

# College of Engineering & Computer Science Syracuse University

Undergraduate Student Handbook  
2017-2018





September 2017

Dear First-Year Students:

On behalf of the students, faculty, and staff of the College of Engineering and Computer Science, I am delighted to have this opportunity to welcome you into our community. We are all looking forward to working alongside you to help make sure that your experience as an ECS student is both rewarding and successful.

The next several years will be a challenging and exciting time for you. As you embark on an ECS undergraduate program that will help prepare you to become a future leader in engineering and computer science, you can look forward to receiving the enthusiastic support of faculty and staff who are firmly committed to your success.

Your success as an ECS student will be based, in part, upon the choices that you make over the course of the next several years. With that in mind, we have assembled this handbook for your use. Please think of this handbook as a resource guide that is available to you and your faculty advisor as you meet to discuss your academic goals and plans.

Inside this handbook, you will find information on rules, regulations, procedures, and worksheets that relate to your program of study. These materials will help you to keep track of your academic progress and will also provide you with important guidelines for registration, advising, and program-of-study adjustments. You will find that sections of this handbook refer you to a separate document, *The University Bulletin: Academic Rules and Regulations*, which is available online <http://coursecatalog.syr.edu/index.php> .

Perhaps the most important and valuable resource that is available to you is the assistance and support that you find from your advisor and from the staff members of your department and the ECS Student Records Office. Our door is always open to your thoughts, ideas, concerns, and accomplishments - please feel free to share them with us at any time. For your information, our office is located at 130 Link Hall; telephone number 315-443-5191.

We all wish you the very best for continued success, good health, and happiness.

Warm regards,

A handwritten signature in cursive script that reads "Julie M. Hasenwinkel".

Dr. Julie Hasenwinkel  
Senior Associate Dean



**SYRACUSE UNIVERSITY**

**COLLEGE OF ENGINEERING  
AND  
COMPUTER SCIENCE**

**UNDERGRADUATE STUDENT HANDBOOK  
2017-2018**

**Prepared by Nicole Adkins**

## Table of Contents

DIRECTORIES .....	9
ECS Student Services Directory.....	9
Academic Programs Directory .....	10
Department Chairs .....	10
Program Directors.....	10
Research Centers.....	10
Computer & Information Technology Services.....	11
ECS Student Societies .....	12
Academic Calendar .....	13
ECS Academic Integrity.....	14
First-Year Programs and Student Success Programs .....	145
Academic Excellence Workshop (AEW).....	15
Pathfinders .....	15
Success Coaching Program .....	16
Professional Engineering Societies.....	16
Study Groups & Tutoring Services.....	16
Student Career Opportunities .....	17
Cooperative Education Program.....	17
Study Abroad Program.....	18
WiSE.....	19
Campus Office Directory .....	20
Syracuse University Statement on Academic Advising.....	22
Academic Advising .....	22
Academic Policies and Procedures .....	23
Academic Probation and Suspension Policy .....	234
Advising.....	25
Advanced Credit Examinations .....	25
Advanced Placement Examinations.....	25
Auditing Courses.....	26
Change of Major .....	26
Corrected Grades.....	26
Dean’s List.....	27
Flagging Courses.....	27
Graduate Level Courses .....	27

Graduation Honors .....	288
Incompletes .....	28
Independent Study .....	28
Intra-University Transfer (IUT) .....	29
Leave Of Absence and Withdrawal.....	30
Missing Grades .....	30
Pass/Fail Option .....	30
Petitions .....	31
Readmission/Termination of Leave of Absence.....	31
Registration .....	31
Repeating a Course.....	32
New York State TAP Recipients .....	32
Registration for More Than 19 Credit Hours (overload).....	32
Schedule Adjustment .....	32
Adding Courses during the first week of classes. ....	32
Dropping a Course after the first week of classes. ....	33
Summer Courses .....	34
Withdrawal from a Course .....	34
All University Requirements .....	35
English Courses for Foreign Students .....	35
Writing Courses .....	35
All-College Requirements .....	35
Introduction to Engineering and Computer Science .....	35
Free Electives .....	35
Mathematics.....	35
Natural Sciences .....	35
Physical Education Courses (PED) .....	36
Remedial Courses.....	36
ROTC Courses .....	36
Senior Year .....	36
File Diploma Request.....	36
Diplomas & Status Verification .....	37
Graduation.....	37
Professional Engineer Exam .....	37
Advance Placement Examinations .....	38
Partial List of acceptable Social Science/ Humanities courses: .....	39

Social Sciences Division.....	39
Humanities Division .....	39
Not a Social Science / Humanities courses .....	39
Curriculum Requirements.....	40
Aerospace Engineering Curriculum .....	40
Bioengineering Curriculum.....	42
Chemical Engineering Curriculum.....	44
Civil Engineering Curriculum.....	46
Computer Engineering Curriculum .....	48
Electrical Engineering Curriculum .....	50
Environmental Engineering Curriculum .....	52
Mechanical Engineering Curriculum .....	54
Systems & Information Science Curriculum .....	56
Computer Science Students .....	58
Summary.....	58
Important Notes on Course Restrictions.....	58
General-Education Requirements.....	58
Writing Requirements .....	58
Presentation Skills Requirement .....	59
Natural Science and Engineering Requirements .....	59
Arts, Humanities, and Social Sciences Requirements.....	60
Free Electives .....	61
Mathematics Requirements .....	61
Course Requirements for the Major .....	62
CIS Core Course Requirements .....	62
Upper-Division Course Restrictions.....	62
Representative CIS Undergraduate Programs.....	63
Computer Science Curriculum.....	65



# DIRECTORIES

## ECS Student Services Directory

Title	Name	Office Location	Phone Number
<b>Dean's Office Suite</b>			
Dean of Engineering & Computer Science	Dr. Teresa Abi-Nader Dahlberg	223 Link Hall	315-443-4341
Assistant to the Dean	Stephanie Vasta	223 Link Hall	315-443-4341
Senior Associate Dean	Dr. Julie Hasenwinkel	223 Link Hall	315-443-4345
Assistant to the Senior Associate Dean	Lynore de la Rosa	223 Link Hall	315-443-4345
Associate Dean for Academic Administration & Space Management	Dr. Riyadh Aboutaha	223 Link Hall	315-443-3604
Assistant to the Associate Dean	Susan Karlik	223 Link Hall	315-443-3604
Director Computer & IT Services (help@ecs.syr.edu)	Jim Spoelstra	210 Link Hall	315-443-1227
Fax Number	Dean's Office	223 Link Hall	315-443-4936
<b>ECS Student Records Office</b>			
Director of Student Records & Study Abroad	Maria Marceau	129 Link Hall	315-443-5191
Assistant to the Director	Nicole Adkins	130 Link Hall	315-443-5191
Office Assistant	Dominique Marceau	130 Link Hall	315-443-1326
Fax Number	Student Records Office	130 Link Hall	315-443-4459
<b>Student Success Center</b>			
Director of First-Year & Student Success Programs	Kathryn Pynn	121 Link Hall	315-443-2582
Program Coordinator First-Year	Sarah Mack	121 Link Hall	315-443-3513
First Year Student Advisor - A-H	Giovanna Colosi	125 Link Hall	315-443-3978
First Year Student Advisor - I-Z	John Kulak	127 Link Hall	315-443-4531
Director of Career Development & Service Learning	Karen Davis	121 Link Hall	315-443-2582
Career Services Coordinator	Jennifer Fazio	121 Link Hall	315-443-2371
Fax Number	Student Success Center	121 Link Hall	315-443-1065
<b>ECS Admissions Office</b>			
Assistant Dean for Student Recruitment	Kathleen Joyce	123 Link Hall	315-443-1044
Undergraduate Recruitment Specialist	Jonathan Hoster	123 Link Hall	315-443-1044

# Academic Programs Directory

## Department Chairs

Department	Chair Name	Office Location	Phone Number
Biomedical & Chemical Engineering	Dr. Radhakrishna Sureshkumar	329 Link Hall	315-443-1931
Civil & Environmental Engineering	Dr. Sam Salem	151 Link Hall	315-443-2311
Electrical Engineering & Computer Science	Dr. Jae Oh	4-206 Sci Tech	315-443-2562
Mechanical & Aerospace Engineering	Dr. Young Moon	263 Link Hall	315-443-2341

## Program Directors

Department	Program Directors	Office Location	Phone Number
Aerospace Engineering	Dr. John Dannenhoffer	263 Link Hall	315-443-2341
Bioengineering	Dr. Pun To (Doug) Yung	329 Link Hall	315-443-1931
Chemical Engineering	Dr. Katie Cadwell	329 Link Hall	315-443-1931
Civil Engineering	Prof. Joan Dannenhoffer, Program Coordinator	151 Link Hall	315-443-2311
Computer Engineering	Dr. Jennifer Graham	4-206 Sci Tech	315-443-2562
Computer Science	Dr. Susan Older	4-206 Sci Tech	315-443-2562
Electrical Engineering	Dr. Jennifer Graham	4-206 Sci Tech	315-443-2562
Environmental Engineering	Dr. Cliff Davidson	151 Link Hall	315-443-2311
Mechanical Engineering	Dr. Michelle Blum	263 Link Hall	315-443-2311
Systems & Information Science	Dr. Andrew Lee	4-206 Sci Tech	315-443-2562

## Research Centers

Center Name	Office Location	Phone Number
<a href="#">Syracuse Biomaterials Institute</a>	318 Bowne Hall	315-443-9185
<a href="#">The Center for Advanced Systems and Engineering (CASE)</a>	2-212 Sci Tech	315-443-1060
<a href="#">Green Data Center</a>	263 Link Hall	315-443-2341
<a href="#">Syracuse Center of Excellence (COE) in Environmental Energy Systems</a>	727 E. Washington Street	315-443-4445

# Computer & Information Technology Services

The College of Engineering & Computer Science (ECS) provides an extensive list of computing resources for its students. There are ECS customized PCs in numerous faculty labs and in several public labs. In addition to the standard office productivity tools like word processors and spreadsheet programs, there are a broad range of the latest engineering tools (CAD, CAE, FEA, math and simulation) and software development tools. A full list of available software at ECS can be found at <http://helpdesk.ecs.syr.edu>. Also note software that is available for students to download at little or no cost. The ECS Windows computing labs use the campus NetID and password and all students have a home directory quota of 100GB. All PCs have DVD Optical Drives and USB ports for portable storage. They are located as follows:

- Link 011 ("MADlab") - 30 PCs
- Link 201- 18 PCs - Open lab for student use only - no classes scheduled
- Link 202 - 33 PCs
- Link 274 - 35 PCs
- CST 3-116 - 40 PCs
- CST 3-231 - 35 MACs

Computer lab schedules and computer availability are located at <http://helpdesk.ecs.syr.edu>.

Some ECS Software is also available through Remote Access. Please see <http://helpdesk.ecs.syr.edu> for instructions.

All ECS students who need Linux access:

- Use Xshell or any SSH terminal emulator to connect to [ecs-linux.syr.edu](http://ecs-linux.syr.edu)
- Use your Net ID and password to login

Please visit the Online Services at <http://listserv.syr.edu> and review your ListServ subscriptions by using the "Subscriber's Corner". It is to your advantage to be subscribed to your class list, so please ensure that you are.

All ECS Graduates	<a href="mailto:ECS-grad@listserv.syr.edu">ECS-grad@listserv.syr.edu</a>
All ECS First Year	<a href="mailto:ECS-2021@listserv.syr.edu">ECS-2021@listserv.syr.edu</a>
All ECS Sophomores	<a href="mailto:ECS-2020@listserv.syr.edu">ECS-2020@listserv.syr.edu</a>
All ECS Juniors	<a href="mailto:ECS-2019@listserv.syr.edu">ECS-2019@listserv.syr.edu</a>
All ECS Seniors	<a href="mailto:ECS-2018@listserv.syr.edu">ECS-2018@listserv.syr.edu</a>

**\*\*\*NOTE:** Subscribing to any of the class lists automatically subscribes you to ECS UNDERGRAD and ECS-STUDENTS where appropriate. You only need to subscribe to your class' mailing list.

For other information about ECS computing, please visit <http://helpdesk.lcs.syr.edu>. Email questions and requests can be sent [help@ecs.syr.edu](mailto:help@ecs.syr.edu) or by visiting the CIT Help Desk in 204 Link Hall during business hours.

# ECS Student Societies

SOCIETIES		Contact
AIAA	American Institute for Aeronautics & Astronautics	<a href="mailto:aiaa@syr.edu">aiaa@syr.edu</a>
AIChE	American Institute of Chemical Engineers	<a href="mailto:aiche@syr.edu">aiche@syr.edu</a>
AOE	Alpha Omega Epsilon Engineering Sorority	<a href="mailto:aoepsln@syr.edu">aoepsln@syr.edu</a>
ASCE	American Society for Civil Engineers	<a href="mailto:asce@syr.edu">asce@syr.edu</a>
ASHRAE	American Society of Heating, Refrigerating & Air Conditioning Engineers	<a href="mailto:ashrae@syr.edu">ashrae@syr.edu</a>
ASME	American Society for Mechanical Engineers	<a href="mailto:asme@syr.edu">asme@syr.edu</a>
BMES	Biomedical Engineering Society	<a href="mailto:bmes@syr.edu">bmes@syr.edu</a>
Chi Epsilon	Civil Engineering Honor Society	<a href="mailto:chiepsln@syr.edu">chiepsln@syr.edu</a>
EWH	Engineering World Health	
IEEE	Institute of Electrical & Electronics Engineers	<a href="mailto:ieee@syr.edu">ieee@syr.edu</a>
NSBE	National Society for Black Engineers	<a href="mailto:nsbe@syr.edu">nsbe@syr.edu</a>
Pi Tau Sigma	Mechanical Engineering Honor Society	<a href="mailto:ptausig@syr.edu">ptausig@syr.edu</a>
SAE	Society of Automotive Engineers (Citrus Racing)	<a href="mailto:sae@syr.edu">sae@syr.edu</a>
SASE	Society of Asian Scientists and Engineers	<a href="mailto:sase@syr.edu">sase@syr.edu</a>
SHPE	Society of Hispanic Professional Engineers	<a href="mailto:lcsshpe@syr.edu">lcsshpe@syr.edu</a>
Sigma Gamma Tau	Aerospace Engineering Honor Society	<a href="mailto:sigmatau@syr.edu">sigmatau@syr.edu</a>
SWE	Society for Women Engineers	<a href="mailto:swe@syr.edu">swe@syr.edu</a>
Tau Beta Pi	National Engineering Honor Society	<a href="mailto:taubeta@syr.edu">taubeta@syr.edu</a>
Theta Tau	National Engineering Fraternity	<a href="mailto:thetatau@syr.edu">thetatau@syr.edu</a>

Information about any Student Organizations, including all non-honor societies above, contact the Office Student Activities:

126 Schine Student Center - <http://studentactivities.syr.edu> - (315) 443-2718

# Academic Calendar 2017-2018

FALL 2017	
Registration for new graduate students	Tuesday, August 1
Schedule adjustment for returning undergraduate students	Monday August 14 - Friday August 18
Registration for new and readmitted undergraduate students	Saturday, August 26 & Sunday, August 27
First day of classes/Extended Campus Classes	Monday, August 28
Late registration & Schedule adjustment	Monday, August 28 - Tuesday, September 5
Labor Day (no classes, University offices closed)	Monday, September 4
Add deadline*	Tuesday, September 5
Early-semester progress report	Monday, September 11 - Friday, September 15
Grading option deadline to elect or rescind pass/fail or audit	Monday, September 11
Financial deadline to drop class*	Monday, September 18
Midterm	Monday, October 16
Mid-Semester progress report	Thursday, October 12 - Sunday, October 22
Academic drop deadline*	Monday, October 23
Registration for Spring 2018	Wednesday, November 8 - Tuesday, January 23
Registration for Winterlude begins	Wednesday, November 8
Withdrawal deadline*	Friday, November 17
Thanksgiving Break (no classes, University offices open Mon. - Wed.)	Sunday, November 19 - Sunday, November 26
Last day of classes	Friday, December 8
Reading days	Sat, Dec. 9, Sun, Dec.10; Tuesday, Dec.12 and Thursday, Dec.14 (am only)
Final examinations	Mon, Dec.11; Wed., Dec.13; Fri, Dec.15; Tue, Dec.12 & Thu, Dec.14 (pm only)
Last day of Extended Campus classes	Thursday, December 14
Last day of the semester	Friday, December 15
Winterlude begins	Monday, December 18
Final grades due from faculty	Thursday, December 21
Degree Award Date	Friday, December 22
SPRING 2018	
Registration for new graduate students	Wednesday, January 3
Winterlude ends	Friday, January 12
Registration for new and returning graduate students who did not previously register, and new and readmitted undergraduate students	Saturday, January 13
Martin Luther King Jr. Day (no classes, University offices closed)	Monday, January 15
First day of classes/Extended Campus Classes	Tuesday, January 16
Late registration & Schedule adjustment	Tuesday, January 16 - Tuesday, January 23
Add deadline*	Tuesday, January 23
Early-semester progress report	Monday, January 29 - Friday, February 2
Grading option deadline to elect or rescind pass/fail or audit	Tuesday, January 30
Academic/Financial deadline to drop class*	Tuesday, February 6
Midterm	Tuesday, March 6
Mid-semester progress report	Friday, March 9 - Sunday, March 18
Spring Break (no classes, University offices open)	Sunday, March 11 - Sunday, March 18
Registration for Summer 2018	Wednesday, March 21
Registration for Fall 2018	Monday, April 9 - Wednesday, May 9
Withdrawal deadline*	Tuesday, April 17
Last day of classes	Tuesday, May 1
Reading days	Wednesday, May 2; Saturday, May 5; Sunday, May 6
Final examinations	Thursday, May 3; Friday, May 4; Monday, May 7 - Wednesday, May 9
Last day of the Semester	Wednesday, May 9
Commencement Weekend	Saturday, May 12; Sunday, May 13
Degree Award Date	Sunday, May 13
Final grades due from faculty	Tuesday, May 15
SUMMER 2018	
Maymester	Monday, May 14 - Friday, May 25
Summer Session I	Monday, May 21 - Friday, June 29
Combined Summer Session	Monday, May 21 - Friday, August 10
Summer Session II	Monday, July 2 - Friday, August 10

# Academic Integrity

## I. General Policy Statement

Syracuse University aspires to the highest standards of integrity and honesty in all endeavors. The Academic Integrity Policy is designed to make integrity and honesty central to the Syracuse University experience by: setting forth clear ethical expectations for students in their academic endeavors; promoting consistency of standards and practices across colleges, schools and programs; encouraging reporting of suspected violations; and facilitating the resolution of cases as promptly as possible while providing thorough and fair consideration for students and instructors. Education is a central goal of the policy, including affording students an opportunity to discuss and learn from academic integrity violations.

## II. Reason for Policy/Purpose

Academic integrity furthers the central mission of the University: to foster high-quality learning, teaching and research, endeavors that are premised on individual intellectual and creative work and require a commitment to the values of honesty, trustworthiness, fairness, respect and responsibility. These values are essential to the overall success of any academic institution, including Syracuse University.

This policy is designed to cultivate an academic environment of honesty and integrity by ensuring that students adhere to certain ethical standards in their academic work. This policy addresses academic integrity standards that apply to students, and it governs the ways in which faculty, instructors and administrators must handle suspected violations.<sup>1</sup>

Syracuse University first adopted a university-wide academic integrity policy in 2006 following passage of a University Senate motion of support for this framework. As part of this framework, the University created the Academic Integrity Office (AIO) to work with the Schools and Colleges in implementing the policy; charged the Senate Committee on Instruction with periodic review of the policy and recommendations for revision when warranted by AIO assessment reports and input from the University community; and made revision of the policies and procedures subject to approval by the Vice Chancellor and Provost. This policy supersedes all policies, procedures and written and online statements of Syracuse University with regard to academic integrity standards. Syracuse University retains the right to revise this policy from time to time based on assessment of its effectiveness and, with approval of the Vice Chancellor and Provost, to modify procedures on a temporary basis in order to pilot and evaluate them. The original university-wide policies and procedures were implemented in 2006 and revised in 2008 and 2011. The current policy is effective as of January 1, 2017.

Please see the website for the complete Academic Integrity Policy [http://class.syr.edu/wp-content/uploads/2017/05/Academic-Integrity-Policy\\_final.pdf](http://class.syr.edu/wp-content/uploads/2017/05/Academic-Integrity-Policy_final.pdf) .

# First-Year Programs and Student Success Programs

At Syracuse University's College of Engineering and Computer Science (ECS), we are committed to the success of each individual. This commitment to student success is at the heart of ECS First-Year Programs and Student Success Programs. It is a commitment that is found not only in our classrooms, but also in the programs and experiences that we provide to our students. These opportunities support our students' development in the academic, personal, and professional skills that are so critical for success and leadership in today's society.

## Academic Excellence Workshop (AEW)

The **Academic Excellence Workshop (AEW)** is an optional active-learning program offered to students taking Pre-Calculus, Calculus I, II, and III. It has also been expanded to several key engineering foundation courses and higher level mathematics courses.

AEW delivers a unique approach to calculus instruction by supplementing classroom teaching through a highly interactive, small-group session. Trained undergraduate facilitators, who excelled in the course previously, work with six to eight students who have volunteered for the extra time commitment week required by AEW. The facilitators present the AEW participants with a worksheet developed in conjunction with the course instructor that reinforces key principles recently taught in class. The facilitator is trained not to do the work for the students, but to encourage them to work in teams, using the language of the course to solve the problems.

The result is a lively, interactive session where students work together to solve problems that enhance their understanding of the subject material. The goal of AEW is to encourage subject mastery, and not merely memorization. At the same time, students develop strengths in other areas to, including their communication, teamwork, problem solving, and presentation skills.

## Pathfinders

**Students helping students.** That is the goal of the Pathfinders, a group of upperclassmen who assist first-year and transfer students in their transition to life as new members of the SU community. Pathfinders offer guidance, support, and friendship to new students in the first semester and beyond.

## Success Coaching Program

Our Success Coaches are here to help you define, clarify, and achieve your personal and academic goals! Your appointments with a Success Coach are tailored to **YOU**: your interests, grades, goals, and talents. Whether you're tackling current academic struggles or seeking ways to enhance your learning experiences, your Success Coach will help you maximize your options. Success Coaches are here to help you make the most of your college experience. The Success Coaches offer both group and individual sessions on an array of topics, such as, how to improve academic performance through study habit development, better time management and improved organizational skills.

## Professional Engineering Societies

**Student chapters of professional engineering societies** focus on student success by providing academic support to members, including tutoring, study circles, and mentoring.

Student societies also promote professional development by hosting guest speakers from industry, and by sponsoring visits to area companies. Other activities include participation in regional and national conferences and competitions where students enjoy additional opportunities to network with their peers from other schools and with professionals from industry. Students often join several societies to share common interests, network, and prepare for life beyond college.

Additional information on ECS Student Societies can be found at <http://studentactivities.syr.edu>.

## Study Groups & Tutoring Services

**Study Groups and Tutoring Services** are available to help students achieve academic excellence in ECS through study groups and tutoring for various courses. You can get current information about these groups in the Student Success Center in 121 Link Hall or by viewing the ECS Student Success Center Guide on the SU Guides app available at <http://guidebook.com>.

It is important for all ECS students to recognize that good study technique includes studying together. You master course content more thoroughly, with better retention when you explain it to others. Successful students not only join study groups, they start them. We encourage all ECS students to do both. It is one of our priorities to help students interested in forming study groups. If you would like some assistance, please stop by and let us know of your interest.

### For Additional Information Contact:

Kate Pynn, Director  
First-Year and Student Success Programs  
Student Success Center  
121 Link Hall  
(315) 443-2582  
[1styear@ecs.syr.edu](mailto:1styear@ecs.syr.edu)



# Student Career Opportunities

## Cooperative Education Program

The ECS Cooperative Education program (Co-op) empowers undergraduate students to take advantage of experiential learning opportunities that have proven to aid them in successfully reaching their post graduate goals. The Co-op program consists of full-time professional work primarily during the summer. This design allows students the opportunity to gain more than six months of paid work experience in their field of study and still graduate in four years. Working during the academic year is an option that students may choose, with the understanding that their ability to graduate on time may be affected. To be eligible, students must be enrolled full time in the College of Engineering and Computer Science.

### For Additional Co-Op Information Contact:

Jennifer Fazio, Career Services Coordinator  
121 Link Hall  
(315) 443-2371

# Study Abroad Program

In a time of rapidly growing global complexity and opportunity, international study is an increasingly important and relevant component of undergraduate study, especially for students preparing for careers in engineering or computer science. Of all the major professions, engineering and computer science are the most likely to involve international activity. In addition to strong technical skills, employers are increasingly looking for international experience, cross-cultural skills by developing a “global mindset” and perspectives, and an understanding of the world's diversity

For over 20 years, the College, in a partnership with SU Abroad, has been a national leader in providing distinctive international study opportunities. These opportunities include:

- Study at SU Centers during Fall or Spring Semesters at: Florence, Hong Kong, Istanbul, London, Madrid, Santiago, and Strasbourg
- Study at World Partner Programs at affiliated universities at: Dublin, Hong Kong, Istanbul, and Sydney
- Summer Research program in Strasbourg, France

The College of Engineering and Computer Science’s international study programs give students the opportunity to gain global experience, develop new ways of viewing the world, form lasting friendships abroad, and deepen their connection to other countries, languages and cultures. Students with these experiences gain a competitive edge in today's multinational, multicultural environment.

To participate, students must be in good academic standing with a cumulative GPA of 3.0 and in one of Syracuse University's engineering, computer science or systems & information science programs or in an equivalent program elsewhere. Participants must also meet any language requirements of the host country.

## Important Application Deadlines

- Spring semester: October 15<sup>th</sup>
- Summer semester: February 20<sup>th</sup>
- Fall semester: February 20<sup>th</sup>

For further information, contact the College of Engineering and Computer Science Study Abroad Office in 130 Link Hall or Syracuse University Abroad or, SU Abroad office at 106 Walnut Place ([suabroad.syr.edu](http://suabroad.syr.edu)).

## For Additional Information Contact:

Maria Marceau  
Director  
129 Link Hall  
Syracuse, NY 13244  
(315) 443-5191  
[mcmarce@syr.edu](mailto:mcmarce@syr.edu)

# WiSE

## Women in Science and Engineering at Syracuse University

The **WiSE** program fosters current and future success of women in science, technology, engineering, and mathematics (STEM) through programs designed to address their unique strengths and challenges at every stage from entering freshman to accomplished professional.

Student and faculty involvement and commitment make WiSE one of the most successful women's programs at Syracuse University.

### Key Goals of WiSE

- Positively impact persistence in STEM for undergraduate women through an emphasis on research.
- Support professional development, degree completion and/or career preparation for women graduate students and post-doctoral fellows.
- Increase resilience, support advancement and improve career and personal productivity and balance for women STEM faculty.
- Build a strong community and social network for women in STEM.

### For Additional Information Contact:

Sharon Alestalo  
WiSE Program Manager  
335 Link Hall  
(315) 443-3419  
[swalesta@syr.edu](mailto:swalesta@syr.edu)  
[www.suwise.syr.edu](http://www.suwise.syr.edu)

Stephanie Wyatt  
WiSE Program Assistant  
267/269a Link Hall  
(315) 443-2313  
[smwyatt@syr.edu](mailto:smwyatt@syr.edu)

# Campus Office Directory

**General Information Number**  
Main Campus  
315-443-1870

**School and College Offices**  
**School of Architecture**  
201 Slocum Hall  
315-443-2256  
*soa.syr.edu*

**The College of Arts and Sciences**  
329 Hall of Languages  
315-443-3150  
*thecollege.syr.edu*

**School of Education**  
111 Waverly Avenue, Suite 230  
315-443-2506  
*soe.syr.edu*

**College of Engineering and Computer Science**  
223 Link Hall  
315-443-2545  
*eng-cs.syr.edu*

**David B. Falk College of Sport and Human Dynamics**  
300 MacNaughton Hall  
315-443-3144  
*falk.syr.edu*

**School of Information Studies**  
343 Hinds Hall  
315-443-2911  
*ischool.syr.edu*

**Martin J. Whitman School of Management**  
721 University Avenue  
315-443-2361  
*whitman.syr.edu*

**S.I. Newhouse School of Public Communications**  
316 Newhouse 3  
315-443-4722  
*newhouse.syr.edu*

**University College**  
700 University Avenue  
315-443-YesU (9378)  
*yesu.syr.edu*

**College of Visual and Performing Arts**  
200 Crouse College  
315-443-2517  
*vpa.syr.edu*

## Campus Offices

**The Advocacy Center**  
111 Waverly Avenue, Suite 006J  
315-443-7273  
*advocacycenter.syr.edu*

**Bookstore**  
Schine Student Center  
303 University Place  
315-443-9900  
*bookweb.syr.edu*

**Bursar Operations**  
Bowne Hall  
315-443-2444  
*bursar@syr.edu*  
*bursar.syr.edu*

**Career Services**  
235 Schine Student Center  
315-443-3616  
*careers@syr.edu*  
*careerservices.syr.edu*

**Counseling Center**  
200 Walnut Place  
315-443-4715  
*counselingcenter.syr.edu*

**Department of Public Safety (includes lost and found)**  
005 Sims Hall  
315-443-2224,  
*On-Campus Emergency 711*  
*publicsafety.syr.edu*

**Office of Disability Services**  
804 University Avenue, Suite 309  
315-443-4498  
*disabilityservices.syr.edu*

**Financial Aid and Scholarship Programs**  
Bowne Hall  
315-443-1513  
*finmail@syr.edu*  
*financialaid.syr.edu*

**Health Services**  
111 Waverly Avenue  
315-443-9005  
*health.syr.edu*

**Hendricks Chapel**  
315-443-2901  
*hendricks.syr.edu*

**Higher Education Opportunity Program (HEOP)**  
804 University Avenue, Suite 009  
315-443-3867  
*oss.syr.edu/heop*

**Housing, Meal Plan, and ID Card Service Center**  
206 Steele Hall  
315-443-2721, #1  
*housing@syr.edu*  
*housingmealplans.syr.edu*

**Information Technology and Services**

1-227 Life Sciences Complex  
315-443-2677  
*help@syr.edu*  
*its.syr.edu*

**Lesbian, Gay, Bisexual, and Transgender (LGBT) Resource Center**

750 Ostrom Avenue  
315-443-3983  
*lgbt@syr.edu*  
*lgbt.syr.edu*

**Library**

222 Waverly Avenue  
315-443-2093  
*library.syr.edu*

**Office of Multicultural Affairs**

105 Schine Student Center  
315-443-9676  
*oma@syr.edu*  
*multicultural.syr.edu*

**Recreation Services**

241 Archbold Gymnasium  
315-443-4FUN (4386)  
*recreationsservices.syr.edu*

**Registrar's Office**

106 Steele Hall  
315-443-2422  
*syr.edu/registrar*

**Renée Crown University Honors Program**

306 Bowne Hall  
315-443-2759  
*honors.syr.edu*

**Office of Residence Life**

111 Waverly Avenue, Suite 200  
315-443-3637  
*orl.syr.edu*

**ROTC, Air Force**

122 Lyman Hall  
315-443-2461  
*afrotc.syr.edu*

**ROTC, Army**

122 Lyman Hall  
315-443-2462  
*armyrotc.syr.edu*

**Slutzker Center for International Services**

310 Walnut Place  
315-443-2457  
*lescis@syr.edu*  
*international.syr.edu*

**Office of Student Assistance**

306 Steele Hall  
315-443-4357

**Student Association**

126 Schine Student Center  
315-443-2650  
*sa.syr.edu*

**Student Employment Services**

210 Steele Hall  
315-443-2268  
*seo.syr.edu*

**Syracuse University Abroad**

106 Walnut Place  
315-443-3471  
*suabroad.syr.edu*

**Center for Learning and Student Success**

348 Bird Library  
315-443-2005  
*class.syr.edu*

**Office of Students Rights & Responsibilities**

310 Steele Hall  
315-443-3728  
*students.syr.edu/judicial*

# Syracuse University Statement on Academic Advising

## Academic Advising

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 process and availability of timely, accurate information.

**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 student's 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.

**Orange SUccess**, Orange SUccess is a web-based advising tool that provides comprehensive support for students at all the schools and colleges of Syracuse University. This system will connect you to faculty and staff to help you have a successful academic career at Syracuse University.

To get started, set up your student profile. Orange SUccess can be accessed through MySlice and Blackboard. Find and click the link "Ask for Help in Orange SUccess" in the "Student Services" pagelet of MySlice or the "tools" panel of Blackboard. For more information, visit <http://orangesuccess.syr.edu>.

# Academic Policies and Procedures

## Academic Probation and Suspension Policy

Students are placed on academic probation when their academic records fail to meet specific **minimum criteria for progress** toward degree completion.

- 1) Term or cumulative GPA less than 2.0 and Less than 2.0 Mathematics, Science and ECS course GPA (IST courses for SIS majors)
- 2) Completion of less than 12 credits hours in one semester or 24 credits hours within any 12-month period
- 3) Failure to complete at least 6 credits and/or term GPA less than 1.5, will result in immediate suspension
- 4) Failure to complete calculus sequence by the end of the sophomore year (MAT 295, 296, & 397) (Does not apply to SIS majors)
- 5) In addition to the above conditions, computer science students only: GPA of less than 2.667 in core courses
- 6) Failure to maintain satisfactory progress toward your degree
- 7) Failure to meet special conditions of previous semester

Students may be suspended from the College of Engineering and Computer Science if they do not achieve the minimum GPA.

**HOURS COMPLETED** refers to credit hours toward the degree program and includes all transfer credits. Minimum GPA refers to the cumulative grade point average for courses taken at Syracuse University. Students classified as Juniors or Seniors (60 credit hours or more) must have at least a 2.00 cumulative average, whether or not they are transfer students.

For **GRADUATION**, students must have at least a 2.00 cumulative GPA and at least a 2.00 GPA in all ECS, mathematics, and science course taken at Syracuse University. In addition, students must meet all degree requirements specific to the chosen major.

Students are placed on academic probation when their academic records fail to meet specific minimum criteria for progress toward degree completion. Probationary status is determined by the Senior Associate Dean in consultation with program directors. The classifications of probation are listed on the next page.

Probationary status is indicated on the student's record maintained in the Student Records Office. The following are the various levels of probation status:

STATUS AT BEGINNING OF SEMESTER
<p><b>College Probation (COP)</b></p> <ul style="list-style-type: none"> <li>• Violation of one or more of the above criteria</li> <li>• A service Indicator of (ECP) was added to your record on MySlice and will be removed at the end of the semester after you meet the special conditions.</li> </ul>
<p><b>Probation - One Semester Trial (PST)</b></p> <ul style="list-style-type: none"> <li>• Term GPA less than 1.75</li> <li>• Violation of 3 or more of the above criteria</li> <li>• A service Indicator of (ECT) was added to your record on MySlice and will be removed at the end of the semester after you meet the special conditions.</li> </ul>
<p><b>Academic Suspension Ineligible to Register (IRE)</b></p> <ul style="list-style-type: none"> <li>• Failure to complete at least 6 credits and/or term GPA less than 1.5, will result in immediate suspension</li> <li>• No improvement while on PST</li> </ul>

### Probation with Advice to Withdraw

Students are placed on Probation with Advice to Withdraw (PAW-ECW) because they are not following an ECS program of study and are taking courses that will enable them to transfer to another school/college at SU. These students must make significant progress toward achieving the desired "Intra-University Transfer (IUT)" guidelines, or they will be suspended. A service Indicator of (EWC) was added to your record on MySlice and will be removed at the end of the semester after you meet the special conditions.

Students on PAW **may not** return to ECS unless exceptional circumstances have been met and approved by the Senior Associate Dean.

Please see the link below for other school/college IUT requirements:

<http://coursecatalog.syr.edu/content.php?catoid=13&navoid=1748#13-0-iut>



## Advising

All Engineering and Computer Science students are assigned professional or faculty advisors. The advisor signs all academic forms (add/drops, petitions). Each semester, prior to registration, students meet with their advisors to discuss the upcoming semester and to prepare for registration. It is important to plan carefully for this meeting to be sure that you will be taking the appropriate courses. You should also feel free to meet regularly with your advisor during the term to discuss program plans for the next term as well as any problems or concerns you may have.

Please feel free to let your advisor know about the good things that are happening to you (scholarships, awards, activities). The more an advisor knows about you, the better equipped they will be able to advise and to make suggestions and recommendations.

Professional or faculty advisor assignments may be changed for the following reasons:

1. **Student Request** - A student who prefers another advisor should see the Student Records Office in 130 Link Hall.
2. **Student Change of Major** - A student who changes his/her major will have a professional faculty advisor from the new academic unit assigned to them.
3. **Advisor Department** - When faculty advisors leave their academic units or the University, their advisees are reassigned to another advisor in the same program. The new advisor will advise these students until they complete their degree requirements.
4. **Advisor on Leave of Absence** - If faculty advisors are unable to meet with their advisees during registration or during the academic year, their students are assigned temporary advisors. This is not a permanent assignment; when regular advisors return they will resume their advising duties.

## Advanced Credit Examinations

Matriculated Syracuse University students may earn credit in an SU course by taking an Advanced Credit Examination. The examination must be approved by the department chair concerned, the student's advisor, and the Senior Associate Dean. It is administered and graded by a member of the faculty. Only A, B, and C grades are acceptable as passing grades. Both credits and grade points are recorded on the student's transcript. By University policy, this option may not be used to repeat a course and flag the first course grade.

For more information, including examination fees, refer to the General Academic Rules and Regulations and to the booklet on Tuition, Fees and Related Policies

<http://bursar.syr.edu/wp-content/uploads/2017/05/2017-2018-Tuition-and-fees-booklet.pdf> .

## Advanced Placement Examinations

Syracuse University is authorized to award academic credit to students who have successfully passed examinations administered by Advanced Placement Program of the College Entrance Examination Board (CEEB). Scores from these examinations must be sent from the agency administering the examination directly to the College. Since the award of credit for AP courses depends on academic major, students should contact their academic advisors or the Student Records Office (130 Link Hall) for additional information.

Academic credit for AP examinations is indicated in the student's record. Advanced Placement Examinations are scored 1 through 5. These credits count just as if the student has taken the corresponding course while in college although no grades are assigned. The credits are counted toward the total required for the degree.

**\*\*Please see page 38 for the AP Table.**

### Auditing Courses

Students may audit courses with the approval of the appropriate department and subject to the restrictions made by the instructor.

Students auditing courses may not be responsible for fulfilling the academic requirements of the course and, therefore, do not receive academic credit for auditing courses. Audited courses appear on student transcripts with a grade of AU, which means no academic credit was earned. Audited courses do not affect the calculation of the grade point average, nor do they count toward hours for graduation. Tuition charges for audited courses are published annually by the Bursar's Office in the booklet <http://bursar.syr.edu/wp-content/uploads/2017/05/2017-2018-Tuition-and-fees-booklet.pdf>.

Students must decide by the end of the second week of classes whether or not they wish to audit a course. They may not rescind their selection of the audit option after the first two weeks of classes. Students may drop or withdraw from an audited course in accordance with standard procedures. See the Student Records Office in 130 Link Hall if you need assistance.

### Change of Major

In order to select or change a major, students must obtain a formal approval from the department chair or program director of the new major. Students may do this by obtaining a Change of Major Petition in the Student Records Office or the ECS <http://eng-cs.syr.edu>, and following the procedure below:

1. Meet with Chairperson or Program Director of the new major.
2. Complete a Change of Major Petition Form clearly stating the current Major and the new major.
3. Obtain the signature of the Chairperson or the Program Director of the new major. A review of the student's file may be necessary before making a decision. If the petition is approved, the Chairperson will assign a new faculty advisor to the student.

### Corrected Grades

An instructor may elect to submit a grade change after the grade has already been reported. Grade changes must be submitted to the department chair, the dean of the student's home school/college, and the Office of the Registrar. Any or all of those offices may require an explanation of the change, and may require that additional information or forms be provided. All changes involving grading symbols must adhere to University policies and procedures. The Office of the Registrar has final authority to approve changes that involve grading symbols. After a degree has been certified, a grade change may be recorded *only* if the student's home school/college determines that the student has completed all coursework, and only the evaluation and grade change submission occurred

after that date. Recording of a grade change after a degree has been certified is subject to the approval of the University Registrar. UNDER NO CIRCUMSTANCES MAY A STUDENT HAND-CARRY A CHANGE OF GRADE FORM

Grades may also be changed in the following circumstances:

*HEOP or SSSP students* who receive grades of D or F during the Summer Start program will have these grades recorded as WD on the transcript; by petition a grade of C- may be changed to a WD.

### Dean's List

The minimum semester grade point average for the Dean's list is 3.40. Students earning Dean's List standing are notified each semester by a congratulatory notice from the Dean's Office; the name will be posted in their hometown local newspaper and will be posted online. The Dean's List will be generated one week after semester grades are posted on Myslice. To be eligible for Dean's List recognition, the students must have earned a minimum of 12 graded credits and must have no missing or incomplete grades.

### Flagging Courses

Students who transfer into the College of Engineering and Computer Science and who have accumulated courses that cannot be included in the new program of study may petition to have these courses flagged for exclusion from the calculation of the grade point average (GPA) following admission to the College. The flagged courses and grades are not deleted from the transcript. Students should be aware such action could affect their eligibility for TAP awards. The consequences with regard to TAP eligibility could be positive or negative. Students are advised to consult with a financial aid counselor BEFORE initiating the action of flagging courses.

Any course with a D or F may be retaken. A course may be flagged up to two times: the higher of the two (or three) grades will be counted in the GPA. For courses retaken more than once, the lower grade may be flagged by petition.

### Graduate Level Courses

ECS students may register for graduate level courses (600 level) under the following conditions:

1. A senior whose overall academic record normally would qualify him or her for admission to the Graduate School may enroll in a 600-level course for undergraduate credit by petition and must have the approval of:  
***Instructor, Department Chairperson and Senior Associate Dean***
2. Graduating seniors who anticipate enrolling in the Graduate School of Syracuse University may submit a petition to the Graduate School to request graduate credit. **Courses taken for graduate credit may not be applied toward an undergraduate degree.**

## Graduation Honors

Graduation honors are based on the following cumulative grade point averages:

Cum Laude.....3.400

Magna Cum Laude.....3.600

Summa Cum Laude.....3.800

Students must complete at least 60 credit hours at Syracuse University in order to be eligible for graduation honors.

## Incompletes

The symbol of I (Incomplete) may be granted to a student only if it can be demonstrated that it would be unfair to hold the student to the normal time limits of the course. Illness or other exceptional circumstances are the usual basis for consideration. To receive an Incomplete, a student must complete a Request for Incomplete Form, available in the Student Records Office. The form becomes a contract between the student and the course instructor, specifying the reasons for granting the Incomplete and the conditions and time limit for removing it.

An Incomplete grade is calculated as an F in the grade point average immediately. A student may graduate with Incompletes outstanding provided the cumulative average equals or exceeds 2.0 and the number of earned credits meets the requirements for the degree. This decision should be made with great care; once a student has graduated, s/he can not remove the Incomplete from her/his transcript. It remains a part of the permanent record.

Incompletes are not removed by re-registering for the course. Even though an instructor may require a student to repeat certain elements of a course to remove an Incomplete, the student should not register for the course a second time.

Further information concerning the removal of an incomplete can be found in the Academic Rules and Regulations, in the Undergraduate course catalog.

## Independent Study

Students who wish to explore a special problem or study an area in which a formal course does not exist must submit a plan of study using the Proposal for Independent Study Form. The plan must be approved by the supervising instructor or faculty sponsor, the student's faculty advisor, the course department chair, and the Senior Associate Dean for Academic Programs. The form must be submitted to the Registrar's Office in 106 Steele Hall. Students should check carefully with their faculty advisors and with the Senior Associate Dean prior to registering for an Independent Study to be sure that the course will be accepted toward the completion of requirements for a degree.

## Intra-University Transfer (IUT)

### 1) Transfer In to the College of Engineering and Computer Science. (IUT-IN)

Students who wish to transfer to any program within the College of Engineering and Computer Science should have a strong record of achievement and demonstrated success in key technical courses. Specifically, it is critical for the applicant to excel in following and meet GPA requirements:

- Complete at least one of MAT 295, 296 or 397 with a grade of B- or better
- Complete at least one set of PHY 211/221 or CHE 150/151 with a grade of B- or better
- A minimum 3.0 cumulative grade point average

### 2) Transfer into Computer Science (CIS) programs only:

Students who wish to major in CIS must also complete the following:

- CIS 252 with a grade of at least a B (3.0), along with the above requirements

Obtain an Intra-University Transfer Form (IUT) from the Student Records Office, 130 Link Hall or on-line: <http://www.syr.edu/registrar/forms/index.html>

Submit the completed IUT Form. If there are any special circumstances that should be noted at the time the application is reviewed, they should be attached to the application.

At the end of each semester and following receipt of the latest grades, applications are reviewed by the Associate Dean and the appropriate Academic Chair. The schedule for review is as follows:

<b>Applications for</b>	<b>Reviewed</b>	<b>Student notification</b>
<i>Fall Semester</i>	<i>Dec-Jan</i>	<i>January</i>
<i>Spring Semester</i>	<i>May</i>	<i>June</i>

### 3) Transfer Out of the College of Engineering and Computer Science. (IUT-OUT)

- Obtain an Intra-University Transfer Form (IUT) from the Student Records Office, 130 Link Hall or online: <http://www.syr.edu/registrar/forms/index.html>
- Check with the college/school into which you wish to transfer. Many have special requirements and application deadlines.
- Obtain the signature of the accepting (new) Dean.
- Submit the IUT form to the Registrar's Office, 106 Steele Hall

## Leave Of Absence and Withdrawal

Students desiring to take a Leave of Absence from the University must initiate such action in the Student Records Office, 130 Link Hall. Students should indicate the approximate date they intend to return to the University.

**Fall 2017** -If a student takes a Leave of Absence before midterm, all courses are dropped from the transcript. Only the effective date of the leave of absence is recorded on the transcript.

After midterm, courses for which the student was registered remain on the transcript and grades of WD are recorded. Following the deadline to receive a WD, an F grade is recorded for all courses unless an approved petition has been filed with the Registrar's Office. Students who take a leave of absence may not receive incomplete grades in courses for which they were registered. Only grades of WD or F can be recorded on the transcript.

**Spring 2018** -Starting this semester if a student takes a Leave of Absence before Academic/Financial drop deadline, all courses are dropped from the transcript. Only the effective date of the leave of absence is recorded on the transcript.

After the academic/financial deadline, courses for which the student was registered remain on the transcript and grades of WD are recorded. Following the deadline to receive a WD, an F grade is recorded for all courses unless an approved petition has been filed with the Registrar's Office. Students who take a leave of absence may not receive incomplete grades in courses for which they were registered. Only grades of WD or F can be recorded on the transcript.

## Missing Grades

Missing grades (grades not reported by the instructor) do not calculate into the student's grade point average. The student should contact his/her instructor to determine why a grade is missing from the record. If the instructor cannot be located, the student should see the Chair of the department in which the course was taught.

To report a missing grade, the instructor submits a Missing Grade Report to the Chair of the department in which the course was taught. The form will then be sent to the student's home college and finally submitted to the Registrar's Office. **UNDER NO CIRCUMSTANCES MAY A STUDENT HAND-CARRY A MISSING GRADE REPORT.**

## Pass/Fail Option

**For students in Engineering majors:** only social science, humanities, and free elective courses at the 300 level or higher may be taken pass/fail. Elective courses that must be taken from a specified list may not be taken pass/fail. The total hours of pass/fail courses permitted cannot exceed 18 credit hours.

**For students in Computer Science and SIS major:** only free elective courses may be taken pass/fail.

## Petitions

Petition forms may be obtained in the Student Records Office, 130 Link Hall or online <http://www.syr.edu/registrar/forms/index.html> . When petitioning, students must obtain the following signatures (in this order), unless otherwise noted below:

1. Faculty Advisor
2. Department Chair or Program Director
3. Senior Associate Dean

**Example:** you may petition to take a course in place of another; or you may petition to take an overload of courses. Undergraduates registering for more than 19 credit hours will be assessed the appropriate extra tuition charges, unless they qualify for an overload rate exception; or you may petition to fulfill your Social Science/Humanities requirements with only Social Sciences, etc.

Students are responsible for checking with the Registrar's Office and/or the Student Records Office to make sure the petition has been processed.

Petitions should be written as clearly and concisely as possible. They should contain all pertinent information since, in many cases, they are used in place of an interview. If the intention of the petition is not clear, it may be returned to the student for further clarification, and thus, delay the processing.

## Readmission/Termination of Leave of Absence

Students who have taken a leave of absence or been withdrawn from the University must apply for readmission through the ECS Student Records office 130 Link Hall, Syracuse, NY 13244, (315) 443-5191. Readmission is contingent on space availability in the college and in the program to which the student seeks readmission. It is also dependent on the student's ability to demonstrate potential for completing the program of study successfully.

A student suspended for academic reasons is eligible to apply for readmission after at least one calendar year has elapsed from the date of the suspension. A student suspended for other reasons is eligible to apply for readmission according to the terms of the suspension. Students may be placed on academic probation for the first semester after reentering the University.

If the Leave of Absence from the University was for health reasons, the attending physician must submit a medical evaluation of the student's present state of health to the Office of the Vice President for Student Affairs, 306 Steele Hall, Syracuse, NY 13244-1120, (315) 443-4357. Health clearance must be granted by Student Affairs before an application for readmission can be considered.

## Registration

Syracuse University uses a computerized registration system known as MySlice. ECS undergraduate students are put on Advising Hold every semester and must meet with their advisor before they can register for classes.

## Repeating a Course

It is not necessary to petition to retake a course that was failed. Equivalent courses taken at other institutions are not counted as repeated courses. Courses may not be repeated after a student receives an undergraduate degree.

Any course with a D or F may be retaken. A course may be flagged up to two times: the higher of the two (or three) grades will be counted in the GPA. For courses taken more than once, the two earlier grades may be flagged by petition.

## New York State TAP Recipients

### REPEATED COURSES/TAP ELIGIBILITY

For purposes of TAP eligibility, a student must be enrolled full time (a minimum of 12 credits per semester). In some circumstances, the credits for repeating a course in which a student has already received a passing grade may not be included in the determination of full time enrollment for TAP purposes. If you have questions about this determination, you may contact the TAP coordinator in the Bursar's Office, 443-2444.

### Please Note:

WE HAVE BEEN REQUESTED BY THE OFFICE OF STUDENT ASSISTANCE TO ALERT STUDENTS TO THE FOLLOWING STATEMENT REGARDING REASONABLE ACADEMIC PROGRESS:

"University, state, and federal regulations require that students receiving financial aid make reasonable academic progress toward a degree. This entails completing one-sixth of the program of study for each year of attendance. Financial aid progress regulations are established separately and may differ from your college's academic progress regulations. If you suspect your aid could be in jeopardy you should make an appointment with your Financial Aid Counselor."

## Registration for More Than 19 Credit Hours (overload)

Undergraduate students who wish to register for more than 19 credits must present an approved petition to the Bursar's Office. The petition, available from the Student Records Office, 130 Link Hall, must be approved by the student's advisor and the Senior Associate Dean.

Juniors and seniors with a grade point average of at least 3.5 or higher cum GPA, with no outstanding incomplete grades and registered as a fulltime student at Syracuse University for the preceding two semesters, may take an overload without added tuition by completing the above petition. If you do not meet this criteria you will be charged extra tuition fees.

Honors students may sign up for this credit overload in the Honors Office. (For more information see the most current version of Tuition, Fees, and Related Policies).

## Schedule Adjustment

### Adding Courses during the first week of classes

During the first week of the semester (see Academic Deadlines in section I), students may change their schedules (adding and/or dropping courses) using MySlice on the web at [www.MySlice.syr.edu](http://www.MySlice.syr.edu). If a student is on *advising hold*, he/she must meet with his/her



advisor, and fill out and advising form. These forms are available in the Student Records Office.

The Faculty or Professional Advisor signature is required on the ECS Advising Form for all undergraduate students in ECS programs of study.

The advisor will keep a copy of the form in the student's folder. Student will drop off a copy of the ECS Advising Form to the Student Records Office who will then process the removal of the advising hold within a 24 hour period.

### **Dropping a Course after the first week of classes**

Students may drop courses up to the Academic Deadline for Dropping Courses. The add/drop form is used for this purpose. Forms are available at the Student Records Office, or from the Registrar's Office, 106 Steele Hall.

The following signatures/stamps are required on the add/drop form:

1. Advisor
2. Course Instructor
3. ECS stamp, provided by Student Records Office in 130 Link Hall

The form must be delivered to the Registrar's Office, 106 Steele Hall. Courses dropped by the deadline date are not recorded on the student's transcript and are not counted in the calculation of the grade point average.

**PLEASE NOTE:** If you fail to complete a course (as a result of dropping, withdrawing, failing, or receiving an incomplete grade) you **will not** be able to register for additional courses for which the uncompleted course is a prerequisite.

**ALSO NOTE:** Courses with start and end dates different from those published in the Time Schedule of Classes may have different add/drop deadlines. For example, during the summer sessions, the last day to drop a course with a tuition refund is one week after the first day of classes. See the booklet, "Tuition, Fees, and Related Policies" for a complete statement of the University's policy regarding the effect of add/drops on tuition charges.

## Summer Courses

Students wishing to take summer courses at Syracuse University should contact University College, Division of Continuing Education, 700 University Ave, Syracuse, NY 13244, (315) 443-4174 for enrollment information.

Students wishing to obtain transfer credit for summer courses taken at another university must meet the requirements below:

1. Complete a Transfer Credit Approval Petition prior to taking the course
  - The Petition must contain:
    - ❖ The name of the school
    - ❖ The Name, number of the course & number of credits for each course
    - ❖ A description of each course from an official catalog, bulletin, or school website.
    - ❖ The equivalent S.U. course.
    - ❖ Any special circumstances, i.e., students who plan to transfer into the college of ECS should state this clearly
  - Obtain the advisor's and department chairperson of the students major signature
  - Return the petition to the Student Records Office
2. Receive a grade of C or better (pass/fail grades are not acceptable)
3. No petition is needed if the course has been previously approved. See the list of approved courses in the Transfer Credit database  
[http://ecs.syr.edu/forms/transfer\\_credit.asp](http://ecs.syr.edu/forms/transfer_credit.asp) .
4. Have an official transcript showing the course taken sent to:

**Syracuse University**  
College of Engineering & Computer Science  
Student Records Office  
130 Link Hall  
Syracuse, New York  
13244-1240  
P:315-443-5191\*\*\*F:315-443-4459  
Attn: Maria Marceau

Students should check the regulations of the school they are planning to attend as early as possible since many schools require written permission for non-matriculated students to register.

## Withdrawal from a Course

Students may withdraw from a course up until two weeks before the last day of classes. A WD will appear on the student's record but will not be counted in the grade point average.

Withdrawal petitions are available in the Student Records Office. The petition must be completed by the student and then the following signatures must be obtained:

1. Course Instructor
2. Student's Advisor
3. Senior Associate Dean

Submit a withdrawal petition to the Registrar's Office, 106 Steele Hall.

**Withdrawal petitions will not be accepted after the deadline.**

## All University Requirements

### English Courses for Foreign Students

All international students (and all students whose English is not their primary language) must take the English Language Assessment (ELA) upon arrival at Syracuse University. The results will determine what sequence of Writing or English courses must be taken. The sequence becomes a requirement for graduation in the College of Engineering and Computer Science and meets the University writing requirement. This sequence may result in extra credit hours required for graduation.

NOTE: Remedial English courses (ENL 201,202,203,205,207) do not count towards degree requirements.

### Writing Courses

Writing Studio I and II (WRT 105,205) are required for all students. Some students may satisfy the requirement by scoring 4 or 5 on the Advanced Placement English Language & Composition Exam of the CEEB or by earning 6 credits in SU's Project Advance English course.

ENL 211 and 213, fulfill Syracuse University's writing requirement for undergraduate students. Thus, after completing these courses, a student has taken the equivalent of WRT 105 and 205 and is ready to enroll in any other writing course that may be required.

## All-College Requirements

### Introduction to Engineering and Computer Science

All first-year ECS students are required to complete ECS 101, Introduction to Engineering and Computer Science. You will be registered for a section of this course by the major you have chosen or by the designation, undeclared. The section for each major is taught by a faculty member from that major; the sections for undeclared students are taught by senior faculty members in the College who have a broad, general knowledge of the majors. In the course, you will receive an introduction to each major offered in the College. In addition, you will spend the semester working with other students and a faculty instructor in developing a baseline of mathematical and scientific skills which you will apply in future course work.

### Free Electives

Any course approved by the faculty advisor may be assigned to the free elective area. These may be technical or social science/humanities courses. Remedial courses may not be used towards these requirements. **For Aerospace, Mechanical, Computer Science and SIS majors only**, can use physical education as free electives.

### Mathematics

All ECS students **except Computer Engineering & Computer Science** are required to complete the following calculus courses, MAT 295, MAT 296, and MAT 397. All programs of study require additional mathematics courses beyond these three courses.

### Natural Sciences

All ECS students are required to complete at least one semester of calculus-based physics. All programs of study require additional natural science courses beyond the physics course.

## Physical Education Courses (PED)

Physical Education Courses are not required.

*For Aerospace, Mechanical, Computer Science and SIS Majors: PED courses may be used for free-elective credit only.*

## Remedial Courses

The following courses are considered by the College Faculty to be remedial and credit for these courses will not be counted toward the total credit hour requirement for graduation: Except SIS majors - MAT 194 -Pre-calculus is required for the major.

ENL 201 - Intermediate English for Non-Native Speakers

ENL 202 - Intermediate English for Non-Native Speakers

ENL 203 - Speaking and Listening for Non-Native Speakers of English

ENL 205 - Intensive Intermediate English for Non-Native Speakers

ENL 207 - Advanced Integrated Skills for Non-Native Speakers of English

MAT 193 - Algebra Infused Pre-Calculus

MAT 194 - Pre-Calculus

## ROTC Courses

An ROTC course, which is cross-listed, with another Syracuse University course is treated in the same manner as the cross-listed course and may thus be used to satisfy degree requirements. ROTC courses, which are not cross-listed, will not count toward degree requirements. For CIS students, the courses, which are not cross-listed, may be used for free-elective credit.

## Senior Year

Degree Works is available on MySlice, this is a web-based tool to help students and advisors monitor a student's progress toward degree completion.

Degree Works combines Syracuse University's degree requirements and the coursework a student has completed into an easy-to-read worksheet that helps to show a student what courses and requirements still need to be completed.

**Responsibility for the verification of information in this report rests with you, the student. Final verification of all degree requirements are done by your department and Student Records Office.**

This should be done prior to registration for the final semester. It is advisable that you do a preliminary check before registration for the final two semesters.

## File Diploma Request

When an undergraduate student attains Junior standing (60 credits or more), the File Diploma Request link becomes available under Student Services in MySlice. Students must use this link to specify the term in which they intend to graduate and to provide information for their diploma. Students must also contact their home school or college to review all graduation requirements.

## Diplomas & Status Verification

Graduating students notify the University of their intent to graduate through the File Diploma Request process, accessed through MySlice. This process must be completed to ensure inclusion in the degree certification review process and receipt of commencement information and, eventually, a diploma. Any questions or problems about diplomas should be directed to the Diploma Office, 106 Steele Hall, (315)443-2222.

During the interim period between certification and the receipt of the diploma, students may request a letter verifying their degree from the Student Records Office, 130 Link Hall. After you have received your diploma your degree can be verified through the [National Clearinghouse](#).

## Graduation

All students must have a minimum cumulative GPA of 2.00 and at least a 2.00 GPA in all ECS, Math & Science courses taken at Syracuse University. In addition, students must meet all degree requirements specific to their chosen major. Seniors graduating in May or August may attend the May Commencement Ceremony. December graduates attend graduation ceremonies held in the following May. For more information concerning commencement, contact the Special Events Office, 210 Women's Building, 443-4631.

In addition to commencement, there is an annual College Convocation for seniors and their parents. All graduates are welcome to attend this event. Information about the ECS Convocation will be available during the Spring Semester.

## Professional Engineer Exam

Students that are within 20 credits of an engineering baccalaureate degree are eligible to sit for the Fundamental of Engineering (FE) Exam. This exam is the first step in your pursuit to become a professional licensed engineer (PE). The FE exam is given year round at Pearson VUE Test Centers across the nation - interested students are responsible for scheduling their own test date and location via the following website <http://ncees.org/engineering/fe/>.

# Advance Placement Examinations

Exam Subject/Title	Minimum Score	Awardable Credit	Equivalent SU Course	Recommending School/College	Additional School/College Requirements or Qualifications
Art/Drawing	5	3	Studio Elective	Visual and Performing Arts	<i>Visual and Performing Arts</i> Does not count toward Art and Design Freshman Foundation studio courses.
Art/2-D Design	5	3	Studio Elective	Visual and Performing Arts	<i>Visual and Performing Arts</i> Does not count toward Art and Design Freshman Foundation studio courses.
Art History	3	6	HOA 105,106	Arts and Sciences	
Biology	4	8	BIO 121, 123 and 124	Arts and Sciences	
Chemistry	3 or 4 5	3 8	CHE 103 CHE 106/107 & 16/117	Arts and Sciences	<i>Arts and Sciences</i> Only a score of 5 counts as a sequence in natural sciences and mathematics. Pre-medical students should consult with health professions advising before accepting AP chemistry credit.
Chinese	3 4	4 4	CHI 102 CHI 201	Arts and Sciences Arts and Sciences	<i>Public Communications</i> Must also place out of CHI 102 (with a score of 3) or CHI 201 (with a score of 4 or 5) on the placement exam.
Comparative Government & Politics	4	3	PSC 123	Arts and Sciences	
Computer Science A or Computer Science AB	3	3	CPS 196	Engineering and Computer Science	<i>Engineering and Computer Science</i> Students will receive this credit only upon approval of their department chair.
English Language and Composition	4	6	WRT 105-205	Arts and Sciences	<i>Education</i> (Inclusive) will accept a score of 3 only after a grade of B+ or higher is earned in an SU writing course.
English Literature and Composition	4	6	ETS151 (or 117 or 118 or 152 or 153) and WRT 105	Arts and Sciences	<i>Arts and Sciences</i> Students scoring 4 or better will receive 3 credits for <a href="#">ETS 151</a> . Such students who subsequently elect to take <a href="#">ETS 151</a> may transfer the credit to one of the following: <a href="#">ETS 117</a> , <a href="#">118</a> , <a href="#">152</a> , or <a href="#">153</a> . 3 additional credits are awarded for <a href="#">WRT 105</a>
Environmental Science	3	3	EAR 200	Arts and Sciences	
European History	4	6	HST 111,112	Arts and Sciences	
French Language & Culture	3	4	FRE 102	Arts and Sciences	<i>Public Communications</i> Must also place out of FRE 102 on the placement examination
German Language & Culture	3	4	GER 102	Arts and Sciences	<i>Public Communications</i> Must also place out of GER 102 on the placement examination
Human Geography	4	3	GEO 105 or 171	Arts and Sciences	
Latin	3 4 5	4 4 7	LAT 102 LAT 201 LAT 201,320	Arts and Sciences	<i>Public Communications</i> Must also place out of LAT 102 on the placement examination
Italian Language and Culture	3	4	ITA 102	Arts and Sciences	<i>Public Communications</i> Must also place out of ITA 102 (with score of 3) or ITA 201 (with score of 4 or 5) on the placement exam.
Japanese language and Culture	3 4	4 4	JPS 102 JPS 201	Arts and Sciences	<i>Public Communications</i> Must also place out of JPS 102 (with a score of 3) or JPS 201 (with a score of 4 or 5) on the placement examination
Macroeconomics*	4	3	ECN 102	Arts and Sciences	
Microeconomics*	4	3	ECN 101	Arts and Sciences	
Mathematics—Calculus AB	3 4	3 6 or 4	MAT 285 MAT 285 and 286 or MAT 295	Arts and Sciences	<i>Engineering and Computer Science</i> 4 credits awarded for MAT 295 only, pending results of the math placement examination
Mathematics—Calculus BC	4	8	MAT 295,296	Arts and Sciences	<i>Engineering and Computer Science</i> Up to 8 credits awarded for MAT 295 only, pending results of the math placement examination.
Mathematics—Calculus BC-AB sub-score	3 4	3 6 or 4	MAT 285 MAT285 and 286 or MAT 295	Arts and Sciences	<i>Arts and Sciences</i> Exemption from Quantitative Skills and substitute for MAT 285 in natural sciences and mathematics.
Mathematics Level II'	3	3	MAT 194	Arts and Sciences	
Music Theory	3	3	HOA/MTC 125	Arts and Sciences	
Physics B	3	8	PHY 101,102	Arts and Science	<i>Education</i> (Inclusive) will accept a score of 3 only after a grade of B+ or higher is earned in an SU lab/science course.
Physics C (Mechanics)	3	4	PHY 101 or 211,221	Arts and Sciences	
Physics C (Electricity and Magnetism)	3	4	PHY 102 or 212,222	Arts and Sciences	
Psychology	4	3	PSY 205	Arts and Sciences	
Spanish Language	3	4	SPA 102	Arts and Sciences	<i>Public Communications</i> Must also place out of SPA 102 on the placement examination
Spanish Literature	3 4	4 4	SPA 102 SPA 201	Arts and Sciences	<i>Public Communications</i> Must also place out of SPA 102 (with a score of 3) or SPA 201 (with a score of 4 or 5) on the place examination
Statistics	3	3 or 4	MAT121,221 or STT101	Arts and Sciences	<i>Management</i> Credit accepted as MAS 261
U.S. Government & Politics	4	3	PSC 121	Arts and Sciences	
U.S. History	4	6	HST 101,102	Arts and Sciences	
World History	4	6	HST 121, 122	Arts and Sciences	

## Partial List of acceptable Social Science/ Humanities courses:

### Social Sciences Division

AAS (African American Studies)	PAF (Public Affairs)	NAT (Native American Studies)
HST (History)	*HNR (Honors)	WGS (Women's & Gender Studies)
PSY (Psychology)	*GEO (Geography)	LAS (Latin American Studies)
*ANT (Anthropology)	PSC (Political Science)	
MAX (Maxwell)	SAS (South Asian Studies)	
SOC (Sociology)	MES (Middle Eastern Studies)	
ECN (Economics)		

### Humanities Division

AAS (African American Studies)	LIN (Linguistics)	HOM & HOA (Art & Music Histories)
HST (History)	REL (Religion)	LAS (Latin American Studies)
PHI (Philosophy)	LIT (Literature)	MES (Middle Eastern Studies)
*ANT (Anthropology)	*HNR (Honors)	NAT (Native American Studies)
HUM (Humanities)	All Foreign Languages	SAS (South Asian Studies)
QSX (LGBT)	WGS (Women's & Gender Studies)	
ETS (English Textual Studies)		

\*See back of curriculum sheets for Major specific requirements\*

### Not a Social Science / Humanities courses

Course Prefix	Course Number
ANT	131
ANT	433
CFS	Any number
GEO	155
GEO	215
GEO	316
GEO	326
GEO	482
GEO	455
HNR	250
HNR	255
HNR	350
HNR	355
HNR	450
HNR	455
PSY	223
PSY	252
PSY	323
PSY	324
PSY	334

For the complete list of exceptions please see the course catalog  
<http://coursecatalog.syr.edu/index.php> .

# Curriculum Requirements

## Aerospace Engineering Curriculum

College of Engineering and Computer Science														
Aerospace Engineering					Name _____									
Fall 2017					SUID _____									
pr= prerequisite, co=corequisite					CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR
Minor/Second Major (if any): _____					GRADE	F	S	F	S	F	S	F	S	+/-
<b>MATHEMATICS (15)</b>														
MAT295 Calculus 1					(4)	4								
MAT296 Calculus 2 (pr: MAT 295 min C-)					(4)		4							
MAT397 Calculus 3 (pr: MAT 296 min C-)					(4)			4						
MAT485 Diff Eqn & Matrix Algebra for Engrs (pr: MAT 397)					(3)				3					
<b>SCIENCES (12)</b>														
CHE106 General Chem Lecture I (co: CHE 107)					(3)	3								
CHE107 General Chem Lab I (co: CHE 106)					(1)	1								
PHY211 General Physics 1 (co: PHY 221, MAT 295)					(3)		3							
PHY221 General Physics Lab 1 (co: PHY 211)					(1)		1							
PHY212 General Physics 2 (pr: PHY 211, 221, co: PHY 222, MAT 296)					(3)			3						
PHY222 General Physics Lab 2 (co: PHY 212, MAT296)					(1)			1						
<b>WRITING SKILLS/SOCIAL SCIENCE/HUMANITIES (15)</b>														
WRT105 Studio 1: Practices of Academic Writing					(3)	3								
WRT205 Studio 2: Critical Research and Writing (pr: WRT 105)					(3)		3							
SSH Elective _____					(3)	3								
SSH Elective _____					(3)		3							
SSH Elective _____					(3)			3						
<b>PROGRAM CUSTOMIZATION (15)</b>														
Course1 _____					(3)				3					
Course2 _____					(3)					3				
Course3 _____					(3)						3			
Course4 _____					(3)							3		
Course5 _____					(3)								3	
<b>ENGINEERING (23)</b>														
ECS101 Intro. to Engr. & Comp. Sci.					(3)	3								
ECS104 Engr. Comp Tools (co: MAT 295)					(3)		3							
ECS221 Statics (pr: PHY 211, co: MAT 296)					(3)			3						
ECS222 Dynamics (pr: ECS 221, MAT 296)					(3)				3					
ECS325 Mechanics of Solids (pr: ECS 221, co: MAT 397)					(4)				4					
ECS326 Engr. Materials, Prop. & Proc.					(3)			3						
ELE231 Elec. Engr. Fundamentals 1 (pr: MAT 295)					(3)					3				
ELE291 Elec. Engr. Laboratory 1 (co: ELE 231)					(1)					1				
<b>AEROSPACE ENGINEERING (48)</b>														
AEE342 Aerodynamics (pr: MAE 341)					(4)					4				
AEE343 Compressible Flow (pr: MAE 251, MAE 341)					(3)					3				
AEE427 Aircraft Performance & Dynamics (pr: MAE 341)					(4)						4			
AEE446 Propulsion (pr: AEE 343)					(3)							3		
AEE471 Des. & Anal. of Aero. Struct. (pr: ECS 325)					(4)							4		
AEE472 Syn. of Aerospace Systems (pr: AEE 427)					(4)								4	
AEE577 Space Flight (pr: ECS 222)					(3)									3
MAE251 Thermodynamics (pr: PHY 211)					(4)				4					
MAE284 Intro to CAD (pr: ECS 101)					(3)				3					
MAE312 Engineering Analysis (pr: ECS 104, MAT 485)					(3)					3				
MAE315 Mech/Aero Lab I (pr: ECS 325, co: MAE 341)					(3)					3				
MAE321 Dynamics of Mech. Systems (pr: ECS 325, ECS 222, MAT 485)					(3)						3			
MAE322 Control Systems for MAE (pr: MAT414 or 485, co: MAE321)					(3)						3			
MAE341 Fluid Mechanics (pr: ECS 221, MAT 397, PHY 211)					(4)					4				
<b>TOTAL CREDITS</b>						<b>128</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>14</b>	<b>13</b>



**AEROSPACE ENGINEERING**  
**Curriculum Notes**  
**2017-2018**

1. There are a total of 24 elective credits in the B.S. AEE program. These credits may be distributed in one of the following two ways:
  - Option 1:** A student may complete any University minor or second major that requires at least 12 credit hours beyond the core AEE curriculum. In addition to, or as part of, this minor or second major, at least 9 credit hours must be taken from the social sciences or humanities (SS/H). Excluding those courses that count towards the minor or second major, a maximum of 6 credit hours that are neither SS/H nor technical electives may be taken as part of the 24 elective credits.
  - Option 2:** A student who does not complete a University minor or second major must take at least 9 credits from the social sciences or humanities (SS/H), at least 6 credits of technical electives, and a maximum of 6 credit hours that are neither SS/H nor technical electives.
2. Technical electives consist of all 300 level and above courses offered by any department within the college of engineering and computer science or by the math or physics departments, except for ECS 391, ECS 392 and any course numbered 300, 400 or 500 that is offered outside of the MAE department. However, in some instances, these courses may be approved by petition. In addition, no more than 3 credit hours of technical electives may be taken outside of the MAE department.
3. Many technical electives in the MAE Department are scheduled on a 2-year rotation, so students should make themselves aware of technical elective offerings starting in their third year.
4. Social science or humanities (SS/H) courses are to be selected from the "Humanities List", the "Social Sciences List", or any foreign language course, as published in the SU Course Catalog.
5. Only courses taken (1) for a letter grade, (2) at the 300-level or greater, or (3) offered by the physical education department may be used to satisfy the requirements for the elective credits that are neither SS/H nor technical electives.

## Bioengineering Curriculum

College of Engineering and Computer Science														
Bioengineering					Name _____									
Fall 2017					SUID _____									
pr= prerequisite, co=corequisite					CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR.
Minor/Second Major (if any): _____					GRADE	F	S	F	S	F	S	F	S	+/-
<b>MATHEMATICS (15)</b>														
MAT295 Calculus 1					(4)	4								
MAT296 Calculus 2 (p: MAT 295 min C-)					(4)		4							
MAT397 Calculus 3 (p: MAT 296 min C-)					(4)			4						
MAT485 Diff. Eq. & Matrix Algebra (p: MAT 397)					(3)				3					
<b>SCIENCES (24)</b>														
CHE106 General Chemistry 1					(3)	3								
CHE107 General Chemistry Lab 1 (c: CHE 106)					(1)	1								
CHE116 General Chemistry 2 (p: CHE106)					(3)		3							
CHE117 General Chemistry Lab 2 (p: CHE 107, c: CHE 116)					(1)		1							
CHE275 Organic Chemistry 1 (p: CHE 116)					(3)			3						
CHE276 Organic Chemistry Lab 1 (p: CHE 117, c: CHE 275)					(2)			2						
PHY211 General Physics 1 (c: PHY 221, MAT 295)					(3)		3							
PHY221 General Physics Lab 1 (c: PHY 211)					(1)		1							
PHY212 General Physics 2 (p: PHY 211,221 , c: PHY 222, MAT 296)					(3)			3						
PHY222 General Physics Lab 2 (c: PHY 212)					(1)			1						
BIO 327 Cell Biology (p: BIO 121 or BEN 301, CHE 106)					(3)							3		
<b>WRITING SKILLS/SOCIAL SCIENCE/HUMANITIES (24)</b>														
WRT105 Studio 1: Practices of Academic Writing					(3)	3								
WRT205 Studio 2: Critical Research and Writing (p: WRT 105)					(3)			3						
SSH Elective _____					(3)	3								
SSH Elective _____					(3)			3						
SSH Elective _____					(3)				3					
SSH Elective _____					(3)					3				
SSH Elective _____					(3)						3			
SSH Elective _____					(3)							3		
<b>ENGINEERING (18)</b>														
ECS101 Intro. to Engr. & Comp. Sci					(3)	3								
ECS104 Engr. Comput. Tools (c: MAT 295)					(3)		3							
ECS221 Statics (p: PHY 211, c: MAT 296)					(3)			3						
ECS326 Engr. Materials, Prop. & Proc.					(3)				3					
ELE231 Elec. Engr. Fundamentals 1 (p: MAT 295)					(3)			3						
ELE232 Elec. Engr. Fundamentals 2 (p: ELE 231)					(3)				3					
<b>BIOENGINEERING (40)</b>														
BEN212 Exp. Methods in BMCE (p: MAT 296, ECS 104)					(3)			3						
BEN231 Mass and Energy Balances					(3)		3							
BEN301 Biol. Prin. for Engineers (p: CHE 275, MAT 397, ECS 104)					(4)				4					
BEN333 Fluid Transport (p: MAT 397, PHY 212)					(3)				3					
BEN341 Heat & Mass Transfer (p: BEN 333)					(4)					4				
BEN364 Quantitative Physiology (p: BEN 301)					(4)					4				
BEN465 Biomechanics (p: ECS 221, MAT 485, BEN 364)					(3)						3			
BEN468 Biomaterials					(3)							3		
BEN481 Bioinstrumentation (p: ELE 231, 232)					(3)						3			
BEN485 Bioengineering Laboratory (c: BEN 465, BEN 481)					(4)						4			
BEN487 Bioengineering Capstone Design					(3)							3		
BEN575 Process Control (p: MAT 485)					(3)					3				
<b>TECHNICAL ELECTIVES (9)</b>														
Tech Elec _____					(3)							3		
Tech Elec _____					(3)								3	
Tech Elec _____					(3)								3	
<b>TOTAL CREDITS</b>						<b>130</b>	<b>17</b>	<b>15</b>	<b>16</b>	<b>18</b>	<b>16</b>	<b>17</b>	<b>16</b>	<b>15</b>

**BIOENGINEERING  
Curriculum Notes  
2017-2018**

1. Bioengineering students must complete a minimum of **9 credits of Technical Electives** from mathematics, natural sciences, and engineering courses not included in the required bioengineering curriculum. These courses are intended to be challenging (200-level or higher), although relevant AP credits and introductory biology courses (BIO 121 and BIO 123/124) may also count. The breadth of technical elective options is intended to be flexible to allow students to develop skill-sets for their chosen careers. It is highly recommended that students work with academic advisors to identify technical electives to build towards their long-term career objectives. Technical electives are subject to academic advisor and program director approval, and courses not included in the description above may be approved by petition if found to have sufficient technical content.
  
2. Bioengineering students must complete a minimum of **18 credits Social Sciences, Humanities, or Foreign Language** using any one of the following options:

**Option 1:** Complete a minimum of 18 credits from the Social Sciences List\* and/or Humanities List\* and/or of a foreign language<sup>†</sup>.

**Option 2:** Petition to use completion of the Engineering and Computer Science Management minor to complete the Social Science and Humanities elective requirement.

\*The Humanities List and Social Sciences List of approved courses are published by the College of Arts and Sciences in the Undergraduate Catalog for Advising ([coursecatalog.syr.edu](http://coursecatalog.syr.edu)). Students should confirm that a course intended to fulfill this requirement is in one of these lists.

\*Please note that the following courses are **NOT** social sciences or humanities: ANT 131, ANT 431, ANT 433, all CFS, GEO 155, GEO 215, GEO 316, GEO 326, GEO 482, GEO 455, HNR 250, HNR 255, HNR 350, HNR 355, HNR 450, HNR 455; PSY 223, PSY 252, PSY 323, PSY 324, PSY 334. This list is not exhaustive.

\*Students may count *ECS 392- Ethical Aspects of ECS* towards their Social Science and Humanities elective requirements.

<sup>†</sup>Foreign language grammar and/or oral practice courses may not be in student's native language. Foreign language courses focused on literature, culture, or linguistics in a student's native language are acceptable.

## Chemical Engineering Curriculum

College of Engineering and Computer Science													
Chemical Engineering					Name _____								
Fall 2017					SUID _____								
pr=prerequisite, co=corequisite					(CREDIT)	FIRST YEAR		SOPHOMORE		JUNIOR		SENIOR	
Minor/Second Major (if any): _____					GRADE	F	S	F	S	F	S	F	S
<b>MATHEMATICS (15)</b>													
MAT295	Calculus 1	(4)	4										
MAT296	Calculus 2 (pr: MAT 295 min C-)	(4)		4									
MAT397	Calculus 3 (pr: MAT 296 min C-)	(4)			4								
MAT485	Diff. Eq. & Matrix Alg. (pr: MAT 397)	(3)				3							
<b>SCIENCES (26)</b>													
CHE106	General Chemistry 1	(3)	3										
CHE107	General Chemistry Lab 1 (co: CHE 106)	(1)	1										
CHE116	General Chemistry 2 (pr: CHE 106)	(3)		3									
CHE117	Gen. Chemistry Lab 2 (pr: CHE 107, co: CHE 116)	(1)		1									
CHE275	Organic Chemistry 1 (pr: CHE 116)	(3)			3								
CHE276	Org. Chemistry Lab 1 (pr: CHE 117, co: CHE 275)	(2)			2								
CHE346	Phys. Chem. 1 (pr: CHE 116, MAT 296 co: PHY 212)	(3)					3						
CHE347	Phys./An. Chem. Lab (pr: CHE 275/276, co: CHE 346)	(2)					2						
PHY211	General Physics 1 (co: PHY 221, MAT 295)	(3)		3									
PHY221	Gen. Physics Lab 1 (co: PHY 211)	(1)		1									
PHY212	Gen. Phys. 2 (pr: PHY 211,221, co: PHY 222, MAT 296)	(3)			3								
PHY222	General Physics Lab 2 (co: PHY 212)	(1)			1								
<b>WRITING/SOCIAL SCIENCES/HUMANITIES (27)</b>													
WRT105	Studio 1: Practices of Academic Writing	(3)	3										
WRT205	Studio 2: Critical Research and Wrt (pr: WRT 105)	(3)				3							
WRT307	Adv. Wrt Studio: Prof. Wrt (pr: WRT 205)	(3)					3						
SSH Elective _____		(3)	3										
SSH Elective _____		(3)				3							
SSH Elective _____		(3)				3							
SSH Elective _____		(3)								3			
SSH Elective _____		(3)								3			
SSH Elective _____		(3)									3		
<b>ENGINEERING (9)</b>													
ECS101	Intro. to Engr. & Comp. Sci.	(3)	3										
ECS104	Engr. Comput. Tools (co: MAT 295)	(3)		3									
ECS326	Engr. Materials, Prop. & Proc.	(3)					3						
<b>CHEMICAL ENGINEERING (36)</b>													
CEN212	Exp. Methods in BMCE (pr: MAT 296, ECS 104)	(3)				3							
CEN231	Mass and Energy Balances	(3)			3								
CEN252	Chem. Engr. Thermodynamics 1 (pr: CEN 231)	(3)				3							
CEN311	Chemical Engineering Lab 1 (co: CEN 341)	(2)						2					
CEN333	Fluid Transport (pr: MAT 397, PHY 212)	(3)					3						
CEN341	Fund. Of Heat & Mass Transfer (pr: CEN 333)	(4)						4					
CEN353	Chem. Engr. Thermodynamics 2 (pr: CEN 252)	(3)					3						
CEN412	Chemical Engineering Lab 2 (pr: CEN 341)	(2)								2			
CEN542	Mass & Heat Transf. Operations (pr: CEN 341)	(3)								3			
CEN574	Process Design (pr: CEN 353,587)	(4)										4	
CEN575	Process Control (pr: MAT 485)	(3)						3					
CEN587	Chemical Reaction Engineering (pr: CEN 341)	(3)								3			
<b>TECHNICAL ELECTIVES (15)</b>													
Choose ONE of: CHE 356, CEN 451, CEN 551		(3)							3				
Tech Elective _____		(3)							3				
Tech Elective _____		(3)								3			
Tech Elective _____		(3)									3		
CEN Tech Elective _____		(3)										3	
<b>TOTAL CREDITS</b>					<b>128</b>	<b>17</b>	<b>15</b>	<b>16</b>	<b>18</b>	<b>17</b>	<b>15</b>	<b>17</b>	<b>13</b>

**CHEMICAL ENGINEERING**  
**Curriculum Notes**  
**2017-2018**

1. Chemical engineering students must complete a minimum of **15 credits of Technical Electives** from mathematics, natural sciences, and engineering courses not included in the required chemical engineering curriculum. All technical electives are subject to approval by the student's academic advisor and program director. Courses not included in the description above may be approved by petition if found to have sufficient technical content.
  - a. **3 credits of this requirement are restricted and must be chosen from:**
    - CHE 356 Physical Chemistry (pr: CHE 346), or
    - CEN 451 Molecular and Statistical Thermodynamics (pr: CEN 353), or
    - CEN 551 Biochemical Engineering (pr: CHE 275)
  - b. **At least one additional technical elective must be in chemical engineering.**
  
2. Chemical engineering students must complete a minimum of **18 credits Social Sciences, Humanities, and/or Foreign Language** using any one of the following options:
  - Option 1:** Complete a minimum of 18 credits from the Social Sciences List\* and/or Humanities List\* and/or of a foreign language<sup>†</sup>.
  - Option 2:** Petition to use completion of the Engineering and Computer Science Management minor to complete the Social Science and Humanities elective requirement.

\*The Humanities List and Social Sciences List of approved courses are published by the College of Arts and Sciences in the Undergraduate Catalog for Advising ([coursecatalog.syr.edu](http://coursecatalog.syr.edu)). Students should confirm that a course intended to fulfill this requirement is in one of these lists.

\*Please note that the following courses are **NOT** social sciences or humanities: ANT 131, ANT 431, ANT 433, all CFS, GEO 155, GEO 215, GEO 316, GEO 326, GEO 482, GEO 455, HNR 250, HNR 255, HNR 350, HNR 355, HNR 450, HNR 455; PSY 223, PSY 252, PSY 323, PSY 324, PSY 334. This list is not exhaustive.

\*Students may count *ECS 392- Ethical Aspects of ECS* towards their Social Science and Humanities elective requirements.

<sup>†</sup>Foreign language grammar and/or oral practice courses may not be in student's native language. Foreign language courses focused on literature, culture, or linguistics in a student's native language are acceptable.

## Civil Engineering Curriculum

College of Engineering & Computer Science										
Civil Engineering					Name _____					
Fall 2017					SUID _____					
pr= prerequisite, co=corequisite										
Minor/Second Major (if any): _____										
CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR	
GRADE	F	S	F	S	F	S	F	S		
<b>MATHEMATICS (15)</b>										
MAT295	Calculus 1	(4)	4							
MAT296	Calculus 2 (pr: MAT 295 min C-)	(4)		4						
MAT397	Calculus 3 (pr: MAT 296 min C-)	(4)			4					
MAT485	Diff. Equations & Matrix Algebra (pr: MAT 397)	(3)				3				
<b>SCIENCES (16)</b>										
CHE106	General Chemistry I	(3)	3							
CHE107	General Chemistry Lab I (co: CHE 106)	(1)	1							
PHY211	General Physics 1 (co: PHY 221, MAT 295)	(3)		3						
PHY221	General Physics Lab 1 (co: PHY 211)	(1)		1						
PHY212	General Physics 2 (pr: PHY 211, 221, co: PHY 222, MAT 296)	(3)			3					
PHY222	General Physics Lab 2 (co: PHY 212)	(1)			1					
<b>Select one of the following two courses:</b>										
EAR110	Dynamic Earth (4)	(4)		4						
EAR203	Earth System Science (4)									
<b>WRITING SKILLS (9)</b>										
WRT105	Studio 1: Practices of Academic Writing	(3)	3							
WRT205	Studio 2: Critical Research and Writing (pr: WRT 105)	(3)			3					
WRT307	Adv Writing Studio: Professional Writing (pr: WRT 205)	(3)				3				
<b>SOCIAL SCIENCE/HUMANITIES (18)</b>										
<b>(See curriculum notes)</b>										
SSH Elective	_____	(3)	3							
SSH Elective	_____	(3)		3						
SSH Elective	_____	(3)			3					
SSH Elective	_____	(3)		3						
SSH Elective	_____	(3)					3* or 3			
SSH Elective	_____	(3)							3	
<b>ENGINEERING (19/20)</b>										
ECS101	Intro. to Engr. & Comp. Sci.	(3)	3							
ECS221	Statics (pr: PHY 211, co: MAT 296)	(3)			3					
ECS222	Dynamics (3) (pr:ECS 221, MAT 296)	(3)				3				
ECS325	Mechanics of Solids (pr: ECS 221, co: MAT 397)	(4)				4				
CIE/ECS 326	Engineering Materials	(3)							3	
<b>Select One of the Following 2 Courses:</b>										
CIE442	Treatment Proc. In Envir. Engr (pr: CIE 327 or MAE 341, CIE 341)	( )					4** or 3			
CIE463	Intro to Sustainable Engr									
<b>CIVIL ENGINEERING (44)</b>										
CIE273	Intro to Geomatics and BIM (pr: MAT 295)	(3)			3					
CIE274	Sustainability in Civil & Env. Systems (pr: CHE 106, MAT 296)	(3)				3				
CIE327/MAE341	Fluid Mechanics (pr: MAT 397, ECS 221)	(4)					4			
CIE329	Prob, Stats and Risk for Civ & Env Engr (pr: MAT 485 or MAT 331)	(4)						4		
CIE331	Analysis of Structures and Materials (pr: ECS 325)	(3)					3			
CIE332	Design of Concrete Structures (pr: CIE 331)	(3)						3		
CIE337	Intro to Geotechnical Engineering (pr: ECS 325)	(4)					4			
CIE338	Foundation Engineering (pr: CIE 337)	(3)						3		
CIE341	Intro to Environmental Engr. (pr: CIE 274)	(3)					3			
CIE352	Water Resources Engr. (pr: CIE 327 or MAE 341)	(4)						4		
CIE401	Construction Engineering & Project Management	(3)							3	
CIE443	Transportation Engineering	(3)							3	
CIE475	Capstone Design	(4)								4
<b>ELECTIVES (6)</b>										
Free Elective	_____	(3)								3
Tech Elective	_____	(3)								3
<b>TOTAL CREDITS</b>		<b>17</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>17</b>	<b>17-18</b>	<b>12</b>	<b>13</b>	

**CIVIL ENGINEERING  
Curriculum Notes  
2016-2017**

**SS/HUM ELECTIVES**

All CIE students are required to complete at least 18 credits of SS/HUM electives. A *minimum* of one course (or 3 credits) must be chosen from each of the three groups of designated courses listed below. The remaining three SS/HUM electives (or 9 credits) can be selected from the lists below or, in addition to the lists, may be chosen from:

- any College of Arts and Sciences courses that are listed on their Humanities and Social Sciences lists in the SU Bulletin - Undergraduate Course Catalog/ Liberal Arts Core
- any foreign language courses (except student's native language)
- ECS 391 - Legal Aspects of ECS
- ECS 392 - Ethical Aspects of ECS.

Group 1: Economics and Social Issues
ECN 203 - Economics Ideas and Issues
ECN 301* - Intermediate Microeconomics
ECN 302* - Intermediate Macroeconomics
ECN 365* - The World Economy
GEO 353 - Environmental Justice
SOC 101 - Introduction to Sociology
SOC 102 - Social Problems
SOC 363 - Urban Sociology
STS/BPS 101 - Introduction to Science, Technology and Society

Group 2: Global Affairs
*ECN 365 - The World Economy
GEO 103 - Environment and Society
GEO 105 - World Geography
GEO 272 - World Cultures
GEO 273 - World Political Economy
MAX 123 - Critical Issues for the U.S.
MAX 132 - Global Community
PAF 351 - Global Social Problems
PSC 124 - International Relations
PSC 355 - International Political Economy

\* requires ECN203 as prerequisite

Group 3: Public Policy and Policy Studies
ECN/WGS 358 - Economics of US Poverty & Discrimination
GEO 203 - Society and the Politics of Nature
GEO 314 - Hazardous Geographic Environments
GEO 356 - Environmental Ideas & Policy
PAF 101 - An Introduction to the Analysis of Public Policy
PAF 409+ - Intermediate Analysis of Public Policy
PAF 451 - Environmental Policy
PSC 302- Environmental Politics and Policy
PSC 305 - Congressional Politics
PSC 308 - The Politics of US Public Policy
PSC 312 - Urban Government & Politics
PSC 318 - Technology, Politics & Environment

+ requires PAF101 as prerequisite

**Technical Electives**

Technical Electives MUST be CIE courses numbered 300 and above. They are to be selected in consultation with a student's advisor to advance the student's knowledge in a specific area of interest in civil or environmental engineering.

**Free Electives**

Any SU or ESF three or four credit course except Academic Excellence Workshops, Physical Education and remedial courses.

## Computer Engineering Curriculum

<b>College of Engineering and Computer Science</b>									
Computer Engineering					Name _____				
Fall 2017					SUID _____				
pr= prerequisite, co=corequisite									
Minor/Second Major (if any): _____									
CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR.
GRADE	F	S	F	S	F	S	F	S	+/
<b>MATHEMATICS (21)</b>									
PHI 251 Logic	(3)		3						
MAT295 Calculus 1	(4)	4							
MAT296 Calculus 2 (pr: MAT 295 min C-)	(4)		4						
MAT331 1st Course in Linear Algebra (pr: MAT 296)	(3)			3					
CIS375 Intro to Discrete Mathematics (pr: PHI 251)	(3)		3						
CIS321 Intro. to Probability and Statistics* (pr: MAT 295)	(4)					4			
<b>SCIENCES (12)</b>									
CHE106 General Chemistry I	(3)	3							
CHE107 General Chemistry I Lab (co: CHE 106)	(1)	1							
PHY211 General Physics 1 (co: PHY 221, MAT 295)	(3)		3						
PHY221 General Physics Lab 1 (co: PHY 211)	(1)		1						
PHY212 General Physics 2 (pr: PHY 211, 221, co: PHY 222, MAT 296)	(3)			3					
PHY222 General Physics Lab 2 (co: PHY 212)	(1)			1					
<b>WRITING SKILLS (9)</b>									
WRT105 Studio 1: Practices of Academic Writing	(3)	3							
WRT205 Studio 2: Critical Research and Writing (pr: WRT 105)	(3)			3					
WRT401 Adv. Wrkshp Tech Com: Desgn Mthd (pr:WRT 105, 205)	(2)						2		
WRT402 Adv. Wrkshp Tech Com: Proto. & Constr. (pr: WRT 105, 205, 401)	(1)							1	
<b>SOC. SCIENCE/HUMANITIES/GEN. ED. (9)</b>									
ECS392 Ethical Aspects of ECS	(3)				3				
SSH Elective _____	(3)		3						
SSH Elective _____	(3)				3				
<b>ENGINEERING (14)</b>									
ECS101 Intro. to Engr. & Comp. Sci.	(3)	3							
ECS102 Intro. to Computing	(3)	3							
ELE231 Electrical Engr. Fundamentals I (pr: MAT 295)	(3)		3						
ELE232 Electrical Engr. Fundamentals II (pr: ELE 231)	(3)			3					
ELE291 Electrical Lab. 1 (co: ELE 231)	(1)		1						
ELE292 Electrical Lab. 2 (co: ELE 232)	(1)			1					
<b>COMPUTER ENGINEERING (35)</b>									
CSE261 Digital Logic Design	(3)			3					
CSE262 Digital System Design and Simulation	(1)			1					
CSE283 Intro. To Object-Oriented Design (pr: ECS 102)	(3)		3						
CSE381 Computer Architecture (pr: CSE 261)	(3)				3				
CSE382 Algorithms & Data Structures (pr: CSE 283)	(3)		3						
CSE384 Systems Programming** (pr: CSE 283)	(3)			3					
CSE389 Web Sys Arch. and Programming (pr: CIS 351 or CSE 283)	(3)		3						
CSE397 FPGA and Microcontroller Design Lab (pr: CSE 261, ELE 231)	(3)				3				
CSE398 Embedded and Mobile Systems Lab (pr:CSE 397)	(3)					3			
CSE484 Intro to Computer & Network Security (pr: CIS 486 or CSE 486)	(3)				3				
CSE486 Design of Operating Systems (pr: CIS 341,342, 351 or CSE 381, 382)	(3)					3			
CSE491 Senior Design Project I (pr: CSE 398)	(1)						1		
CSE492 Senior Design Project II (pr: CSE 491)	(3)							3	
<b>TECHNICAL ELECTIVES (18)**</b>									
Tech Elective _____	(3)					3			
Tech Elective _____	(3)						3		
Tech Elective _____	(3)						3		
Tech Elective _____	(3)						3		
Tech Elective _____	(3)							3	
Tech Elective _____	(3)							3	
<b>NON-ENG./COMP. SCIENCE ELECTIVES (12)***</b>									
Arts & Science Elective _____	(3)					3			
Arts & Science Elective _____	(3)				3				
Non-Eng./Comp. Sci. Elective _____	(3)						3		
Non-Eng./Comp. Sci. Elective _____	(3)							3	
<b>TOTAL CREDITS</b>									
	<b>130</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>18</b>	<b>18</b>	<b>16</b>	<b>15</b>	<b>13</b>

\*CIS321 can be waived if a student takes both MAT521 and MAT525. \*\* Every year, three courses will be selected as Group A courses, at least two of them have to be selected \*\*\*At least 6 of the 9 credits must be from the College of Arts & Sciences.



Computer Engineering  
Curriculum Notes  
2017-2018

**Technical Electives**

Students fulfill 18 credits of technical electives by completing at least 6 credits from group A technical electives and the remaining from group B technical electives. Special topic technical courses, which from time to time are offered, may be assigned to either group A or group B as determined by Computer Engineering program committee. Every year the computer engineering program committee will review the list and may make change(s).

**Group A (*at least 6 credits*):**

- ❖ Please see the Program Director for a list of courses.

**Group B (*remaining credits*):**

Any CSE, ELE, CIS course 300 Level or above can be considered as a Group B elective

The Computer Engineering Program Committee will determine if a specific 'special topics' course can be used to fulfill the technical elective requirement.

**Social Sciences and Humanities Electives**

This 6-credit requirement for SSH electives may be fulfilled by any combination of courses whose contents are in the social science and humanities area. A glossary of course designations with such contents can be found in the Humanities Division and the Social Sciences Division of the College of Arts and Sciences with the exception of the following Anthropology - Physical courses: ANT 131, 331, 431, 432, and 433. These glossaries are given in The College of Arts and Sciences section of the Undergraduate Catalog.

**Non-Engineering/Computer Science Electives**

The purpose of this 12-credit requirement of non-engineering/computer science elective courses is to provide students with a broad educational experience in a diversity of subjects.

More specifically, technical courses offered by (or crosslisted with) the College of Engineering and Computer Science (ECS), courses with pass/fail grades, CPS courses, and 100-level courses in CHE, MAT, and PHY cannot be used to satisfy this requirement. IST courses will require permissions from academic advisors.

**General Information**

Note that you cannot take CIS 554 - Object-Oriented Programming in C++, to fulfill any requirement in the Computer Engineering undergraduate program. This is because a considerable amount of material covered in this course overlaps with the material covered in the core course CSE 283 - Introduction to Object-Oriented Design.

Note that CPS courses cannot be taken to fulfill any of the requirements for the Computer Engineering undergraduate program. These courses are designed for non-majors in Computer Engineering or in Computer Science.

Note that Fall 2017 students will be asked to take CIS 351 in place of CSE 382. Students who are sophomores in Fall 2017 will have this deviation.

**Minors**

In order to promote interdisciplinary study and facilitate the pursuit of minors, students may use up to 6 credits of technical electives towards completing minor requirements (in programs other than MAT and ELE). In this case, at least 6 credits of technical electives have to be from Group A (shown above). This special rule applies only when a student actually completes a minor requirement.

# Electrical Engineering Curriculum

College of Engineering and Computer Science											
Electrical Engineering					Name _____						
Fall 2017					SUID _____						
pr= prerequisite, co=corequisite											
Track: _____											
Minor: _____											
CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR		
GRADE	F	S	F	S	F	S	F	S	+/-		
<b>MATHEMATICS (18)</b>											
MAT295	Calculus 1	(4)	4								
MAT296	Calculus 2 (pr: MAT 295 min C-)	(4)		4							
MAT397	Calculus 3 (pr: MAT 296 min C-)	(4)			4						
MAT485	Diff Eqn & Matrix Algebra for Engrs (pr: MAT 397)	(3)				3					
MA T521	Probability and Statistics (pr: MAT 295)	(3)					3				
<b>SCIENCES (15)</b>											
CHE106	General Chemistry I	(3)	3								
CHE107	General Chemistry I Lab (co: CHE 106)	(1)	1								
PHY211	General Physics 1 (co: PHY 221, MAT 295)	(3)		3							
PHY221	General Physics Lab 1 (co: PHY 211)	(1)		1							
PHY212	General Physics 2 (pr: PHY 211, 221, co: PHY 222, MAT 296)	(3)			3						
PHY222	General Physics Lab 2 (co: PHY 212)	(1)			1						
	Science/Math Elective _____	(3)							3		
<b>WRITING SKILLS (12)</b>											
WRT105	Studio 1: Practices of Academic Writing	(3)	3								
WRT205	Studio 2: Critical Research and Writing (pr: WRT 105)	(3)			3						
WRT307	Adv. Writing Studio: Professional Writing (pr:WRT 205)	(3)				3					
WRT401	Adv. Wrkshp Tech Com: Desgn Mthd (pr:WRT 105, 205)	(2)						2			
WRT402	Adv. Wrkshp Tech Com: Proto. & Constr. (pr: WRT 105, 205, 401)	(1)								1	
<b>SOC. SCIENCE/HUMANITIES/GEN. ED. (18)</b>											
	SSH Elective _____	(3)	3								
	SSH Elective _____	(3)		3							
	SSH Elective _____	(3)			3						
ECS392	Ethical Aspects of ECS	(3)						3			
	Non-Tech Elective _____	(3)		3							
	Non-Tech Elective _____	(3)								3	
<b>ENGINEERING (10)</b>											
ECS101	Intro. to Engr. & Comp. Sci.	(3)	3								
ECS102	Intro. to Computing	(3)		3							
ECS 204	Mathematical Programming for Engineers	(1)			1						
CSE261	Digital Logic Design	(3)				3					
<b>ELECTRICAL ENGINEERING (36)</b>											
ELE231	Electrical Engr. Fundamentals I (pr: MAT 295)	(3)			3						
ELE232	Electrical Engr. Fundamentals II (pr: ELE 231)	(3)				3					
ELE291	Electrical Engr. Lab. I (co: ELE 231)	(1)			1						
ELE292	Electrical Engr. Lab. II (pr: 291, co: ELE 232)	(1)				1					
ELE314	Intro to Pow er Engineering (pr: ELE 231)	(3)					3				
ELE324	Electromagnetics I (pr: MAT 397, PHY 212)	(3)					3				
ELE331	Digital Circuits & Systems (pr: ELE 232)	(3)					3				
ELE333	Analog Circuits (pr: ELE 231, 232)	(3)						3			
ELE346	Semiconductor Devices* (pr: PHY 212)	(3)			3						
ELE351	System and Signal Analysis (pr: ELE 232, MAT 296)	(3)				3					
ELE391	Digital Circuits Laboratory (pr: ELE 292, co: ELE 331)	(3)				3					
ELE392	Analog Circuits Laboratory (pr: ELE 292, co: 333)	(3)					3				
ELE491	Senior Design Project 1	(1)							1		
ELE492	Senior Design Project 2 (pr: ELE 491)	(3)								3	
<b>TECHNICAL ELECTIVES (18)</b>											
<b>Select Two of the Following 3 Courses:</b>											
ELE312	Control Systems* (3) (pr: ELE 351)	( )					3				
ELE352	Digital Signal Processing (3) (pr: ELE 351)	( )					3				
ELE424	Fundtls of Radio Freq. & Microw aves (3) (pr: ELE 232)	( )									
<b>And Another 4 Technical Electives:</b>											
	Tech Elective _____	(3)							3		
	Tech Elective _____	(3)							3		
	Tech Elective _____	(3)								3	
	Tech Elective _____	(3)								3	
<b>FREE ELECTIVES (5)</b>											
	Free Elective _____	(2)					2				
	Free Elective _____	(3)							3		
<b>TOTAL CREDITS</b>			<b>132</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>16</b>	<b>18</b>	<b>17</b>	<b>15</b>	<b>16</b>

## ELECTRICAL ENGINEERING Curriculum Notes 2017-2018

1. Electrical Engineering (EE) students must complete 18 credit hours in social sciences/humanities/Non-Technical electives using any one of the following options:

**Option 1:** Students may use their electives to complete a non-technical minor. Students pursuing this option must plan early in their degree program.

**Option 2:** Complete the divisional perspective requirements of humanities division and take the remaining electives from the social sciences division.

**Option 3:** Complete the divisional perspective requirements of social sciences division and take the remaining electives from the humanities division.

2. In the EE program, tracks of specialization (described in the *2017-2018 Syracuse University online Undergraduate Course Catalog*: <http://coursecatalog.syr.edu> ) and minors are used to regulate technical electives. A student must complete four technical elective courses in Electrical Engineering or Computer Engineering. At a minimum, two of these courses must complete one EE track. If a student chooses to complete two tracks, there are 12 credits of technical electives. If a student chooses to complete one EE track and a technical ECS minor, the technical electives are increased to 21 credits. Courses that are not required for students who complete a technical minor are ELE 346, 325 and 312.

3. First year courses in Physics, Mathematics and computer programming may not be used as unspecified electives.

### Footnotes to the Curriculum Table:

- \* Students who choose to complete a technical ECS minor may replace these courses with technical electives.

### Tracks (Technical Electives)

Tracks are intended to provide a cohesive set of technical electives for electrical engineering students. A track usually consists of a group of four courses (12 credits). In the Department of Electrical Engineering and Computer Science there are three tracks in electrical engineering.

#### Communications Track:

ELE 351	System and Signal Analysis	3
ELE 352	Digital Signal Processing	3

#### And two of the following:

ELE 551	Communication Systems	3
ELE 458	Data Networks: Basic Principles	3
ELE 591	Special Topics in Communications	3
ELE 452	Digital Audio Signal Processing	3

#### Electromagnetics Track:

ELE 324	Electromagnetics I	3
ELE 325	Electromagnetics II*	3

#### And two of the following:

ELE 424	Fundamentals of RF & Microwaves	3
ELE 425	Microwave Engineering	3
ELE 525	Electromagnetic Compatibility	3
ELE 524	Intro to Applied Optics	3

#### Power Track:

ELE 324	Electromagnetics I	3
ELE 314	Introduction to Power Engineering**	3

#### And two of the following:

ELE 416	Electromechanical Devices	3
ELE 514	Electric Power Systems	3
ELE 417	Power Electronics	3
		3
ELE 418	Sensors and Measurements	3
ELE 591	Special topics in Power	3

\* Students who choose to complete a technical ECS minor may replace these courses (ELE346, ELE325, and ELE312) with technical electives.

\*\*To be approved by EECS faculty with technical electives.

Environmental Engineering Curriculum

College of Engineering & Computer Science									
Environmental Engineering					Name _____				
Fall 2017					SUID _____				
pr= prerequisite, co=corequisite									
Minor/Second Major (if any): _____									
CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR.
GRADE	F	S	F	S	F	S	F	S	W
<b>MATHEMATICS (15)</b>									
MAT295 Calculus 1	(4)	4							
MAT296 Calculus 2 (pr: MAT 295 min C-)	(4)		4						
MAT397 Calculus 3 (pr: MAT 296 min C-)	(4)			4					
MAT485 Diff. Equations & Matrix Algebra (pr: MAT 397)	(3)				3				
<b>SCIENCES (20)</b>									
CHE106 General Chemistry I	(3)	3							
CHE107 General Chemistry I Lab (co: CHE 106)	(1)	1							
CHE116 General Chemistry 2 (pr: CHE 106)	(3)		3						
CHE117 General Chemistry Lab 2 (pr: CHE 107, co: CHE 116)	(1)		1						
PHY211 General Physics 1 (co: PHY 221, MAT 295)	(3)		3						
PHY221 General Physics Lab 1 (co: PHY 211)	(1)		1						
GEO383 Geographic Information System	(4)					4			
<b>Select one of the following two courses:</b>									
EAR110 Dynamic Earth	(4)								
EAR203 Earth System Science								4* or 4	
<b>WRITING SKILLS (6)</b>									
WRT105 Studio 1: Practices of Academic Writing	(3)	3							
WRT205 Studio 2: Critical Research and Writing (pr: WRT 105)	(3)				3				
<b>SOCIAL SCIENCE/HUMANITIES (18)</b> (See curriculum notes)									
SSH Elective _____	(3)	3							
SSH Elective _____	(3)		3						
SSH Elective _____	(3)				3** or 3				
SSH Elective _____	(3)		3						
SSH Elective _____	(3)			3					
SSH Elective _____	(3)					3			
<b>ENGINEERING (16/17)</b>									
ECS101 Intro. to Engr. & Comp. Sci.	(3)	3							
ECS221 Statics (pr: PHY 211, co: MAT 296)	(3)			3					
ECS325 Mechanics of Solids (pr:ECS 221, co: MAT 397)	(4)				4				
CIE561 Air Resources I	(3)							3	
<b>Select One of the Following 5 Courses:</b>									
ECS222 Dynamics (3) (pr: ECS 221, MAT 296)	( )							3 or 4	
CIE/ECS 326 Engineering Materials									
ELE231 Elec. Engr. Fundamentals (3 or 4) (pr: MAT 295)									
MAE251 Thermodynamics (4) (pr: PHY 211)									
CHE346 Physical Chemistry (3) (pr: CHE 116, MAT 296, co: PHY 212)									
<b>ENVIRONMENTAL ENGINEERING (35)</b>									
CIE271 Env. Chemistry & Analysis	(3)			3					
CIE274 Sustainability in Civil & Env Engr. Systems (pr: CHE106, MAT296)	(3)				3				
CIE327/MAE341 Fluid Mechanics (pr: MAT 397, ECS 221)	(4)					4			
CIE329 Prob, Stats and Risk for Civ & Env Engr (pr: MAT 485 or MAT 331)	(4)						4		
CIE337 Intro to Geotechnical Engineering (pr: ECS 325)	(4)					4			
CIE341 Intro Environmental Engineering (pr: CIE 274)	(3)					3			
CIE352 Water Resources Engr. (pr: CIE 327 or MAE 341)	(4)						4		
CIE442 Treatment Proc. In Env Engr. (pr: CIE 327 or MAE 341, CIE 341)	(4)						4		
CIE472 Applied Env. Microbiology	(3)							3	
CIE475 Capstone Design	(4)								4
<b>ELECTIVES (18)</b>									
Prof. Elective _____	(3)							3	
Prof. Elective _____	(3)							3	
Prof. Elective _____	(3)								3
Tech Elective _____	(3)								3
Tech Elective _____	(3)							3 or 3	
Free Elective _____	(3)					3			
<b>TOTAL CREDITS</b>	<b>129-130</b>	<b>17</b>	<b>18</b>	<b>16-17</b>	<b>16-17</b>	<b>17</b>	<b>16</b>	<b>15-16</b>	<b>13-14</b>

**ENVIRONMENTAL ENGINEERING**  
**Curriculum Notes**  
**2016-2017**

### SS/HUM ELECTIVES

All CIE students are required to complete at least 18 credits of SS/HUM electives. A *minimum* of one course (or 3 credits) must be chosen from each of the three groups of designated courses listed below. The remaining three SS/HUM electives (or 9 credits) can be selected from the lists below or, in addition to the lists, may be chosen from:

- any College of Arts and Sciences courses that are listed on their Humanities and Social Sciences lists in the SU Bulletin - Undergraduate Course Catalog/ Liberal Arts Core
- any foreign language courses (except student's native language)
- ECS 391 - Legal Aspects of ECS
- ECS 392 - Ethical Aspects of ECS.

Group 1: Economics and Social Issues
ECN 203 - Economics Ideas and Issues
ECN 301* - Intermediate Microeconomics
ECN 302* - Intermediate Macroeconomics
ECN 365* - The World Economy
GEO 353 - Environmental Justice
SOC 101 - Introduction to Sociology
SOC 102 - Social Problems
SOC 363 - Urban Sociology
STS/BPS 101 - Introduction to Science, Technology and Society

Group 2: Global Affairs
*ECN 365 - The World Economy
GEO 103 - Environment and Society
GEO 105 - World Geography
GEO 272 - World Cultures
GEO 273 - World Political Economy
MAX 123 - Critical Issues for the U.S.
MAX 132 - Global Community
PAF 351 - Global Social Problems
PSC 124 - International Relations
PSC 355 - International Political Economy

\* requires ECN203 as prerequisite

Group 3: Public Policy and Policy Studies
ECN/WGS 358 - Economics of US Poverty & Discrimination
GEO 203 - Society and the Politics of Nature
GEO 314 - Hazardous Geographic Environments
GEO 356 - Environmental Ideas & Policy
PAF 101 - An Introduction to the Analysis of Public Policy
PAF 409* - Intermediate Analysis of Public Policy
PAF 451 - Environmental Policy
PSC 302- Environmental Politics and Policy
PSC 305 - Congressional Politics
PSC 308 - The Politics of US Public Policy
PSC 312 - Urban Government & Politics
PSC 318 - Technology, Politics & Environment

\* requires PAF101 as prerequisite

### Technical Electives

Technical Electives **MUST** be CIE courses numbered 300 and above. They are to be selected in consultation with a student's advisor to advance the student's knowledge in a specific area of interest in civil or environmental engineering.

### Free Electives

Any SU or ESF three or four credit course except Academic Excellence Workshops, Physical Education and remedial courses.

### Professional Electives

Professional Electives are *upper-level courses* (300 and above; as well as ECS 222, ELE 231, and MAE 251 that have not been used for degree credits), generally from professional schools at SU and SUNY-ESF, and must be selected in consultation with the student's academic advisor. Many Professional Electives can be used towards completion of a minor. Approved Professional Electives are courses offered in the following schools/colleges with the indicated prefixes that meet the above stated criteria.

School/College	Course Prefix
Architecture	ARC
Arts and Sciences	AST, BCM, BIO, CHE, ECN, EAR, GEO, MAX, MAT, PAF, PHY
Engineering and Computer Science	All course prefixes
Information Studies	IST
Whitman	ACC, BUA, EEE, FIN, INB, LPP, MAR, O&M, SHR, SOM
Newhouse	COM
VPA	CRS
SUNY-ESF	All course prefixes

Mechanical Engineering Curriculum

College of Engineering and Computer Science											
Mechanical Engineering					Name _____						
Fall 2017					SUID _____						
pr= prerequisite, co=corequisite											
Minor/Second Major (if any): _____											
CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR		
GRADE	F	S	F	S	F	S	F	S	#/		
<b>MATHEMATICS (15)</b>											
MAT295	Calculus 1	(4)	4								
MAT296	Calculus 2 (pr: MAT 295 min C-)	(4)		4							
MAT397	Calculus 3 (pr: MAT 296 min C-)	(4)			4						
MAT485	Diff Eqn & Matrix Algebra for Engrs (pr: MAT 397)	(3)				3					
<b>SCIENCES (12)</b>											
CHE106	General Chem for Engrs	(3)	3								
CHE107	General Chem Lab (co: CHE 150)	(1)	1								
PHY211	General Physics 1 (co: PHY 221, MAT 295)	(3)		3							
PHY221	General Physics Lab 1 (co: PHY 211)	(1)		1							
PHY212	General Physics 2 (pr: PHY 211, 221, co: PHY 222, MAT 296)	(3)			3						
PHY222	General Physics Lab 2 (co: PHY 212)	(1)			1						
<b>WRITING SKILLS/SOCIAL SCIENCE/HUMANITIES (12)</b>											
WRT105	Studio 1: Practices of Academic Writing	(3)	3								
WRT205	Studio 2: Critical Research and Writing (pr: WRT 105)	(3)		3							
ECN203	Economic Ideas & Issues	(3)	3								
SSH	Elective _____	(3)		3							
<b>PROGRAM CUSTOMIZATION (18)</b>											
Course1	_____	(3)			3						
Course2	_____	(3)					3				
Course3	_____	(3)						3			
Course4	_____	(3)						3			
Course5	_____	(3)							3		
Course6	_____	(3)								3	
<b>ENGINEERING (26)</b>											
ECS101	Intro. to Engr. & Comp. Sci.	(3)	3								
ECS104	Engr. Comp Tools (co: MAT 295)	(3)		3							
ECS221	Statics (pr: PHY 211, co: MAT 296)	(3)			3						
ECS222	Dynamics (pr: ECS 221, MAT 296)	(3)				3					
ECS325	Mechanics of Solids (pr: ECS 221, co: MAT 397)	(4)				4					
ECS326	Engr. Materials, Prop. & Proc.	(3)			3						
ELE231	Elec. Engr. Fundamentals 1 (pr: MAT 295)	(3)					3				
ELE291	Elec. Engr. Laboratory 1 (co: ELE 231)	(1)					1				
MAE322	Control Systems for MAE (pr: MAT414 or 485, co: MAE321)	(3)						3			
<b>MECHANICAL ENGINEERING (45)</b>											
MAE284	Intro. to CAD (pr: ECS 101)	(3)				3					
MAE251	Thermodynamics (pr: PHY 211)	(4)				4					
MAE312	Engineering Analysis (pr: ECS 104, MAT 485)	(3)					3				
MAE315	Mech/Aero Lab I (pr: ECS 325, co: MAE 341)	(3)						3			
MAE321	Dynamics of Mech. Systems (pr: ECS 325, ECS 222, MAT 485)	(3)							3		
MAE341	Fluid Mechanics (pr: ECS 221, MAT 397, PHY 211)	(4)					4				
MAE355	Heat Transfer (pr: MAE 341, co: MAE 251)	(4)						4			
MAE333	Data Analysis for Engrs. (pr: MAT 397)	(3)					3				
MEE332	Intro. Machine Des. (pr: ECS 222, ECS 325)	(3)						3			
MEE416	Mechanical Engr. Lab (pr: MAE 251, MAE 315, MAE 341, MAE 355)	(3)							3		
MEE431	Manufacturing Processes (pr: MAE 284 and ECS 326)	(3)							3		
MEE471	Design Practice (pr: MEE 332, MAE 284, co: MEE472)	(2)								2	
MEE472	Syn. Mech. Systems II (pr: MAE 284, MAE 321, MAE 322, MAE 355, co: MEE 471)	(4)								4	
<b>Select One of the Following 3 Courses:</b>											
MAE430	Intro to Design Optimization (3) (pr: MAT 397, MAT 485)	(3)							3		
MAE 571	Applic of Cmptn'l Fluid Dynmcs (3) (pr: MAE 341)	(3)									
MAE573	Applic of Finite Elemnt Anlsys (3) (pr: ECS 325, MAT 485)	(3)									
<b>TOTAL CREDITS</b>			<b>128</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>12</b>

**MECHANICAL ENGINEERING  
Curriculum Notes  
2017-2018**

1. Mechanical Engineering students must take at least 3 credit hours in the Social Science/ Humanities in addition to ECN203. Further, they must take one Numerical Elective (3 credits), one of which must be either MAE430, MAE571, or MAE573, as well as complete one of the following two 18-credit options, for a total of eight (8) Electives (24 credit hours):

**Option 1:** A University Minor - typically 18 credits coordinated by the offering department; the minor must have fewer than 12 credits of overlap with required MEE courses. A second major also satisfies this option.

**Option 2:** A Distribution of Electives - an additional 6 credits of Social Sciences/Humanities, 9 credits of Technical Electives, and a 3-credit Free Elective.

2. Technical Electives are courses at the 300 level or higher taken within the Mechanical and Aerospace (MAE) department. Selected courses from other ECS departments, mathematics, or natural sciences may be accepted as Technical Electives, but no more than 3 credit hours of the Technical Electives can be taken outside the MAE department.
3. Many technical electives in the MAE Department are scheduled on a 2-year rotation, so students should check availability of Technical Electives starting in their third year.
4. Mechanical Engineering students seeking to complete a Mathematics Minor can take a mathematics course as a Free Elective but must still complete one of the 2 options listed above.
5. Mechanical Engineering students seeking to complete the Energy Systems Minor (15 credits) must take an additional 3-credit Social Sciences/Humanities Elective.
6. Students may bundle courses into free electives if desired. The bundled courses must be taken for a letter grade and either be at the 300-level or greater, or be a physical education course. AEW credit cannot be bundled.
7. Social science or humanities (SS/H) courses are to be selected from any foreign language course, the "Humanities List", or the "Social Sciences List", as published in the SU Course Catalog.

# Systems & Information Science Curriculum

**College of Engineering and Computer Science**  
**Systems & Information Science** Name \_\_\_\_\_  
**Fall 2017** SUID \_\_\_\_\_

pr=prerequisite, co=corequisite  
 Minor/Second Major (if any): \_\_\_\_\_

CREDIT	FIRST YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR
	F	S	F	S	F	S	F	S	

GRADE	F	S	F	S	F	S	F	S	VAR
<b>Writing and Communication Skills (9 cr)</b>									
WRT105 Studio 1: Practices of Academic Writing	(3)	3							
WRT205 Studio 2: Critical Research and Writing (pr: WRT 105)	(3)			3					
<b>Select one of the following three courses:</b>	(3)					3			
CRS/CAS325 Presentational Speaking (3)									
IST 344 Info. Reporting & Presentations (3)									
<b>Arts &amp; Sciences Elec (39 cr) 6 cr Hum, 6 cr SS, 6 cr Nat Sci. &amp; Math, 21 cr (in total) SS and/or Hum and/or VPA</b>									
Humanities _____	(3)	3							
Humanities _____	(3)		3						
Soc.Scie _____	(3)		3						
Soc.Scie _____	(3)		3						
NS/Math _____	(3)			3					
NS/Math _____	(3)				3				
A&S/VPA _____	(3)					3			
A&S/VPA _____	(3)						3		
A&S/VPA _____	(3)							3	
A&S/VPA _____	(3)								3
A&S/VPA _____	(3)								3
A&S/VPA _____	(3)								3
A&S/VPA _____	(3)								3
<b>Free Electives (3 cr)</b>									
Free Elec _____	(3)			3					
<b>Mathematics Foundations (13 cr)</b>									
MAT194 Pre-Calculus	(4)	4							
PHI 251 Logic	(3)		3						
CIS 375 Intro to Discrete Math (pr: PHI 251)	(3)			3					
CIS 223 Statistical Reasoning and Practice (pr: MAT 194)	(3)				3				
<b>SIS Core (32 cr)</b>									
ECS101 Intro to Engr & Comp Sci	(3)	3							
<b>Computing Core (20 Cr)</b>									
ECS102 Intro to Computing	(3)	3							
CIS 252 Intro to Computer Science	(4)		4						
CIS 351 Data Structures (pr: CIS 252)	(4)			4					
CIS/CSE386 * Princ of Computer Systems Des. (pr: ECS 102, CIS 351)	(3)				3				
CIS 453 Software Specifications & Design (pr: CIS 351 or CSE 382)	(3)						3		
CIS 454 Software Implementations (pr: CIS 453)	(3)							3	
<b>Information Management Core (9 cr) **</b>									
IST 335 Intro to Information-Based Organ.	(3)			3					
IST 352 Information Analysis of Organ Sys.	(3)				3				
IST 345 Managing Information Sys Projects	(3)					3			
<b>Short Technical Sequence (6 cr)</b>									
Tech Spec _____	(3)						3		
Tech Spec _____	(3)					3			
<b>Focus Area (18 cr)</b>									
Elective _____	(3)					3			
Elective _____	(3)				3				
Elective _____	(3)						3		
Elective _____	(3)							3	
Elective _____	(3)								3
Elective _____	(3)								3
<b>TOTAL CREDITS</b>	<b>120</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>15</b>	<b>12</b>

\* Students will take CIS/CSE 389 Web Systems Programming and Architecture when CIS/CSE 386 are not offered

\*\* This group of courses are currently under review and will like to be changed in this academic year



## Systems & Information Science Curriculum Notes 2016-2017

### SIS Specializations

All SIS students must complete both a *Short Technical Sequence* (6 credits) and a *Focus Area* (18 credits).

The Short Technical Sequence requires a two-course sequence in one of several applied-technology areas: Database Management, Networking, Security Management, Systems, and Web Design Management.

The Focus Area requires 18 credits in a specific domain, which represents a potential area for the application of a student's information management and computing skills.

Students **may not** count the same course towards both their Short Technical Sequence and their Focus Area.

---

### Short Technical Sequence

Students must complete one of the following short technical sequences:

<i>Database Management</i>	
IST 359	Intro to Database Management Systems
<i>And choose one of the following</i>	
IST 469	Advanced Data Admin: Concepts & Database Management
CSE 581	Intro to Database Management Systems

<i>Networking</i>	
IST 233	Intro to Comp Networking
<i>And choose one of the following</i>	
IST 452	Advanced Comp Networking
CIS/CSE/ELE 458	Data Networks: Basic Principles

<i>Security Management</i>	
IST 323	Intro to Information Security
CSI 483/CSE 484	Intro to Comp & Network Security

<i>Systems</i>	
GET 439	Enterprise Technologies
CSE 483	Windows Programming

<i>Web Design &amp; Management</i>	
IST 263	Design Management of Internet Services
<i>And choose one of the following</i>	
IST 479	E Commerce Technologies
IST 523	Graphic Design for the Web

---

### Focus Areas

The following options satisfy the Focus Area requirement:

1. Any minor (of at least 18 credits) throughout the University, with the following exceptions:
  - Computer Engineering
  - Computer Science
  - Information Management and Technology
2. Information Assurance and Security (IAS)

<i>Information Assurance &amp; Security (IAS) *</i>	
IST 323	Intro to Information Security
CIS/CSE 583	Systems Assurance Seminar
<i>And choose four of the following:</i>	
IST 471	Internship (3 credit IAS-related internship, subject to approval)
CIS 483/CSE 484	Intro to Comp & Network Security
CIS/CSE 487	Access Control, Security & Trust
IST 425	Enterprise Risk Management
IST 429	Organizational Info Security
<i>Note: Students who take the Information Assurance &amp; Security focus area cannot take the Security Management short technical sequence.</i>	

### Other remarks

1. Short technical sequence(s) and focus area that are marked with a \* are currently under review and will likely to change in this academic year. Students should contact the program coordinator for details.
2. Students can be a dual major with any majors throughout the University, with the following exceptions:
  - Computer Science
  - Information Management and Technology

## Computer Science Students

### Summary

The current Computer Science (CS) undergraduate curriculum was approved by the faculty of the department of Electrical Engineering and Computer Science in the Spring of 2011.

The requirements for the program of study are divided into three categories: *general education*, *mathematics* and *major*. The general education category has requirements in writing, presentation skills, natural science and engineering, and a requirement for courses offered by the College of Arts and Sciences or the College of Visual and Performing Arts. The major category has two parts—the computer science core, and the upper-division electives.

#### GENERAL EDUCATION

6	Writing (WRT 105, WRT 205)
3	Presentation Skills
18	Natural Science and Engineering (including ECS 101, 102 and PHY 211, 221)
21	Arts, Humanities, and Social Sciences (including PHI 251, ECS 392)
9	free electives

#### MATHEMATICS

15 or 16 Mathematics

#### MAJOR

33	Computer and Information Science core courses
18	upper-division courses
123 or 124	Credit hours total

Table 1: Credit hours required for the CS Bachelor's program.

### Important Notes on Course Restrictions

The restrictions on courses listed below are *not* comprehensive. Students unclear about the appropriateness of courses for meeting a distribution requirement must petition for acceptance of the course(s) through the CIS program committee *before* taking the course. Prior to registration each semester, students *must* meet with their faculty advisors for assistance in choosing appropriate courses.

### General-Education Requirements

The intent of the general-education requirements is to ensure that students graduate with knowledge of subjects beyond Computer Science, with particular emphasis on writing skills.

### Writing Requirements

The following two courses are required (no grade below C- is acceptable):

- WRT 105 *Writing Studio I*
- WRT 205 *Writing Studio II*

## Presentation Skills Requirement

Students must successfully complete at least one of the following courses:

CRS 255            *Public Advocacy*  
 CAS 325/CRS 325 *Presentation Speaking*  
 IST 344            *Information Reporting and Presentation*

## Natural Science and Engineering Requirements

Eighteen credits of natural science and engineering courses are required: six in engineering and twelve in science. These engineering courses are required:

ECS 101 *Introduction to Engineering and Computer Science*  
 ECS 102 *Introduction to Computing*

The twelve credits of science must include a two-semester sequence in a laboratory science, as well as the following courses:

PHY 211 *General Physics*  
 PHY 221 *General Physics Lab*

A student may take the second physics course (PHY 212) and its associated lab (PHY 222) to satisfy the two- semester requirement; the student would still have to take an additional four credits of science. Possible two-course sequences include the following:

- PHY 211/221 (*General Physics I and Laboratory*)  
    *and*  
    PHY 212/222 (*General Physics II and Laboratory*)
- CHE 106/107 (*General Chemistry Lecture and Laboratory*) *and*  
    CHE 116/117 (*General Chemistry Lecture II and Laboratory*)
- BIO 121 (*General Biology*)  
    *and*  
    BIO 123/124 (*General Biology II and General Biology II Laboratory*)

Additional courses that may be used to complete the science requirement include those in the following departments, except those courses specifically excluded or whose content relates primarily to computing and/or mathematics, or to social and historical issues. Such courses may be appropriate for other distribution requirements.

Anthropology, Physical (ANT 131, 331, 431, 432, 433)	Biology (BIO)
Chemistry (CHE)	Earth Sciences (EAR)
Materials Science (MTS)	Physics (PHY)

The following courses **do not** satisfy the science requirement:

Social, Cultural Anthropology (ANT)	Astronomy (AST)
BIO 211	BIO 215
CHE 103, 113	Geography (GEO)
EAR 102, 105	NEU 211
PHY 101/111, 102/112, 105, 106	

## Arts, Humanities, and Social Sciences Requirements

Students are required to take PHI 251 (*Logic*), ECS 392 (*Ethical Aspects of Engineering and Computer Science*), and fifteen additional credit hours of courses in fine arts, humanities, and/or social sciences. These courses (A/H/SS) are to be drawn from the offerings of the College of Arts and Sciences and the College of Visual and Performing Arts. In general, courses from the following departments may be used:

Art Photography (APH)	Korean (KOR)
African American Studies (AAS)	Latin (LAT)
Asian/Asian American Studies(AAA)	Latin American Studies (LAS)
Applied Music (AMC)	Linguistics (LIN)
American Studies (AMS)	Literature in Translation (LIT)
Anthropology–Social and Cultural (ANT)	Middle Eastern Studies (MES)
Arabic (ARB)	Museum Studies (MUS)
Art (ART)	Music History & Literature (MHL)
Ceramics (CER)	Native American Studies (NAT)
Chinese (CHI)	Public Affairs & Citizenship(PAF)
Communications Design (CMD)	Philosophy (PHI)
Communication and Rhetorical Studies (CRS)	Polish (POL)
Drama (DRA)	Political Science (PSC)
Economics (ECN)	Psychology (PSY)
English and Textual Studies (ETS)	Printmaking (PRT)
Fiber Arts (FIB)	Painting (PTG)
Film (FIL)	Queer Sexuality (QSX)
Foundation (FND)	Persian (PRS)
French (FRE)	Portuguese (POR)
Fashion Illustration (FSH)	Religion (REL)
Geography (GEO)	Russian (RUS)
German (GER)	Sculpture (SCU)
Greek (GRE)	Sociology (SOC)
Hebrew (HEB)	Social Science (SOS)
Hindi (HIN)	South Asian Studies (SAS)
History (HST)	Spanish (SPA)
History of Art (HOA)	Surface Pattern Design (SPD)
History of Music (HOM)	Studio Arts (STA)
Humanities (HUM)	Kiswahili (SWA)
Illustration (ILL)	Turkish (TRK)
International Relations (IRP)	Art Video (VID)
Interior Design (ISD)	Women’s and Gender Studies (WGS)
Italian (ITA)	Writing (WRT)
Japanese (JPS)	
Jewish Studies Program (JSP)	

The following courses/departments **cannot** be used:

Art Education (AED)	Earth Sciences (EAR)
Astronomy (AST)	Industrial Design
Advertising Design(ADD)	(IND) Mathematics
Anthropology-Physical (see above)	(MAT) Music
Biology (BIO)	Education (MUE)
Chemistry (CHE)	Non-departmental AS (NAS)
Cognitive Science (COG)	Physics (PHY)
Communication Sciences & Disorders (CSD) Computer Art (CAR)	Science Teaching (SCI)
	Undergraduate Research Program (URP) WRT 105, WRT 205

Also excluded are any courses cross-listed in the College of Arts and Sciences and the School of Education, as well as the following courses:

ANT 131, 431, 433	HNR 250, 255, 350, 355, 450, 455
CFS courses	PSY 223, 252, 323, 324, 334
GEO 155, 215, 316, 326, 455, 482, 583	

### Free Electives

Any and all courses may be taken as free electives, with the following exceptions:

- CPS courses **do not count** as free-elective credits for CS majors.
- ENL courses **do not count** as free-elective credits.

### Mathematics Requirements

Fifteen or sixteen credit hours of Mathematics courses are required. No grade below C- is acceptable. Students *must* take the following three courses:

MAT 295 <i>Calculus I</i>	4 credits
MAT 296 <i>Calculus II</i>	4 credits
CIS 321 <i>Introduction to Probability and Statistics</i>	4 credits

In addition, students *must* also take at least one of the following courses:

MAT 397 <i>Calculus III</i>	(4 credits)
MAT 331 <i>Linear Algebra</i>	(3 credits)

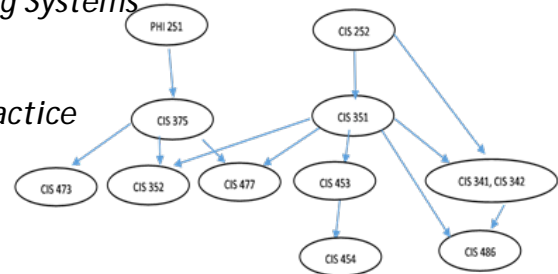
*Note: Students may petition to satisfy the 4-credit CIS 321 requirement by completing the 6-credit combination of MAT 521 and MAT 525. This option may be preferable for students pursuing a dual major or minor in mathematics.*

## Course Requirements for the Major

### CIS Core Course Requirements

The following ten courses (33 credit hours) are required. These courses **must** be completed with a core GPA of at least 2.667. No grade below C- is acceptable for a core course.

- CIS 252 *Introduction to Computer Science*
- CIS 375 *Introduction to Discrete Mathematics*
- CIS 341 *Computer Organization and Programming Systems*
- CIS 342 *Introduction to Systems Programming*
- CIS 351 *Data Structures*
- CIS 352 *Programming Languages: Theory and Practice*
- CIS 453 *Software Specification and Design*
- CIS 454 *Software Implementation*
- CIS 473 *Automata and Computability*
- CIS 477 *Introduction to Analysis of Algorithms*
- CIS 486 *Design of Operating Systems*



The diagram on the right shows the prerequisite structure of the core courses. As always, check with the course catalog and the course instructor for details.

### Upper-Division Course Restrictions

Eighteen credit hours of upper-division courses are required: at least 9 of the 18 credits must be computer science or computer engineering courses. No grade below C- is acceptable for an upper-division elective.

Upper-division courses include the following:

- |   |   |
|---|---|
| CIS 400 <i>Selected Topics</i>                        | CIS/MAT 545 <i>Finite Mathematics</i>               |
| CIS 425 <i>Intro to Computer Graphics</i>             | CIS 551 <i>Modern Programming in Java</i>           |
| CIS 428 <i>Intro to Cryptography</i>                  | CIS 554 <i>Object Oriented Programming in C++</i>   |
| CIS 444 <i>Mobile Application Programming</i>         | CSE 381 <i>Computer Architecture</i>                |
| CIS 451 <i>Modern Programming in Java</i>             | CSE 397 <i>Computer Laboratory I</i>                |
| CIS 458 <i>Data Networks: Basic Principles</i>        | CSE 398 <i>Computer Laboratory II</i>               |
| CIS 467 <i>Intro to Artificial Intelligence</i>       | CSE 483 <i>C# and Windows Programming</i>           |
| CIS 468 <i>Natural Language Processing</i>            | CSE 491 <i>Senior Design Project I</i>              |
| CIS 471 <i>Optimization Methods</i>                   | CSE 492 <i>Senior Design Project II</i>             |
| CIS 478 <i>Intro to Quantum Computing</i>             | CSE 561 <i>Digital Machine Design</i>               |
| CIS 483 <i>Intro to Computer and Network Security</i> | CSE 581 <i>Intro to Database Management Systems</i> |
| CIS 487 <i>Access Control, Security, and Trust</i>    | PHI 378 <i>Minds and Machines</i>                   |
| CIS 488 <i>Intro to Internet Security</i>             | PHI 551 <i>Symbolic Logic</i>                       |
| CIS 543/ELE 516 <i>Control of Robots</i>              | PHI 552 <i>Modal Logic</i>                          |

In general, students may choose any other CIS course numbered above 300, except those that carry no credit hours. However, the following courses **do not qualify** as upper-division electives:

CIS 470 *Experience Credit*  
 CIS 490 *Independent Study*

CS students may also choose any MAT courses at the 400 level or higher, **except** for the following:

MAT 421 *Applied Probability and Statistics*  
 MAT 485 *Differential Equations and Matrix Algebra for Engineers*  
 MAT 521 *Introduction to Probability*

CS students may also choose topics courses (e.g., PHI 460 *Logic and Foundations of Mathematics*); however, they must petition the CIS program committee to have the specific course accepted *before* taking the course.

## Representative CIS Undergraduate Programs

Here is a fairly typical CIS undergraduate program for a student who initially places into MAT 295.

<b>First Year</b>	<b>Fall</b> ECS 101 ECS 102 MAT 295 WRT 105 A/H/SS elective*	<b>Spring</b> CIS 252 MAT 296 PHY 211, PHY 221 PHI 251
<b>Second Year</b>	CIS 375 CIS 351 MAT 397 or MAT 331 A/H/SS elective	CIS 321 CIS 341, CIS 342 CIS352 WRT 205 free elective
<b>Third Year</b>	CIS 453 CIS 477 CIS 486 presentation-skills elective science elective	CIS 454 CIS 473 upper-division course A/H/SS elective science elective
<b>Fourth Year</b>	upper-division course upper-division course upper-division course ECS 392 A/H/SS elective	upper-division course upper-division course A/H/SS elective free elective free elective

\*Students wishing to preserve the option of transferring to an engineering major at the end of the first semester should take CHE 106/107 in place of the A/H/SS elective.

Here is a fairly typical CIS undergraduate program for a student who initially places into MAT 194.

<b>First Year</b>	<b>Fall</b> ECS 101 ECS 102 MAT 194 WRT 105 A/H/SS elective*	<b>Spring</b> CIS 252 MAT 295 PHY 211, PHY 221 PHI 251
<b>Second Year</b>	CIS 375 CIS 351 MAT 296 A/H/SS elective	CIS 321 CIS 341, CIS 342 WRT 205 MAT 397 or MAT 331 free elective
<b>Third Year</b>	CIS 453 CIS 477 CIS486 presentation-skills elective science elective	CIS 454 CIS 473 CIS 352 A/H/SS elective science elective
<b>Fourth Year</b>	upper-division course upper-division course upper-division course ECS 392 A/H/SS elective	upper-division course upper-division course upper-division course A/H/SS elective free elective

\*Students wishing to preserve the option of transferring to an engineering major at the end of the first semester should take CHE 106/107 in place of the A/H/SS elective.



Computer Science Curriculum

<b>College of Engineering and Computer Science</b>										
Computer Science Fall 2017					Name _____ SUID _____					
pr=prerequisite, co=corequisite										
Minor/Second Major (if any): _____										
CREDIT	FIRST-YEAR		SOPHOMORE		JUNIOR		SENIOR		VAR	
GRADE	F	S	F	S	F	S	F	S	+	-
<b>G Writing Skills (6 cr) Minimum Grade C-</b>										
E WRT105 Studio 1: Practices of Academic Writing	(3)	3								
N WRT205 Studio 2: Critical Research and Writing (pr: WRT 105)	(3)			3						
<b>Presentational Skills (3 cr)</b>										
<b>Select one of the following three courses:</b>										
CRS 225 Public Advocacy (3)	(3)				3					
CRS/CAS325 Presentational Speaking (3)										
E IST 344 Info. Reporting & Presentations (3)										
<b>D SSH/VPA (21 credits)</b>										
U ECS 392 Ethical Aspects of ECS	(3)							3		
C PHI 251 Logic	(3)		3							
A SSH/VPA _____	(3)	3								
T SSH/VPA _____	(3)			3						
I SSH/VPA _____	(3)					3				
O SSH/VPA _____	(3)							3		
N SSH/VPA _____	(3)								3	
<b>Natural Sciences (12 cr) Two semester lab sequence in Natural Sciences</b>										
PHY211 General Physics 1 (co: PHY 221, MAT 295)	(3)		3							
R PHY221 General Physics Lab 1 (co: PHY 211)	(1)		1							
E Natural Science Elective _____	(4)					4				
Q Natural Science Elective _____	(4)						4			
<b>M Free Electives (9 cr)</b>										
N Free Elec _____	(3)				3					
T Free Elec _____	(3)								3	
S Free Elec _____	(3)									3
<b>Mathematics (15-16 cr) Minimum Grade of C-</b>										
MAT295 Calculus 1	(4)	4								
M MAT296 Calculus 2 (pr: MAT295)	(4)		4							
A MAT397/ 331 Calculus or Linear Algebra (pr: MAT 296)	(4-3)			4 or 3						
J CIS321 Intro. to Probability & Statistics (pr: MAT 295)	(4)				4					
<b>Engineering Courses (6 cr)</b>										
R ECS101 Intro. to Engineering & Computer Sci	(3)	3								
ECS102 Intro. to Computing	(3)	3								
<b>Comp Sci Core (33 cr) 2.667 GPA &amp; Minimum Grade C-</b>										
CIS252 Intro. to Computer Science	(4)		4							
CIS375 Intro. to Discrete Mathematics (pr: PHI 251)	(3)			3						
CIS341 Comp. Organization & Prog. Systems (pr: ECS 102 or CIS 252)	(3)				3					
CIS342 Intro. to Systems Programming (pr: CIS 351, co: CIS 341)	(1)				1					
R CIS351 Data Structures (pr: CIS 252)	(4)			4						
E CIS352 Programming Lang: Theory & Prac. (pr: CIS 375, CIS 351)	(3)				3					
Q CIS453 Software Specification & Design (pr: CIS 351 or CSE 382)	(3)					3				
U CIS454 Software Implementation (pr: CIS 453)	(3)						3			
I CIS473 Automata and Computability (pr: CIS 375, or MAT 375)	(3)						3			
R CIS477 Intro. to Analysis of Algorithms (pr: CIS 375, CIS 351)	(3)					3				
E CIS486 Design of Operating Systems (pr: CIS 341, 342, 351 or CSE 381, 382)	(3)					3				
<b>M Upper Division Courses (18 cr) Minimum Grade C- At least 9 credits of Upper Division MUST be in CIS or CSE</b>										
E Upper Div _____	(3)							3		
N Upper Div _____	(3)								3	
T Upper Div _____	(3)								3	
S Upper Div _____	(3)								3	
Upper Div _____	(3)									3
Upper Div _____	(3)									3
<b>TOTAL CREDITS</b>										
	123-124	16	15	13-14	17	16	16	15	15	

### GPA WORKSHEET

**REQUIREMENTS: Minimum grade of C- in English, Mathematics, Core, and Upper Division Courses**

123 credits to graduate

2.0 Overall GPA to graduate

2.667 Core Course GPA

Restrictions/exclusions as noted in the Undergraduate Handbook

**CORE GPA TALLY SHEET:**

2) Divide Total Grade Points by Total Course Credits for Core Grade Point Average (GPA).

CORE COURSE	HR	GRD	TOTAL GRD POINTS	TOTAL COURSE CR	CORE GPA	CALCULATION DATE AND INITIALS
CIS252	4					
CIS375	3					
CIS341	3					
CIS342	1					
CIS351	4					
CIS352	3					
CIS453	3					
CIS454	3					
CIS473	3					
CIS477	3					
CIS486	3					
			÷	=		
			÷	=		
			÷	=		
			÷	=		
			÷	=		
			÷	=		
			÷	=		
			÷	=		
			÷	=		
			÷	=		
			÷	=		

**GRADING CHART: Credit hours X points per grade = Grade Points Earned**

GRD	PTS
A	4.000
A-	3.667
B+	3.333
B	3.000
B-	2.667
C+	2.333
C	2.000
C-	1.667
D	1.000
F	0.000

In most cases an excellent approximation can be obtained by taking A- = 11/3, B+ = 10/3, etc. The correct GPA, however, is that determined by using the table.