problem.
The Yueh-Ying Hu Memorial Award-
   This award is presented to the graduating woman who best exemplifies the spirit, determination, and academic excellence demonstrated by Ms. Yueh-Ying Hu.

The Earl H. DeVoe Prize for Outstanding Undergraduate Research-
   The DeVoe prize is presented to an ECS student who has made a significant scholarly research contribution as an undergraduate.

The Louis N. DeMartini Award for Innovative Undergraduate Research-
   This award, which is endowed by Mrs. Gloria DeMartini Gioia in memory of her father, Louis N. DeMartini, is presented to an undergraduate researcher who has made a particularly innovative contribution to his or her scholarly discipline.

The ECS Alumni Association Service Award-
   Every year, the Alumni Association honors a graduating senior who has performed extraordinary service on behalf of the college community.

The Richard A. Bernard Award-
   This award, which is endowed by Jean I. Bernard in memory of her husband, is presented to the ECS student who has shown awareness of the needs of physically challenged individuals and the creative application of engineering approaches to solving the challenges posed by those functional and practical needs.

The John Burch McMorrnan ’22 Award-
   This award is presented annually to an outstanding civil engineering senior based upon academic performance and extracurricular activities.

Outstanding Achievement Award in Environmental Engineering-
   This award is presented to a senior with outstanding academic credentials who has demonstrated leadership in extracurricular activities.

Civil and Environmental Faculty Award-
   This award is presented in recognition of a graduating student’s outstanding contributions and service to the Department of Civil and Environmental Engineering.
Becoming a Licensed Professional Engineer

You have made the decision to become an engineer and have started down the path toward your dream. Congratulations! Now it's time to make a second decision- the decision to follow the path to professional licensure.

Professional licensure can open more doors than a degree alone can. You will become more promotable and enjoy higher wages. Professional engineers (P.E.'s) can expect salaries 15% to 25% higher than those whom are not licensed. You may even have the opportunity to hold positions not open to those without these distinguished designations. However, what does being a licensed professional mean?

It means you have passed two exams and proven to the public and your peers that you have fulfilled the education, examination, and experience requirements needed to become a licensed professional. As a licensed professional you can offer your engineering services directly to the public. A license earns you a higher level of respect and credibility as well as the opportunity for a more diverse career.

Which exams should I take?
The first exam you'll take is the Fundamentals Examination (FE or EIT). This exam is offered in April and October every year. Most students take the exam right before graduation or soon after while the information is still fresh in their minds. Once you pass the exam, you are classified as an intern and can begin your journey toward becoming professionally licensed. Typically, after four years of professional experience you can take the second exam- the Principles and Practice of Engineering (PE). Most PE disciplines are offered in both April and October, but some are offered only in October. After passing the PE and satisfying the requirements of your local board, you can use the distinguished P.E. designation.
Future Examination Dates

2004........April 16, (PE), 17 (FE) ....... October 29, (PE), 30 (FE)
2005........April 15, (PE), 16 (FE) ........ October 28, (PE), 29 (FE)
2006........April 21, (PE), 22 (FE) ........ October 27, (PE), 28 (FE)
2007........April 20, (PE), 21 (FE) ........ October 26, (PE), 27 (FE)
2008........April 11, (PE), 12 (FE) ........ October 24, (PE), 25 (FE)
2009........April 24, (PE), 25 (FE) ........ October 23, (PE), 24 (FE)

What Does the FE Exam Cover?
The morning session consists of 120 questions that counts one point each, for a total of 120 points.

<table>
<thead>
<tr>
<th>Topic</th>
<th>% of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>9%</td>
</tr>
<tr>
<td>Computers</td>
<td>6%</td>
</tr>
<tr>
<td>Dynamics</td>
<td>7%</td>
</tr>
<tr>
<td>Electrical Circuits</td>
<td>10%</td>
</tr>
<tr>
<td>Engineering Economics</td>
<td>4%</td>
</tr>
<tr>
<td>Ethics</td>
<td>4%</td>
</tr>
<tr>
<td>Fluid Mechanics</td>
<td>7%</td>
</tr>
<tr>
<td>Materials Science/Structure of Matter</td>
<td>7%</td>
</tr>
<tr>
<td>Mathematics</td>
<td>20%</td>
</tr>
<tr>
<td>Mechanics of Materials</td>
<td>7%</td>
</tr>
<tr>
<td>Statics</td>
<td>10%</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>9%</td>
</tr>
</tbody>
</table>

The afternoon session consists of 60 questions that count two points each, for a total of 120 points. You have a choice of selecting a general afternoon session or a discipline-specific session. The general exam covers the same subject topics as the morning session, with a different percentage breakdown, and obviously more involved questions. The civil engineering discipline specific exam covers the following content breakdown:

<table>
<thead>
<tr>
<th>Topic</th>
<th>% of Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers &amp; Numerical Methods</td>
<td>10%</td>
</tr>
<tr>
<td>Construction Management</td>
<td>5%</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>10%</td>
</tr>
<tr>
<td>Hydraulics &amp; Hydrologic Systems</td>
<td>10%</td>
</tr>
<tr>
<td>Legal &amp; Professional Aspects</td>
<td>5%</td>
</tr>
<tr>
<td>Soil Mechanics &amp; Foundations</td>
<td>10%</td>
</tr>
<tr>
<td>Structural Analysis</td>
<td>10%</td>
</tr>
<tr>
<td>Structural Design</td>
<td>10%</td>
</tr>
<tr>
<td>Surveying</td>
<td>10%</td>
</tr>
<tr>
<td>Transportation Facilities</td>
<td>10%</td>
</tr>
<tr>
<td>Water Purification &amp; Treatment</td>
<td>10%</td>
</tr>
</tbody>
</table>

A more complete breakdown of the FE Exam Content can be found at: http://www.ncees.org
Student Resources

Office of Student Assistance
306 Steele Hall
x-HELP
http://students.syr.edu/depts/assist

The Office of Student Assistance administers several comprehensive academic support programs. These programs have eligibility requirements that include academic and economic need. The programs are the Higher Education Opportunity Program (HEOP), Student Support Services Program (SSSP), and the Science and Technology Entry Program (STEP) in cooperation with the Syracuse City School District. Services provided include academic advising, personal and career counseling, and financial aid advocacy. These services are primarily available to students enrolled in these programs.

CSTEP
804 University Ave. Suite 303
x-2622
http://cstep.syr.edu

The Collegiate Science and Technology Entry Program (CSTEP) is an enrichment program designed to help students enhance their experience at SU through participation in specially constructed activities. In order to participate, a student must be a New York state resident, a member of a minority or disadvantaged group, and a citizen or permanent resident alien.

Learning Resource Center
Suite 220, 111 Waverly Ave.
x-2005
http://www.tutoring.syr.edu

The Learning Resource Center provides individual and group tutorial services in undergraduate courses. Students seeking help with classwork should contact the Deans' Offices of their individual Schools and Colleges for assistance and advice.

The Health Center
111 Waverly Ave.
x-2666
http://students.syr.edu/dept/health

The Health Center offers full medical care to Syracuse University Students. Services include everything from physicals to cold clinics. The clinic is staffed by nurses 24 hours
a day. Physicians and nurse practitioners are available 8:30 am to 5:00 pm during the week. Appointments are not necessary, but can be made.

Counseling Center
200 Walnut Place.
x-4715
http://students.syr.edu/counselingcenter

The Counseling Center provides evaluation, counseling and psychotherapy services for a wide range of emotional/psychological problems and concerns. Services include: short-term individual and group counseling/psychotherapy, crisis intervention, specialized outreach/educational programs in alcohol and mental health issues, readmission evaluations, family consultations and referrals. Emergency on-call services during evenings and weekends. Appointments are necessary. All information is strictly confidential.

Options
306 Steele Hall
x-4234 (confidential)
http://sumweb.syr.edu/health/OPTIONS.htm

The Options program offers counseling, support services for students needing assistance with alcohol and other drug problems.

Goldberg Couple and Family Therapy Center
008 Slocum Hall
x-3023
http://students.syr.edu/depts/cpcs/cinv/goldberg.shtml

Individual, couple and family therapy is available year round to members and non-members of the Syracuse University community. The center specializes in relationship issues with a sensitivity to the impact of gender, race, age, ethnicity and sexual orientation. Therapists are advanced-level graduate students in the Marriage and Family Therapy Program. Appointments are necessary. Office hours are 8:30 a.m.- 7:00 p.m., Monday-Friday. Please call for fee schedule.

Chaplains
Lower Level, Hendricks Chapel
x-2901
http://hendricks.syr.edu

The Hendricks Chapel staff members and chaplains serving the University community have a wide range of experience in personal and group counseling including grief counseling, spiritual guidance, premarital and marital counseling, sexuality, abortion, drugs, and family problems, as well as personal and spiritual difficulties. Appointments
can be arranged with the chaplains or staff members directly, or through the Coordinator of Counseling.

**Psychological Services Center**  
Room 205, 804 University Ave.  
x-3595

Individual and couples therapy is available by appointment from the Psychological Services Center. There is no fee for students who have paid their health fee. The staff is composed of advanced graduate students in clinical and school psychology under the supervision of New York State licensed psychologists. Confidentiality is strictly protected in accordance with the code of ethics of the American Psychological Association.

The Center offers assistance for most psychological problems including (but not limited to) anxiety, depression, eating disorders (including anorexia and bulimia), sexual functioning, relationship difficulties, and a range of adjustment problems. A full range of services for children of students is also available.

**R.A.P.E. Center**  
111 Waverly Ave.  
x-RAPE  
[http://students.syr.edu/rapecenter](http://students.syr.edu/rapecenter)

The R.A.P.E. Center provides rape and sexual assault crisis intervention, counseling and prevention programs for the SU and ESF communities. Services are available at no charge to all SU and ESF students and employees. Staff members are available in the office during business hours and are on-call 24 hours a day, seven days a week for emergency situations. No appointment is necessary. All information is strictly confidential.

**Student Legal Services**  
760 Ostrom Ave.  
x-4532

Student Legal Services provides free legal advice, on every topic from parking tickets to divorce, to Syracuse University Students. They also provide free legal representation in the Syracuse City Court on a case-by-case basis. The offices are open during business hours, please call for an appointment.

**Student Employment Services**  
210 Steele Hall  
x-2268  
[http://seo.syr.edu](http://seo.syr.edu)

The Student Employment Services maintain information about ALL student jobs: Positions on and off campus, work study and non-work study, and community service.
Students registered for six or more hours may access job information through JOBNET, on the campus-wide information system. The office also assists students with job placement, and answers questions concerning job training and work-related problems.

**English Language Institute**  
Syracuse University Continuing Education  
700 University Ave., Room 207  
x-2390  
Email: elimail@uc.syr.edu  

The English Language Institute offers a program of instruction to international students in English grammar, writing, reading, and speaking/listening skills, for four hours per day, five days a week. There are two semester-long sessions yearly and one six-week summer session. In addition, special activities such as home visits, trips, films, and University lectures help expose students to situations that make it easier for them to attain proficiency in English.  

SU domestic students and student organizations can volunteer as conversation partners, head conversation/interest groups, or engage in 50/50 English and another language with ELI students for up to one hour a week.

**Slutzker Center for International Services**  
310 Walnut Place  
x-2457  
http://international.syr.edu  

This center advises international students and scholars on a variety of topics: immigration, visas, passports, insurance, employment authorization, travel, and dependents' concerns. Counseling and support in academic, social, financial and personal areas are also provided. A special international orientation program is held at the beginning of each semester. During the academic year, the center offers many additional programs, which aid in cultural adjustment, getting to know Americans, and learning about the Syracuse community. The center also works with AISSU, the Association of International Students at Syracuse University.

**Center for Career Services**  
235 Schine Student Center  
x-3616  
http://student.syr.edu/depts/careerservices  

The Center for Career Services gives students advice on resume and cover letter writing, interviewing, researching employers and careers, networking, and preparing for graduate school. Students can attend workshops on the aforementioned topics or can meet individually with a career counselor. The center organizes career fairs in both fall and spring, and also organizes on campus interviews with a wide variety of companies.
The Opportunity Center
123 Link Hall
x-2239
http://uplink.syr.edu/ECS/Careers/index/body.html

The Opportunity Center organizes recruitment opportunities for all ECS students. Many outstanding companies have visited Syracuse University to recruit ECS graduates. The Opportunity Center also offers assistance with writing and formatting resumes and cover letters.
**Frequently Asked Questions**

1. **Does a student need to take the SS or HUM courses in a sequence to satisfy the SS/HUM requirement?**
   No, the SS or HUM courses do not need to be taken in a sequence. However, it is strongly recommended that some of these SS/HUM courses be taken in a two-course sequence to satisfy the NY State requirement of ‘breadth and depth’ in liberal arts education for Bachelor of Science in Engineering degrees. For instance, if a student has taken ECN203, it is advisable for him/her to take ECN204.

2. **Can a student use ROTC courses to satisfy the SS/HUM requirement?**
   No, unless the ROTC courses in question have the approved SS/HUM prefixes (see the prefix list on page 5).

3. **Can ECS222-Dynamics, ELE231-Electrical Engineering Fundamentals I, or MAE251-Thermodynamics be used as Professional electives?**
   No, because they are not numbered 300 or above.

4. **Can language courses be used as Professional electives?**
   No, they can only be used as HUM electives.

5. **Can ROTC courses be used as Professional electives?**
   No, unless they are offered through the list of Schools/Colleges and Departments given in the answer to Question 2 and are numbered 300 or above.

6. **Can Independent Studies be used as Professional electives?**
   Yes, if they are registered as 300 or above in the approved list of Schools/Colleges or Departments, and endorsed by the student’s advisor, the instructor and the department chair.

7. **What are Technical electives?**
   Technical electives are upper level courses (courses numbered 300 and above) with the CIE prefix. Courses that are closely related to Civil or Environmental Engineering but without the CIE prefix can be used as Technical electives only through petition.

8. **Can Independent Studies be used as Technical Electives?**
   Yes, if they are registered as CIE 490, and approved by the student’s advisor, the instructor and the department chair.

9. **Can a student take ECS325-Mechanics of Materials and CIE331-Structures I concurrently?**
   No, ECS325 is a prerequisite for CIE331. Even if a student had registered for ECS325 in the past but for one reason or another dropped or withdrew from the course, he/she should not be advised to take the two concurrently.
10. Can a student take CIE433-Structures III without CIE332-Structures II?
Yes, the prerequisite for CIE433 is CIE331-Structures I. CIE332 is NOT a prerequisite for CIE433.

11. What is the difference between the course sequence WRT105, WRT205 and ENG207, ENG211, ENG213?
WRT105 and WRT205 are for students whose native language is English. ENG207, ENG211 and ENG213 are for students whose native language is not English. It is possible for students whose native language is not English to take WRT105 and WRT205 in place of ENG207, ENG211 and ENG213, but they must get approval from the director of the Writing Program. Students whose native language is English can not take ENG207, ENG211 and ENG213 in place of WRT105 and WRT205.

12. Must a student enroll in the designated discipline specific WRT307 section?
To get the most out of WRT307, a student should enroll in the discipline specific section of WRT307. Students who attended the English Language Institute (ELI) prior to enrollment are strongly encouraged to register for the special WRT307 section. However, if there are time conflicts or other schedule problems, a student can register for other WRT307 sections.

13. Are there designated minors that a student can take?
A list of official minors is given in the SU Bulletin-Undergraduate Course Catalog. The list is updated periodically when new minors are approved (or dropped). The required coursework for each minor is described in the Bulletin. (Also see the information in this handbook).

14. Can an undergraduate student take 600 level graduate courses?
An undergraduate student can take 600 level graduate courses by petition. However, no undergraduate student is allowed to take any 700 level or above graduate courses.

15. Can a student take courses outside of SU to count toward his/her degree?
Yes, provided that the course credits and content are comparable to those of the SU course and that a petition is filed and approved. Also, the student must obtain a grade of C or better for the course to be transferable. Note that only the course credits, but not the course grade, will be accepted. Courses taken outside of SU will not be used to compute the student’s GPA, nor will it be used to flag any grades on the student’s transcript.

16. Can a student enroll through University College (UC) to complete his/her degree?
Yes, especially if the student is only one or two courses short of satisfying the degree requirement. Enrolling through UC allows the student to pay the UC tuition rate, which is based on the number of credits enrolled. However, the student will lose his/her full time status, which may affect the terms of his/her financial aid.
17. Can a student apply course credits beyond the required 123/124 credit hours toward a graduate degree?
   Yes, if those additional courses are graduate level courses pertinent to the graduate degree that the student is seeking. Most graduate schools accept up to six credit hours of transfer credits toward a graduate degree. The student needs to receive a grade of B or better before the course can be accepted for graduate credits.

18. Can a student register for less than 12 credit hours in a given semester?
   If a student is an American student, he/she can register for less than 12 hours of coursework in a given semester. However, by doing so the student becomes a part-time student and this may affect the terms of his/her financial aid. If the student is an international student on F-1 visa, registering for less than 12 hours in a given semester is a violation of the U.S. Immigration Law. To ensure that no problem will arise, you should contact the Office of International Services (OIS) for assistance.

19. Is a student required to repeat courses with D grades?
   The college has no requirement for students to repeat courses with Ds. However, depending on the course and the circumstances, it may be advisable for a student to repeat a low grade course. For instance, if the course is an important prerequisite for the discipline that the student is pursuing, it is probably a good idea to advise the student to repeat the course.

20. What does flagging a course mean?
   If a student receives a low grade for a course taken at SU, he/she can repeat the same course at SU. The new grade received for the course will be used in place of the old grade to compute the student’s GPA. However, it should be noted that even though the old grade will not be used to compute GPA, it will remain on the student’s transcript.

21. Is ECS101-Introduction to Engineering required for transfer students?
   It depends on the situation. If the transfer student knows how to use the computer as well as software for drafting, spreadsheet and math (e.g., AutoCAD, EXCEL, Mathcad, MATLAB, etc.), he/she probably does not need to take ECS101. He/she should be advised to petition to apply any unused math, science, engineering or technology credits toward ECS101. If there are no unused math, science, engineering or technology credits, he/she should be advised to take a math/science/engineering course that is appropriate for his/her discipline and use the credits for ECS101.

22. Is ECS104-Engineering Computational tools required for transfer students?
   ECS104 is a course on numerical methods and programming concepts. If the student has taken a course that addresses these topics, he/she should be able to receive transfer credits for ECS104 (assuming a course grade of C or better if the course was taken outside of SU). If no transfer credits were given to the student by the recorder, chances are the student need to take ECS104.
23. **What happens if the number of credits of a course taken by a transfer student from another institution is less than that of a similar SU course?**

One way to remedy the discrepancy is to advise the student to take an independent study for the number of credits that are short. For instance, a student has taken an introductory structural analysis course for 3 credits in another institution. That course, by itself, can not be used to satisfy the requirement for CIE331-Structures I, which is a 4-credit course. In this scenario, advise the student to take a 1-credit independent study with the instructor of CIE331. The 3-credit course plus this 1-credit independent study can now be used to satisfy the requirement for CIE331.
National Society of Professional Engineers  
Code of Ethics for Engineers

Preamble

Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct.

I. Fundamental Canons

Engineers, in the fulfillment of their professional duties, shall:

1. Hold paramount the safety, health and welfare of the public.
2. Perform services only in areas of their competence.
3. Issue public statements only in an objective and truthful manner.
4. Act for each employer or client as faithful agents or trustees.
5. Avoid deceptive acts.
6. Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.

II. Rules of Practice

1. Engineers shall hold paramount the safety, health, and welfare of the public.
   a. If engineers' judgment is overruled under circumstances that endanger life or property, they shall notify their employer or client and such other authority as may be appropriate.
   b. Engineers shall approve only those engineering documents that are in conformity with applicable standards.
   c. Engineers shall not reveal facts, data or information without the prior consent of the client or employer except as authorized or required by law or this Code.
   d. Engineers shall not permit the use of their name or associate in business ventures with any person or firm that they believe are engaged in fraudulent or dishonest enterprise.
   e. Engineers having knowledge of any alleged violation of this Code shall report thereon to appropriate professional bodies and, when relevant, also to public authorities, and cooperate with the proper authorities in furnishing such information or assistance as may be required.

2. Engineers shall perform services only in the areas of their competence.
   a. Engineers shall undertake assignments only when qualified by education or experience in the specific technical fields involved.
   b. Engineers shall not affix their signatures to any plans or documents dealing with subject matter in which they lack competence, nor to any plan or document not prepared under their direction and control.
c. Engineers may accept assignments and assume responsibility for coordination of an entire project and sign and seal the engineering documents for the entire project, provided that each technical segment is signed and sealed only by the qualified engineers who prepared the segment.

3. Engineers shall issue public statements only in an objective and truthful manner.
   a. Engineers shall be objective and truthful in professional reports, statements, or testimony. They shall include all relevant and pertinent information in such reports, statements, or testimony, which should bear the date indicating when it was current.
   b. Engineers may express publicly technical opinions that are founded upon knowledge of the facts and competence in the subject matter.
   c. Engineers shall issue no statements, criticisms, or arguments on technical matters that are inspired or paid for by interested parties, unless they have prefaced their comments by explicitly identifying the interested parties on whose behalf they are speaking, and by revealing the existence of any interest the engineers may have in the matters.

4. Engineers shall act for each employer or client as faithful agents or trustees.
   a. Engineers shall disclose all known or potential conflicts of interest that could influence or appear to influence their judgment or the quality of their services.
   b. Engineers shall not accept compensation, financial or otherwise, from more than one party for services on the same project, or for services pertaining to the same project, unless the circumstances are fully disclosed and agreed to by all interested parties.
   c. Engineers shall not solicit or accept financial or other valuable consideration, directly or indirectly, from outside agents in connection with the work for which they are responsible.
   d. Engineers in public service as members, advisors, or employees of a governmental or quasi-governmental body or department shall not participate in decisions with respect to services solicited or provided by them or their organizations in private or public engineering practice.
   e. Engineers shall not solicit or accept a contract from a governmental body on which a principal or officer of their organization serves as a member.

5. Engineers shall avoid deceptive acts.
   a. Engineers shall not falsify their qualifications or permit misrepresentation of their or their associates' qualifications. They shall not misrepresent or exaggerate their responsibility in or for the subject matter of prior assignments. Brochures or other presentations incident to the solicitation of employment shall not misrepresent pertinent facts concerning employers, employees, associates, joint venturers, or past accomplishments.
   b. Engineers shall not offer, give, solicit or receive, either directly or indirectly, any contribution to influence the award of a contract by public authority, or which may be reasonably construed by the public as having the effect of intent to influencing the awarding of a contract. They shall not offer any gift or other
valuable consideration in order to secure work. They shall not pay a commission, percentage, or brokerage fee in order to secure work, except to a bona fide employee or bona fide established commercial or marketing agencies retained by them.

III. Professional Obligations

1. Engineers shall be guided in all their relations by the highest standards of honesty and integrity.
   a. Engineers shall acknowledge their errors and shall not distort or alter the facts.
   b. Engineers shall advise their clients or employers when they believe a project will not be successful.
   c. Engineers shall not accept outside employment to the detriment of their regular work or interest. Before accepting any outside engineering employment they will notify their employers.
   d. Engineers shall not attempt to attract an engineer from another employer by false or misleading pretenses.
   e. Engineers shall not actively participate in strikes, picket lines, or other collective coercive action.
   f. Engineers shall not promote their own interest at the expense of the dignity and integrity of the profession.

2. Engineers shall at all times strive to serve the public interest.
   a. Engineers shall seek opportunities to participate in civic affairs; career guidance for youths; and work for the advancement of the safety, health and well-being of their community.
   b. Engineers shall not complete, sign, or seal plans and/or specifications that are not in conformity with applicable engineering standards. If the client or employer insists on such unprofessional conduct, they shall notify the proper authorities and withdraw from further service on the project.
   c. Engineers shall endeavor to extend public knowledge and appreciation of engineering and its achievements.

3. Engineers shall avoid all conduct or practice that deceives the public.
   a. Engineers shall avoid the use of statements containing a material misrepresentation of fact or omitting a material fact.
   b. Consistent with the foregoing, Engineers may advertise for recruitment of personnel.
   c. Consistent with the foregoing, Engineers may prepare articles for the lay or technical press, but such articles shall not imply credit to the author for work performed by others.

4. Engineers shall not disclose, without consent, confidential information concerning the business affairs or technical processes of any present or former client or employer, or public body on which they serve.
a. Engineers shall not, without the consent of all interested parties, promote or arrange for new employment or practice in connection with a specific project for which the Engineer has gained particular and specialized knowledge.
b. Engineers shall not, without the consent of all interested parties, participate in or represent an adversary interest in connection with a specific project or proceeding in which the Engineer has gained particular specialized knowledge on behalf of a former client or employer.

5. Engineers shall not be influenced in their professional duties by conflicting interests.
a. Engineers shall not accept financial or other considerations, including free engineering designs, from material or equipment suppliers for specifying their product.
b. Engineers shall not accept commissions or allowances, directly or indirectly, from contractors or other parties dealing with clients or employers of the Engineer in connection with work for which the Engineer is responsible.

6. Engineers shall not attempt to obtain employment or advancement or professional engagements by untruthfully criticizing other engineers, or by other improper or questionable methods.
a. Engineers shall not request, propose, or accept a commission on a contingent basis under circumstances in which their judgment may be compromised.
b. Engineers in salaried positions shall accept part-time engineering work only to the extent consistent with policies of the employer and in accordance with ethical considerations.
c. Engineers shall not, without consent, use equipment, supplies, laboratory, or office facilities of an employer to carry on outside private practice.

7. Engineers shall not attempt to injure, maliciously or falsely, directly or indirectly, the professional reputation, prospects, practice, or employment of other engineers. Engineers who believe others are guilty of unethical or illegal practice shall present such information to the proper authority for action.
a. Engineers in private practice shall not review the work of another engineer for the same client, except with the knowledge of such engineer, or unless the connection of such engineer with the work has been terminated.
b. Engineers in governmental, industrial, or educational employ are entitled to review and evaluate the work of other engineers when so required by their employment duties.
c. Engineers in sales or industrial employ are entitled to make engineering comparisons of represented products with products of other suppliers.

8. Engineers shall accept personal responsibility for their professional activities, provided, however, that Engineers may seek indemnification for services arising out of their practice for other than gross negligence, where the Engineer's interests cannot otherwise be protected.
a. Engineers shall conform with state registration laws in the practice of engineering.
b. Engineers shall not use association with a nonengineer, a corporation, or partnership as a "cloak" for unethical acts.

9. Engineers shall give credit for engineering work to those to whom credit is due, and will recognize the proprietary interests of others.
   a. Engineers shall, whenever possible, name the person or persons who may be individually responsible for designs, inventions, writings, or other accomplishments.
   b. Engineers using designs supplied by a client recognize that the designs remain the property of the client and may not be duplicated by the Engineer for others without express permission.
   c. Engineers, before undertaking work for others in connection with which the Engineer may make improvements, plans, designs, inventions, or other records that may justify copyrights or patents, should enter into a positive agreement regarding ownership.
   d. Engineers' designs, data, records, and notes referring exclusively to an employer's work are the employer's property. Employer should indemnify the Engineer for use of the information for any purpose other than the original purpose.

As Revised July 1996

"By order of the United States District Court for the District of Columbia, former Section 11(c) of the NSPE Code of Ethics prohibiting competitive bidding, and all policy statements, opinions, rulings or other guidelines interpreting its scope, have been rescinded as unlawfully interfering with the legal right of engineers, protected under the antitrust laws, to provide price information to prospective clients; accordingly, nothing contained in the NSPE Code of Ethics, policy statements, opinions, rulings or other guidelines prohibits the submission of price quotations or competitive bids for engineering services at any time or in any amount."

Statement by NSPE Executive Committee

In order to correct misunderstandings which have been indicated in some instances since the issuance of the Supreme Court decision and the entry of the Final Judgment, it is noted that in its decision of April 25, 1978, the Supreme Court of the United States declared: "The Sherman Act does not require competitive bidding."

It is further noted that as made clear in the Supreme Court decision:

1. Engineers and firms may individually refuse to bid for engineering services.
2. Clients are not required to seek bids for engineering services.
3. Federal, state, and local laws governing procedures to procure engineering services are not affected, and remain in full force and effect.
4. State societies and local chapters are free to actively and aggressively seek legislation for professional selection and negotiation procedures by public agencies.
5. State registration board rules of professional conduct, including rules prohibiting competitive bidding for engineering services, are not affected and remain in full force and effect. State registration boards with authority to adopt rules of professional conduct may adopt rules governing procedures to obtain engineering services.

6. As noted by the Supreme Court, "nothing in the judgment prevents NSPE and its members from attempting to influence governmental action . . ."

NOTE: In regard to the question of application of the Code to corporations vis-à-vis real persons, business form or type should not negate nor influence conformance of individuals to the Code. The Code deals with professional services, which services must be performed by real persons. Real persons in turn establish and implement policies within business structures. The Code is clearly written to apply to the Engineer and items incumbent on members of NSPE to endeavor to live up to its provisions. This applies to all pertinent sections of the Code.

**Engineers' Creed**

As a Professional Engineer, I dedicate my professional knowledge and skill to the advancement and betterment of human welfare.

I pledge:

- To give the utmost of performance;
- To participate in none but honest enterprise;
- To live and work according to the laws of man and the highest standards of professional conduct;
- To place service before profit, the honor and standing of the profession before personal advantage, and the public welfare above all other considerations.

In humility and with need for Divine Guidance, I make this pledge.

*Adopted by National Society of Professional Engineers, June 1954*