CIE GRADUATE HANDBOOK
2019 - 2020
Civil & Environmental Engineering
Graduate Handbook
2019-20 Academic Year

Last Updated: September 20, 2019

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1.0 Introduction

This handbook is intended to serve as a supplemental guide to assist graduate students in the Department of Civil and Environmental Engineering as they work towards their degree.

Please note that this is not all-inclusive of Syracuse University policy. Students should refer to the most recent Online Course Catalog for the full listing of Academic Rules & Regulations.

2.0 Program Description

The Department of Civil and Environmental Engineering at Syracuse University was established by the Board of Trustees in 1876. Graduate degrees have been awarded since the 1920s. Civil and Environmental Engineering is one of four departments within the College of Engineering and Computer Science. The department has a long tradition of excellence in graduate teaching and research. Graduate students work closely with their faculty advisors on a variety of research projects, and receive individualized attention from the faculty. The CIE faculty has a wide range of research and teaching interests. The graduate programs are divided into two disciplines: Civil Engineering and Environment Engineering. Degrees in Civil Engineering are chosen to include an emphasis in Construction Engineering and Management, Geotechnical Engineering, or Structural Engineering. Degrees in Environmental Engineering can encompass a broad range of topics or can be more focused on water quality, hydrology, air quality, sustainable infrastructure, or other topics.

3.0 Academic Integrity

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.
Students must fully inform themselves of their responsibilities in the conduct of their academic work and should familiarize themselves with Syracuse University’s policy on Academic Integrity.

The full, updated academic integrity policy may be found on the website for the Center for Learning & Student Success. The Center offers academic integrity education and training upon request.

4.0 Academic Performance

All graduate students are required to maintain a satisfactory level of academic performance which includes but is not limited to:

- maintaining status as a registered student;
- maintaining the minimum required grade point averages (GPA); and
- maintaining continuous progress toward the completion of degree.

The department will provide the student with written notice should a student’s performance become unsatisfactory.

The department may cancel matriculation if these requirements are not met.

4.1 Status as a Registered Student

Graduate students must register for at least 0 credits of coursework each semester that they attend Syracuse University. Students who do not register in a timely manner will lose access to buildings and labs.

A student who is not taking at least 1 credit of coursework in a given semester must register for 0 credits of Degree in Progress (GRD 998).
5.0 Departmental Policy & Personnel

Regular office hours during the academic year are 8:30am until 5:00pm, Monday through Friday. The departmental suite is located at 151 Link Hall. Please do not hesitate to contact departmental staff if you have any questions or concerns:

<table>
<thead>
<tr>
<th>Title</th>
<th>Name</th>
<th>Office</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Chair</td>
<td>Andria Costello Staniec</td>
<td>151G</td>
<td>X2311</td>
<td><a href="mailto:costello@syr.edu">costello@syr.edu</a></td>
</tr>
<tr>
<td>Administrative Assistant</td>
<td>Nicholas Clarke</td>
<td>151R</td>
<td>x2588</td>
<td><a href="mailto:niclarke@syr.edu">niclarke@syr.edu</a></td>
</tr>
<tr>
<td>Budget Manager</td>
<td>Jennifer Andrews</td>
<td>151B</td>
<td>X2493</td>
<td><a href="mailto:jandre02@syr.edu">jandre02@syr.edu</a></td>
</tr>
<tr>
<td>Office Coordinator</td>
<td>Morgan Narkiewicz</td>
<td>151</td>
<td>x2311</td>
<td><a href="mailto:mnarkiew@syr.edu">mnarkiew@syr.edu</a></td>
</tr>
</tbody>
</table>

5.1 Conference/Event Space Reservations

Students who would like to reserve the CIE conference room (Link 151A), or any other space within the College of Engineering, should contact the department’s office coordinator.

5.2 Retaking double-numbered coursework

Some courses are double-numbered and have both undergraduate- and graduate-level sections available (typically as 400-/600-level courses). This allows both undergraduate and graduate students to take the same course, with additional coursework required of graduate students.

Students are prohibited from taking both levels of a double-numbered course. A student that completes the undergraduate-level section may not later complete the graduate-level section.

5.3 Curricular Practical Training (CPT)

To be eligible for CPT, a student must:

- Be in good academic standing with the department;
- Have a minimum overall grade point average (GPA) of 2.800; and
- Have completed no fewer than 15 credits of coursework toward their degree.

The department’s administrative assistant will provide a recommendation letter upon request. Any student interested in CPT should speak with an advisor at the Slutzker Center for International Services.
5.4 Optional Practical Training (OPT)

International students with an F-1 visa may be eligible for a 12-month temporary employment authorization.

The department’s administrative assistant will provide a recommendation letter upon request. For details, please contact the Slutzker Center for International Services.

5.5 Graduate Seminar Series

The department will host graduate research seminars throughout the fall and spring semesters. Departmental seminars are generally held on Friday from 1:00pm until 2:00pm and will be announced through email. All Full Time MS and PhD students are expected to enroll in the Graduate Seminar each semester, although PhD students in absencia may be excused from this requirement. In addition to separate seminar programs for Civil Engineering graduate students and for Environmental Engineering graduate students, there are occasional CIE Full Department seminars generally held on Friday afternoons and announced through email.

5.6 Summer Taxes

Any graduate student receiving income from an assistantship, fellowship, hourly lab work, or other on-campus source during the summer should register for 0 credits of GRD 998 (Degree in Progress).

Students who are not registered for at least 0 credits of coursework during the summer may have FICA taxes withheld from their paycheck during that period.

Please contact the department’s budget manager if you believe FICA taxes are being withheld from your paycheck in error.

5.7 Electives

Graduate students at Syracuse University are able to take courses at both SUNY ESF and SUNY Upstate Medical University.

Students may register for SUNY Upstate Medical University coursework using the Inter-Institutional Graduate Course Registration Form, which is available from the department’s administrative assistant.

All coursework taken at SUNY Upstate Medical University must be approved by petition.

Students may register for SUNY ESF coursework normally using MySlice.

Please contact the department if you are interested in an elective that is not included on one of the approved lists below.

Additional coursework at Syracuse University or SUNY ESF may be approved by petition.
6.0 Civil Engineering PhD

The Doctor of Philosophy (PhD) is a research-based degree program involving a high level of advanced training in the chosen field. A dissertation consisting of original research in a specialty area within the field is required.

A minimum of 48 credit hours of coursework are required. No dissertation credits are required.

A student entering the program with a prior MS degree may petition to transfer in a maximum of 30 graduate-level credits as approved by the program director.

A minimum of three years of graduate study is required. Students typically complete their degree within five years.

6.1 Advising

The candidate, with advice from the department chair and/or the program director, selects a dissertation advisor, whose consent must be obtained. The candidate and the advisor together, with consent from the department chair, select the members of the examination and dissertation committees. The candidate, in consultation with the advisor and dissertation committee, selects a program of coursework appropriate to the research and scholarly interests of the student.

6.2 Exit Requirements

- No fewer than 48 total credits of graduate-level coursework;
- minimum 3.333 GPA for all coursework used toward the completion of degree;
- minimum 2.800 GPA cumulative for all coursework taken at SU;
- no more than 16 credits of 500-level coursework;
- no more than 16 credits of CIE 690 (independent study);
- satisfactory academic performance;
- successful completion of a qualifying examination;
- successful completion of a candidacy examination; and
- successful defense of a dissertation in an oral examination.
6.3 Exceeding Time to Degree Requirements

If the student has exceeded the seven-year limit for achieving ABD status, the student must register for GRD 991, which requires a minimum of one credit hour per semester, each fall and spring semester until ABD status is achieved. If the student fails to register for GRD 991, for a given term, the student will be withdrawn from the program.

If the student has exceeded the degree completion limit of five years after achieving ABD status, the student must register for GRD 991, which requires a minimum of one credit hour per semester, each fall and spring semester until the completion of the doctoral degree. If the student fails to register for GRD 991, for a given term, the student will be withdrawn from the program.
6.4 Qualifying Examination

The examination is composed of two parts: a written exam followed by an oral examination covering materials from at least three graduate level classes that the student has taken at Syracuse University, as well as relevant materials from undergraduate coursework. The purpose of this examination is to assess the student’s background knowledge in his/her primary subject area(s) and his/her preparedness for Ph.D. level research. The result of this examination is a decision by the exam committee as to whether or not the student should continue in the Ph.D. program.

Timing

Students are expected to outline and present their research to a faculty examination committee by the end of their first year of study.

Exam Committee

The exam committee shall consist of at least three faculty members. The majority of the committee membership shall be faculty members from the Department of Civil and Environmental Engineering at Syracuse University.

Scheduling

The student must work with their advisor to select the members of their exam committee, and to determine the date and time of the written and oral parts of the examination. The written portion of the exam is typically a three-day period, allowing one full day of work for the student to solve the problems of each committee member. Students must contact the department’s administrative assistant at least three weeks prior to the presentation date in order to reserve space.

Qualifying examinations can be held in the CIE Conference Room (151A Link Hall) or in the Link-Plus Conference Room (462K Link Hall) if available, or other space upon request.

At least 2.5 hours should be scheduled to allow sufficient time for questions.

Exam Process

If the student does not pass this examination, they can request to retake the examination one more time in the following semester. In the event that the student fails the examination for the second time, their Ph.D. program of study will be terminated.
6.5 Candidacy Examination

Timing

Students are expected to present their research proposal to a faculty examination committee after completion of the student’s required Ph.D. coursework, but no later than the fifth semester after admission into the Ph.D. program.

Organization of the Proposal

Prior to this examination, the student shall prepare a detailed research proposal that includes, but is not limited to a review of relevant literature leading to a statement of objectives (including major questions or hypotheses to be addressed in the dissertation), a description of methods and approaches to be used, and a brief description of the significance of the proposed work. The proposal will often include preliminary results from the student’s work to date.

Exam Committee

The examination committee will consist of the dissertation advisor and at least four other faculty members.

The majority of the committee membership shall be faculty members from the Department of Civil and Environmental Engineering at Syracuse University.

A copy of the research proposal must be delivered to all members of the exam committee at least two full weeks prior to the oral defense date. Any committee member who receives their copy fewer than 14 calendar days prior to the defense may ask for a postponement of the defense. The student should not distribute the final draft of the research proposal until the advisor is satisfied with it.

Scheduling

The student must work with their advisor to select the members of their exam committee, and to identify which committee member will serve as exam chair, and to determine the date and time of the presentation.

A copy of the research proposal must be delivered to all members of the exam committee at least two full weeks prior to the oral defense date.

Students must contact the department’s administrative assistant at least three weeks prior to the presentation date in order to reserve space.

Candidacy examinations can be held in the CIE Conference Room (151A Link Hall) or in the Link-Plus Conference Room (462K Link Hall) if available, or other space upon request.

At least 2 hours should be scheduled to allow sufficient time for questions.

Exam Process

The oral examination is initiated by a 30-40 minute summary of the dissertation research proposal and progress to date by the student.
Following the presentation, the dissertation committee and department faculty ask the student questions concerning the research proposal.

Following the examination, the dissertation committee confers to determine if the student is a suitable Ph.D. candidate based on his/her performance on the candidacy examination, as well as to determine if the student should be required to take additional coursework beyond the minimum required for the degree.

If the student successfully completes the candidacy examination by receiving an affirmative vote from the majority of the committee, the advisor notifies the student and the graduate school and the student is considered a Ph.D. candidate.

If the student does not successfully complete the candidacy examination, the committee determines whether the student will be permitted to retake the examination after a minimum period of six months or whether the student’s Ph.D. program should be terminated.
6.6 Dissertation

The Oral Dissertation Defense and submission of the dissertation document to the Syracuse University Graduate School are the final requirements of the PhD program. Defense paperwork must comply with Graduate School’s guidelines, including formatting.

Preparation

It is recommended that the student meet with their defense committee to review dissertation progress at least three to six months in advance of the defense. The student should not distribute the final draft of the dissertation until the advisor is satisfied with it. Readers should be presented with a polished draft that has been proofread, paginated, and contains professional quality tables and figures with captions.

Deadlines

The official Request for Examination form must be signed and submitted to the Graduate School at least three full weeks prior to the oral defense date.

A copy of the dissertation document must be delivered to all members of the defense committee at least two full weeks prior to the oral defense date. Any committee member who receives their copy fewer than 14 calendar days prior to the defense may ask for a postponement of the defense.

Defense Committee

The dissertation defense committee will consist of six members, including

- the research advisor;
- four tenured or tenure-track faculty members from the department; and
- the Chair of the Oral Examination Committee.

The Chair of the Oral Examination Committee must be a Syracuse University tenured or tenure-track faculty member from outside the department and program.

The student may substitute one committee member based on subject-matter expertise who does not satisfy the second bullet above and may be internal or external to Syracuse University. Additional external committee members may be allowed by petition.

Defense Process

The dissertation defense is usually initiated with a 30-40 minute summary of the research. This is followed by open questioning from the audience. When this is completed, the candidate is questioned by the dissertation committee members.

For the candidate to pass the dissertation defense, a majority vote on the quality and originality of the research, the quality of the dissertation, and the performance of the candidate at the examination is required.
7.0 Master of Science Programs

The Master of Science is a flexible and individually-structured program, planned by the student and their advisor to help students develop careers in their chosen field. The MS can be a terminal degree or an introduction to research before pursuing the PhD. All plans are designed to be completed within three to four semesters.

7.1 Master of Science in Civil Engineering

All Civil Engineering MS Students will follow one of three plans. Students completing a Civil Engineering MS must select one the following concentrations: Construction, Geotechnical, or Structural Engineering. Students who receive a Master’s in Civil Engineering in one focus area cannot apply for and receive a second Master’s in Civil Engineering in a different focus area.

7.2 Master of Science in Environmental Engineering

The MS in Environmental Engineering is intended for students with undergraduate engineering degrees.

7.3 Master of Science in Environmental Engineering Science

The MS in Environmental Engineering Science is intended for students with technical/scientific undergraduate degrees that are not in engineering.

7.4 Exit Requirements

- No fewer than 30 total credits of graduate-level coursework;
- completion of all coursework group requirements in a selected concentration;
- minimum 3.000 GPA for all coursework used toward the completion of degree;
- minimum 2.800 GPA cumulative for all coursework taken at SU;
- no more than 15 credits of 500-level coursework;
- at least 15 credits must be CIE prefixed graduate level courses
- satisfactory academic performance; and
- satisfactory completion of either a thesis or an exit paper.

7.5 Thesis

The Oral Thesis Defense and submission of the thesis document to the Syracuse University Graduate School are the final requirements for students in a thesis plan. Defense paperwork must comply with the Graduate School’s guidelines, including formatting.

The candidate must complete 24 credit hours of coursework, which include a set of core courses in the student’s chosen area of specialization and a cohesive program of elective coursework approved by the student’s advisor, as outlined in the attached
programs of study. All Full Time M.S. candidates are expected to participate in faculty/student seminar series (CIE 660) each year. In addition, the student must register for six credits of CIE 997-Master's Thesis, culminating in the defense of the thesis administered by the student's thesis committee.

**Deadlines**

The official Request for Examination form must be signed and submitted to the Graduate School at least three full weeks prior to the oral defense date.

A copy of the thesis document must be delivered to all members of the defense committee at least two full weeks prior to the oral defense date.

**Defense Committee**

The thesis defense committee will consist of four members, including

- the thesis advisor;
- two tenured or tenure-track faculty members from the department; and
- the Chair of the Oral Examination Committee

The Chair of the Oral Examination Committee must be a Syracuse University tenured or tenure-track faculty member from outside the department and program.

Committee members from outside Syracuse University may be allowed by petition.

**7.6 Exit Paper**

Students not completing a Master’s Thesis must instead complete a Master’s Exit Paper. To complete the degree requirement, a student must also take CIE 995-Master’s Exit Paper for zero credit. The exit paper must address issues related to their specialty approved by the advisor and have a minimum length of 2,000 words.
8.0 Civil Engineering MS - Programs of Study

8.1 Construction Engineering and Management - Program of Study

Construction Engineering and Management - 30 Total Credit Hours

**Group 1 - Core Courses**

All courses in Group 1 are required for a total of 9 Credit Hours. Courses include:

- CIE 601 Construction Engineering and Project Management;
- CIE 639/ECS 636 Sustainable Development and Infrastructure Management;
- CIE 605 Construction Estimating and Scheduling.

**Group 2 - Advanced Fundamentals**

At least one course from Group 2 (3 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 677</td>
<td>Design of Structural Systems</td>
</tr>
<tr>
<td>CIE 637</td>
<td>Advanced Soil Mechanics and Foundation Engineering I</td>
</tr>
<tr>
<td>CIE 678</td>
<td>Rehabilitation of Civil Infrastructure</td>
</tr>
<tr>
<td>CIE 663</td>
<td>Introduction to Sustainable Engineering</td>
</tr>
<tr>
<td>MAE 548</td>
<td>Engineering Economics and Technology Valuation</td>
</tr>
<tr>
<td>MFE 634</td>
<td>Productivity and Quality Control</td>
</tr>
<tr>
<td>CIE 500</td>
<td>Construction Control Systems</td>
</tr>
</tbody>
</table>

**Group 3 - Design**

At least one course from Group 3 (3 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 535</td>
<td>Structural Steel Design</td>
</tr>
<tr>
<td>CIE 536</td>
<td>Pre-Stressed Concrete Design</td>
</tr>
<tr>
<td>CIE 549</td>
<td>Designing with Geofoam</td>
</tr>
<tr>
<td>CIE 638</td>
<td>Advanced Soil Mechanics and Foundation Engineering II</td>
</tr>
<tr>
<td>CIE 641</td>
<td>Seepage and Earth Dam Design</td>
</tr>
<tr>
<td>CIE 643</td>
<td>Transportation Engineering</td>
</tr>
<tr>
<td>CIE 739</td>
<td>Soil Stabilization</td>
</tr>
</tbody>
</table>
**Group 4 - Management and Advanced Tools**

At least one course from Group 4 (3 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECS 526</td>
<td>Statistics for Engineers</td>
</tr>
<tr>
<td>ECS 650</td>
<td>Managing Sustainability</td>
</tr>
<tr>
<td>GEO 683</td>
<td>Geographic Information Systems</td>
</tr>
<tr>
<td>CIE 600</td>
<td>Public Infrastructure: Shaping of America</td>
</tr>
<tr>
<td>CIE 600</td>
<td>Management and Planning of Public Infrastructure</td>
</tr>
<tr>
<td>MBC 616</td>
<td>Operations Management (1.5 credits). Must be taken with MBC 617</td>
</tr>
<tr>
<td>MBC 617</td>
<td>Supply Chain Management (1.5 credits). Must be taken with MBC 616</td>
</tr>
<tr>
<td>PAI 712</td>
<td>Public Organizations and Management</td>
</tr>
<tr>
<td>PAI 731</td>
<td>Financial Management in State and Local Governments. Cannot be</td>
</tr>
<tr>
<td></td>
<td>taken with PAI 734.</td>
</tr>
<tr>
<td>PAI 734</td>
<td>Public Budgeting. Cannot be taken with PAI 731.</td>
</tr>
<tr>
<td>PAI 895</td>
<td>Mid-Career Training Group</td>
</tr>
<tr>
<td>SCM 656</td>
<td>Project Management</td>
</tr>
<tr>
<td>SCM 701</td>
<td>Introduction to Supply Chain Management</td>
</tr>
<tr>
<td>SCM 702</td>
<td>Principles of Management</td>
</tr>
</tbody>
</table>

**Group 5 - Electives**

- Advisor approval is required before a student can take courses from this group.
- Some suggested elective courses can be selected from Engineering and Computer Science (ECS) and Public Administration and Management (PAI) courses not listed above, Architecture (ARC), and Construction Management (ESF).
- For the MS with Thesis - Two additional course from Groups II through V, upon advisor's approval, or CIE 690 - Independent study should be taken for a total of 6 credit hours. Students will also enroll in CIE 997 - Master's Thesis for 6 credit hours.
- For the MS without Thesis - Four additional courses from Groups II through V upon advisor's approval; one of which can be CIE 690 - Independent study for a total of 12 credit hours. Students will also enroll in CIE 995 - Master's Exit Paper (0 credit hour). The exit paper must address a topic relevant to construction engineering. The paper can be an original work or it can be a critical review of a published journal article.
- All Full Time MS candidates must enroll and participate in CIE 660-CIE Seminar.
8.2 Geotechnical Engineering - Program of Study

Geotechnical Engineering - 30 Total Credit Hours

**Group 1 - Core Courses**

Three courses in Group 1 are required for a total of 9 Credit Hours. Courses include:

- CIE 637 Soil Mechanics and Foundation Engineering I;
- CIE 638 Soil Mechanics and Foundation Engineering II;
- Either CIE 549 Designing with Geofoam, or CIE 584 Designing with Geosynthetics.

**Group 2 - Advanced Fundamentals**

At least one course from Group 2 (3 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 538</td>
<td>Dynamics of Structures</td>
</tr>
<tr>
<td>CIE 633</td>
<td>Finite Element Analysis</td>
</tr>
<tr>
<td>CIE 737</td>
<td>Applied Soil Mechanics</td>
</tr>
<tr>
<td>CIE 739</td>
<td>Soil Stabilization</td>
</tr>
<tr>
<td>CIE 740</td>
<td>Soil Dynamics</td>
</tr>
</tbody>
</table>

**Group 3 - Design**

At least two courses from Group 3 (6 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 545</td>
<td>Pavement Design</td>
</tr>
<tr>
<td>CIE 549</td>
<td>Designing with Geofoam</td>
</tr>
<tr>
<td>CIE 584</td>
<td>Designing with Geosynthetics</td>
</tr>
<tr>
<td>CIE 641</td>
<td>Seepage and Earth Dam Design</td>
</tr>
</tbody>
</table>
Group 4 - Advanced Tools

At least one course from Group 4 (3 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 629</td>
<td>Reliability of Civil Systems</td>
</tr>
<tr>
<td>CIE 678</td>
<td>Rehabilitation of Civil Infrastructure</td>
</tr>
<tr>
<td>EAR 601</td>
<td>Hydrogeology</td>
</tr>
<tr>
<td>EAR 603</td>
<td>Geomorphology</td>
</tr>
<tr>
<td>ERE 527</td>
<td>Storm Water Management</td>
</tr>
<tr>
<td>ERE 551</td>
<td>GIS for Engineers</td>
</tr>
<tr>
<td>ERE 693</td>
<td>GIS Based Modeling</td>
</tr>
</tbody>
</table>

Group 5 - Electives

- Advisor approval is required before a student can take courses from this group.
- Some suggested elective courses can be selected from Earth Science, Computer Programing, Construction Engineering, Information Technology, and Other CIE graduate courses.
- For the MS with Thesis - One additional course from Groups II through V, upon advisor's approval, or CIE 690 - Independent study should be taken for a total of 3 credit hours. Students will also enroll in CIE 997 - Master's Thesis for 6 credit hours.
- For the MS without Thesis - Three additional courses from Groups II through V upon advisor's approval; one of which can be CIE 690 - Independent study for a total of 9 credit hours. Students will also enroll in CIE 995 - Master's Exit Paper (0 credit hour). The exit paper must address a topic relevant to construction engineering. The paper can be an original work or it can be a critical review of a published journal article. The paper has a minimum length requirement of 2000 words and requires approval of the student's advisor.
- All Full Time MS candidates must enroll and participate in CIE 660-CIE Seminar.
8.3 Structural Engineering - Program of Study

Structural Engineering - 30 Total Credit Hours

**Group 1 - Core Courses**

All courses in Group 1 are required for a total of 9 Credit Hours. Courses include:

- CIE 633 Finite Element Analysis;
- CIE 678 Rehabilitation of Civil Infrastructure;
- MAE 635 Advanced Mechanics of Materials.

**Group 2 - Structural Analysis**

At least one course from Group 2 (3 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 629</td>
<td>Reliability of Civil Systems</td>
</tr>
<tr>
<td>CIE 631</td>
<td>Classical and Matrix Structural Analysis</td>
</tr>
<tr>
<td>CIE 634</td>
<td>Stability Analysis of Structural Systems</td>
</tr>
<tr>
<td>CIE 733</td>
<td>Plate and Shell Structures</td>
</tr>
</tbody>
</table>

**Group 3 - Structural Design**

Two courses from Group 3 (6 credit hours) must be selected. One course must be on Steel Design, and one course must be on either Concrete Design or Bridge Engineering.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 535</td>
<td>Structural Steel Design</td>
</tr>
<tr>
<td>CIE 536</td>
<td>Pre-Stressed Concrete Design</td>
</tr>
<tr>
<td>CIE 635</td>
<td>Advanced RC Design</td>
</tr>
<tr>
<td>CIE 636</td>
<td>Plastic Design of Steel Structures</td>
</tr>
<tr>
<td>CIE 666</td>
<td>Design of Concrete Bridges</td>
</tr>
<tr>
<td>CIE 677</td>
<td>Design of Structural Systems</td>
</tr>
</tbody>
</table>
Group 4 - Dynamics and Earthquake Engineering

At least one course from Group 4 (3 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 538</td>
<td>Dynamics of Structures</td>
</tr>
<tr>
<td>CIE 632</td>
<td>Structural Dynamics and Earthquake Engineering</td>
</tr>
<tr>
<td>CIE 740</td>
<td>Soil Dynamics</td>
</tr>
<tr>
<td>MAE 626</td>
<td>Vibration of Mechanical Systems</td>
</tr>
</tbody>
</table>

Group 5 - Electives

- Advisor approval is required before a student can take courses from this group.
- Some suggested elective courses can be selected from Architecture, Construction Management, Political Science, Engineering and Computer Science, Information Studies Management, Public Communications, and Other CIE graduate courses not listed above.
- For the MS with Thesis - One additional course from Groups II through V, upon advisor's approval, or CIE 690 - Independent study should be taken for a total of 3 credit hours. Students will also enroll in CIE 997 - Master's Thesis for 6 credit hours.
- For the MS without Thesis - Three additional courses from Groups II through V upon advisor's approval; one of which can be CIE 690 - Independent study for a total of 9 credit hours. Students will also enroll in CIE 995 - Master's Exit Paper (0 credit hour). The exit paper must address a topic relevant to construction engineering. The paper can be an original work or it can be a critical review of a published journal article. The paper has a minimum length requirement of 2000 words and requires approval of the student's advisor.
- All Full Time MS candidates must enroll and participate in CIE 660-CIE Seminar.
9.0 Environmental Engineering MS Programs

9.1 Environmental Engineering MS - Program of Study

Group 1 - Core Courses

Three courses in Group 1 are required for a total of 9 or 10 Credit Hours. Select three from the group. Only one course can come from the Hydrology Group, and only one course can come from the Statistics Group. Courses include:

- CIE 642 Treatment Processes in Environmental Engineering
- CIE 671 Environmental Chemistry and Analysis
- CIE 672 Applied Environmental Microbiology

Hydrology Courses (only one can count as a core course)

- CIE 659 Advanced Hydrology
- EAR 601 Hydrology
- ERE 645 Hydrologic Modeling

Statistics Courses (only one can count as a core course)

- APM 595 Probability and Statistics for Engineers
- CIE 687 Environmental Geostatistics

Group 2 - Electives

- Any CIE graduate course, no more than 15 credits of 500-level coursework. Other graduate courses can be used as Group 2 electives if approved by the student's advisor.
- Advisor approval is required before a student can take courses from this group.
- For the MS with Thesis - In addition to the Three courses taken in Group 1, Five additional elective courses, upon advisor's approval, or CIE 690 - Independent study should be taken for a total of 15 credit hours. Students will also enroll in CIE 997 - Master's Thesis for 6 credit hours.
- For the MS without Thesis - In addition to the Three courses taken in Group 1, Seven additional elective courses, upon advisor's approval, or CIE 690 - Independent study should be taken for a total of 21 credit hours. Students will also enroll in CIE 995 - Master's Exit Paper (0 credit hour). The exit paper must address a topic relevant to environmental engineering. The paper can be an original work or it can be a critical review of a published journal article.
- All Full-Time MS candidates must enroll and participate in CIE 660-CIE Seminar.
9.2 Environmental Engineering Science MS - Program of Study

**Group 1 - Core Courses**

Both courses in Group 1 are required for a total of 6 Credit Hours. Required Courses include:

- CIE 671 Environmental Chemistry and Analysis
- CIE 672 Applied Environmental Microbiology

**Group 2 - Advanced Fundamentals**

At least two courses from Group 2 (6 credit hours) must be selected.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 554</td>
<td>Principles of Environmental Toxicology</td>
</tr>
<tr>
<td>CIE 565/CEN 565</td>
<td>Bioremediation</td>
</tr>
<tr>
<td>CIE 567/CEN 567</td>
<td>Biotechnology</td>
</tr>
<tr>
<td>CIE 600</td>
<td>Environmental Data Analysis</td>
</tr>
<tr>
<td>CIE 613</td>
<td>Physical Hydrology</td>
</tr>
<tr>
<td>CIE 630</td>
<td>Environmental Organic Chemistry</td>
</tr>
<tr>
<td>CIE 653</td>
<td>Applied Aquatic Chemistry</td>
</tr>
<tr>
<td>CIE 657</td>
<td>Biogeochemistry</td>
</tr>
<tr>
<td>CIE 659</td>
<td>Advanced Hydrology</td>
</tr>
<tr>
<td>CIE 662</td>
<td>Chemistry of Soils and Natural Surfaces</td>
</tr>
<tr>
<td>CIE 663</td>
<td>Introduction to Sustainable Engineering</td>
</tr>
<tr>
<td>CIE 673</td>
<td>Transport Processes in Environmental Engineering</td>
</tr>
<tr>
<td>CIE 764</td>
<td>Industrial Hygiene Engineering and Radiological Health</td>
</tr>
</tbody>
</table>

**Group 3 - Advanced Tools**

At least two courses from Group 3 (6 credit hours) must be selected. Courses in probability and statistics and/or regression analysis may be accepted with advisor approval.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 529</td>
<td>Risk Analysis in Civil Engineering</td>
</tr>
<tr>
<td>CIE 571</td>
<td>Water Quality Modeling</td>
</tr>
<tr>
<td>CIE 600</td>
<td>Groundwater Modeling</td>
</tr>
<tr>
<td>CIE 600/EAR 600</td>
<td>Earth Systems Modeling</td>
</tr>
<tr>
<td>CIE 687</td>
<td>Environmental Geostatistics</td>
</tr>
<tr>
<td>GEO 683</td>
<td>Geographic Information Systems</td>
</tr>
</tbody>
</table>
Group 4 - Electives

- Advisor approval is required before a student can take courses from this group.
- Some suggested elective courses can be selected from Law and Public Policy, Management, Computer Programming, and other CIE graduate courses not listed above.
- For the MS with Thesis - Two additional courses from Groups II through IV, upon advisor’s approval, or CIE 690 - Independent study should be taken for a total of 6 credit hours. Students will also enroll in CIE 997 - Master’s Thesis for 6 credit hours.
- For the MS without Thesis - Three additional courses from Groups II through IV upon advisor’s approval, should be taken for a total of 9 credit hours. One of these can be CIE 690 - Independent study for 3 credit hours. Students will also either enroll in (a) CIE 600 Environmental Assessment or (b) CIE 995 - Master’s Exit Paper (0 credit hours) and one additional course from Groups II through IV (3 credit hours). The exit paper must address a topic relevant to environmental engineering. The paper can be an original work or it can be a critical review of published journal articles. The paper has a minimum length requirement of 2000 words and requires approval of the student’s advisor.
- All Full Time MS candidates must enroll and participate in CIE 660-CIE Seminar.
10.0 Certificates of Advanced Study

Civil and Environmental Engineering graduate students have the opportunity to earn a Certificate of Advanced Study (CAS) in the following programs:

10.1 Sustainable Enterprise

The Certificate of Advanced Study in Sustainable Enterprise (CASSE) integrates business, science, engineering, and environmental science and policy, taking a transdisciplinary approach to sustainable enterprise. The program brings together graduate students in Business, Engineering, and Environmental Sciences. Students must complete 15 credits for the certificate.

Students who complete the certificate will be fluent in the economic, environmental, and social dimensions of sustainability and their interdependence; systems science and its relationship to sustainability; and the natural, financial, technical, legal, and social drivers of sustainability strategy in businesses and other organizations. They will be prepared to engage in transdisciplinary collaboration to develop sustainable solutions to complex organizational challenges.

**Group 1 - Required Courses (9 Credits)**

All three courses are required.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUA 650/ECS 650/EST 696</td>
<td>Managing Sustainability: Purpose, Principles, and Practice</td>
</tr>
<tr>
<td>BUA 651/ECS 651</td>
<td>Strategic Management and the Natural Environment</td>
</tr>
<tr>
<td>BUA 759/ECS 759/EST 796</td>
<td>Sustainability Driven Enterprise</td>
</tr>
</tbody>
</table>

**Group 2 - Electives (6 Credits)**

Two courses of CIE Graduate level coursework.
10.2 Public Infrastructure Management and Leadership

The College of Engineering and Computer Science, in collaboration with the Department of Public Administration and the Executive Education Program within The Maxwell School at Syracuse University, has created a joint 15-credit certificate program entitled the Joint Certificate of Advanced Studies in Public Infrastructure Management and Leadership (CAS-PIML). This certificate program is geared towards mid-career professionals that are interested in building on their body of experience and expanding their skills and knowledge in infrastructure planning, engineering, management and administration through course work that is relevant to their knowledge, interests, and needs.

Group 1 - Required Courses

Four courses are required from this group for a total of 12 Credits. Students may take either PAI 734 or PAI 731. PAI 895, MAE 548 and ECS 636 are required.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PAI 895</td>
<td>Mid-Career Training Group Executive Education Seminar: Managerial Leadership</td>
</tr>
<tr>
<td>PAI 734</td>
<td>Public Budgeting</td>
</tr>
<tr>
<td>PAI 731</td>
<td>Financial Management in State and Local Governments</td>
</tr>
<tr>
<td>MAE 548</td>
<td>Engineering Economics and Technology Valuation</td>
</tr>
<tr>
<td>ECS 636</td>
<td>Sustainable Development and Infrastructure Management</td>
</tr>
</tbody>
</table>

Group 2 - Elective

One course selected from the group below, or approved by course director for 3 Credits.

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 570</td>
<td>Water &amp; Wastewater Treatment</td>
</tr>
<tr>
<td>CIE 601</td>
<td>Construction Engineering and Project Management</td>
</tr>
<tr>
<td>CIE 643</td>
<td>Transportation Engineering</td>
</tr>
<tr>
<td>CIE 678</td>
<td>Rehabilitation of Civil Infrastructure</td>
</tr>
<tr>
<td>PAI 601</td>
<td>Fundamentals of Conflict Studies</td>
</tr>
<tr>
<td>PAI 730</td>
<td>Problems in Public Administration</td>
</tr>
<tr>
<td>PAI 730</td>
<td>Environmental Conflicts and Collaboration</td>
</tr>
<tr>
<td>PAI 757</td>
<td>Economics of Development</td>
</tr>
<tr>
<td>PAI 777</td>
<td>Economics of Environmental Policy</td>
</tr>
</tbody>
</table>
10.3 Enterprise Technology Leadership

The Certificate of Advanced Study in Enterprise Technology Leadership is an interdisciplinary Certificate of Advanced Study designed by key representatives of The School of Information Studies (iSchool), The College of Engineering & Computer Science, and The Martin J. Whitman School of Management.

The curriculum is designed to fit the needs of working professionals in a variety of fields who are working toward or aspire to be in technology leadership roles. The Certificate of Advanced Study is also designed to assist companies in cultivating technology leadership within their organization. This certificate requires 15 graduate credits.

**Group 1 - Core Courses**

Three courses in Group 1 are required for a total of 9 Credit Hours. Courses include:

- IST 645 Managing Information System Projects
- MAE 548 Engineering Economics and Technology Valuation
- MBC 639 Leadership in Organizations; or MBC 645 Strategic Management

**Group 2 - Electives**

Students must choose two electives from the listed disciplinary area below for 6 Credit Hours.

**Discipline - Civil and Environmental Engineering**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE 535</td>
<td>Structural Steel Design</td>
</tr>
<tr>
<td>CIE 536</td>
<td>Pre-Stressed Concrete Design</td>
</tr>
<tr>
<td>CIE 551</td>
<td>Energy Conversion</td>
</tr>
<tr>
<td>CIE 558</td>
<td>Solid Wastes: Collection and Disposal</td>
</tr>
</tbody>
</table>

10.4 Public Administration

This certificate is for midcareer professionals who cannot leave work to complete the entire Executive Master of Public Administration program but still desire a rigorous educational experience focusing on significant elements of public administration. Most individuals taking the certificate state an interest in improving their management and leadership skills or an interest in developing concrete knowledge in a specific policy area. This certificate requires 12 graduate credits. To complete the certificate, students take 12 credits of Public Administration coursework (recognized by a PAI prefix), including one required course, PAI 895 Managerial Leadership.
11.0 Recent Theses and Dissertations

11.1 Ph.D Dissertations

- Bo Yan, “Residual Flexural Strength of Corroded AASHTO TYPE II Pretensioned Concrete Girder-Deck System”, 2018.
- Song He, “A Project-level Infrastructure Management Framework for Sustainable Roadway”, 2018
- Zheng Dong, “Dynamics of Water, Carbon, and Nitrogen in Forest and Alpine Tundra Ecosystems in the Pacific Northwest and the Rocky Mountains”, 2018
- Chen Liu, “Assessment of Stress-Strain Behavior of EPS Geoform By Using New Sensors”, 2019

11.2 MS Theses

- Kirill Skorokhod, "A Risk-Based Prioritization Model for Local Roadways: A Case Study of Syracuse, NY”, 2018
- Alexander Johnson, “Measuring Atmospheric Dry Deposition to Urban Surfaces”, 2018
- Ting Wang, “Seasonal Patterns of Total Methyl Mercury Concentrations in Ground and Surface Waters in Natural and Restored Freshwater Wetlands in Northern New York”, 2018
- Nima Fayaz, “Studying Impacts of Climate Change on Operation of Reservoirs in Bull Run Watershed, Portland, Oregon”, 2018
- Nicholas LoRusso, “Dissolved organic matter dynamics in calcium-treated and reference watersheds at Hubbard Brook Experimental Forest”, 2019
- Chinthoory Ganeshalingam, “A Framework to Predict the Dewatering Performance of Large-Scale Geotextile Tubes in the Field”, 2019
- Burak Gursoy, “Network Level Pavement Deterioration Prediction Modeling for the City of Syracuse”, 2019
12.0 Faculty

12.1 Full Time Faculty

Riyad S. Aboutaha

Ph.D. (University of Texas at Austin), Associate Dean and Associate Professor of Civil and Environmental Engineering

Specialty: Structural Engineering

E-mail: rsabouta@syr.edu

- Teaching Interests: Rehabilitation of Civil Infrastructure, Bridge Engineering, Behavior and Design of Reinforced and Pre-Stressed Concrete Structures, Mechanics of Materials, and Structural Analysis
- Research Interests: Structural Rehabilitation of Civil Infrastructure, Bridge Retrofit with CFRP Composites, Experimental Investigation of Structural Concrete and Steel Systems, FRP Reinforced Concrete Structural Systems, Foundation Strengthening, Cost-Effective Preventive Maintenance and Widening of Highway Bridges, Rehabilitation of Fire Damaged Concrete Structures, and Investigation of Structural Failures

Sample Publications:

Shobha K. Bhatia

Ph.D. (University of British Columbia), Professor of Civil and Environmental Engineering, Laura J. and L. Douglas Meredith Professor for Teaching Excellence

Specialty: Geotechnical Engineering

E-mail: skbhatia@syr.edu

- Teaching Interests: Designing with Geosynthetics, Seepage and Earth Dams, Ground Improvement, Soil Dynamics and Advanced Soil Mechanics

Sample Publications:

David G. Chandler

Ph.D. (Cornell University), Associate Professor of Civil and Environmental Engineering
Specialty: Hydrology
E-mail: dgchandl@syr.edu

- Teaching Interests: Hydrology, Water Resources Engineering, Sustainable Water Systems, Environmental Sensing
- Research Interests: Climate and Anthropogenic Impacts on Hydrology, Soil Physics, Alternative Waste Treatment Systems, Green Infrastructure

Sample Publications:

Andria Costello Staniec

Ph.D. (California Institute of Technology), Department Chair, Associate Professor of Civil & Environmental Engineering

Specialty: Environmental Microbiology, Biotechnology, Engineering & STEM Education

E-mail: costello@syr.edu

- Teaching Interests: Environmental Microbiology, Environmental Chemistry, Environmental Engineering, Biotechnology
- Research Interests: Environmental Microbiology, Engineering & STEM Education

Sample Publications:

Joan V. Dannenhoffer

M.S.C.E (University of Connecticut), MBA (Rensselaer Polytechnic Institute), P.E., Associate Teaching Professor of Civil and Environmental Engineering

E-mail: jvdannen@syr.edu

Teaching Interests: Engineering Mechanics, Engineering Materials
Research Interests: Engineering Education Assessment and Teaching Methods

Sample Publications:

Cliff I. Davidson

Ph.D. (California Institute Technology), Program Director of Environmental Engineering, Professor of Civil and Environmental Engineering and Center of Excellence in Environmental and Energy Systems, Thomas C. and Colleen L. Wilmot Chair of Engineering; Director, Center for Sustainable Engineering

Specialty: Environmental Engineering

E-mail: davidson@syr.edu

- Teaching Interests: Environmental Engineering, Sustainable Engineering
- Research Interests: Green Infrastructure, Environmental Flows of Chemicals, Air Quality, Sustainable Urban Development, Engineering Education

Sample Publications:

Charles T. Driscoll

Ph.D. (Cornell University), University and Distinguished Professor of Environmental Systems Engineering, National Academy of Engineering

Specialty: Environmental Engineering, Civil Engineering, Environmental Science

E-mail: ctdisco@syr.edu

- Teaching Interests: Environmental Engineering, Environmental Chemistry, Biogeochemistry, Environmental Systems Modeling

Sample Publications:

Chris E. Johnson

Ph.D. (University of Pennsylvania), Professor of Civil and Environmental Engineering
Specialty: Environmental Engineering
E-mail: cejohns@syr.edu

- Teaching Interests: Environmental Chemistry, Soil Chemistry, Statistics
- Research Interests: Biogeochemistry, Soil Chemistry, Natural Organic Matter

Sample Publications:

Christa Kelleher

Ph.D. (The Pennsylvania State University), Assistant Professor of Earth Sciences and Civil and Environmental Engineering

Specialty: Hydrology

E-mail: ckellehe@syr.edu

- Teaching Interests: Physical Hydrology, Hydrologic Systems Modeling, Small Unoccupied Aerial Systems
- Research Interests: Watershed Hydrology, Riverine Responses to Climate and Land Use Change, Water Quality, Environmental Model Diagnostics and Uncertainty, Small Unoccupied Aerial Systems, Scientific Visualization

Sample Publications:

Eric M. Lui

Ph.D. (Purdue University), Laura J. and L. Douglas Meredith Professor for Teaching Excellence, Associate Professor of Civil and Environmental Engineering

Specialty: Structural Engineering

E-mail: emlui@syr.edu

- Research Interests: Nonlinear Analysis, Numerical Methods, Steel Structures, Damage Identification and Quantification, Structural Dynamics and Earthquake Engineering

Sample Publications:

Dawit Negussey

Ph.D. (University of British Columbia), Professor of Civil and Environmental Engineering
Specialty: Geotechnical Engineering
E-mail: negussey@syr.edu

- Teaching Interests: Geofoam Geotechnics, Soil Mechanics, Geotechnical Engineering Design, Transportation Engineering
- Research Interests: Properties and Applications of Geofoams, Geotechnical Engineering Design, and Forensic Engineering Investigations

Sample Publications:

Zhao Qin
Ph.D., (Massachusetts Institute of Technology), Assistant Professor of Civil and Environmental Engineering, Specialty: Structural Engineering
E-mail: zqin02@syr.edu

- Research Interests: Development of advanced computational modeling methods for designing new materials of advanced material functions.

Sample Publications:

- Z. Qin, M. J. Buehler (2019), Analysis of the vibrational and sound spectrum of over 100,000 protein structures and application in sonification, Extreme Mechanics Letters, Vol 29, 100460
- Z. Qin, M. Buehler (2018), Hierarchical nanostructures for functional materials (editorial), Nanotechnology, Vol. 29, paper #: 280201
Baris Salman

Ph.D. (University of Cincinnati), Professor of Practice Civil and Environmental Engineering Specialty: Civil Engineering/Construction Engineering and Management

Email: bsalman@syr.edu

- Teaching Interests: Construction Project Management and Scheduling, Construction Equipment, Sustainable Infrastructures and Asset Management, Civil Engineering Materials, Principles of Transportation Engineering
- Research Interests: Infrastructure Asset Management; Risk Assessment and Management; Trenchless Inspection, Repair, and Renewal Methods; Accelerated and Fast Track Construction

Sample Publications:

- Ghorai, S., Salem, O., Salman, B. (2016) "Assessment of traffic emission impacts due to rigid pavement repair and rehabilitation activities." Eighth International Conference on Maintenance and Rehabilitation of Pavements (MAIREPAV8), Singapore.
Laura J Steinberg

Ph.D. (Duke University), Professor, Special Assistant for Strategy, Office of the Vice Chancellor, Former Dean of the College of Engineering and Computer Science

Specialty: Environmental Engineering, Civil Engineering, Public Policy

E-mail: ljs@syr.edu

- Teaching Interests: Infrastructure Management, Environmental Engineering, Resilience, Public Policy
- Research Interests: Critical Infrastructure, Smart Cities, Natural Hazards Management, infrastructure and Environmental Policy, Environmental Modeling

Sample Publications:

Svetoslava Todorova

Ph.D. (Syracuse University), Professor of Practice Civil and Environmental Engineering
Specialty: Environmental Engineering
E-mail: stodorov@syr.edu

- Teaching Interests: Environmental Engineering, Environmental Chemistry, Sustainable Engineering, Urban Drainage and Stormwater Design
- Research Interests: Aquatic Chemistry, Mercury Cycling and Bioaccumulation, Environmental Policy, Sustainable Infrastructure

Sample Publications:

Teng Zeng

Ph.D. (University of Minnesota), Assistant Professor of Civil and Environmental Engineering Specialty: Environmental Engineering

Email: tezeng@syr.edu

- Research Interests: Occurrence and Fate of Organic Contaminants, Formation and Control of Disinfection Byproducts, Aquatic Photochemistry

Sample Publications:

12.2 Other Faculty

**Ruth Chen**
Ph.D. (University of Michigan), Part-Time Professor of Practice Civil and Environmental Engineering

- Teaching Interests: Risk assessment methodology, environmental toxicology, alternative energy, human health impact of exposures to environmental toxins, education in global response to energy and environmental challenges

**Samuel P. Clemence**
Ph.D. (Georgia Institute of Technology), Emeritus Professor, Laura J. and L. Douglas Meredith Professor for Teaching Excellence

- Teaching Interests: Geotechnical Engineering, Soils and Foundation Design, Construction Management in the Middle East, History of Technology, Leonardo da Vinci Artist and Engineer, Engineering History of the Erie Canal

**Kimberly M. Driscoll**
M.S.E.E. (Syracuse University), Research Faculty

- Teaching Interests: Environmental Engineering
- Research Interests: Environmental Systems

**Omar Y. El Masri**
Ph.D. (Syracuse University), Adjunct Professor/Bridge Engineer

- Teaching Interests: Bridge Engineering, Finite Element Analysis, Steel Design
- Research Interests: Steel Structures, Structural Stability, Computer-Aided Analysis and Design Methods, Bridge Engineering

**Alexander A. Friedman**
Ph.D. Eng. (University of California-Davis), Emeritus Professor

- Teaching Interests: Environmental Engineering, Water and Wastewater Treatment.
- Research Interests: Water and Wastewater Treatment
Dennis P. Joyce, LS
Joyce Land Surveying, Adjunct Faculty
Teaching Interests: Surveying and Mapping

Lance S. Ketcham, P.E.
M.S. (Syracuse University), Adjunct Faculty, Practitioner in Residence
Principal Environmental/Geotechnical Design Engineer and National Expert, ARCADIS

Raymond D. Letterman
Ph.D. (Northwestern University), Emeritus Professor
- Research Interests: Solid-Liquid Separation Processes, Potable Water Supply, Applied Surface Chemistry

James A. Mandel
Ph.D. (Syracuse University), Emeritus/Research Professor
- Teaching Interests: Finite Element Analysis, Plate and Shell Structures
- Research Interests: Composite Materials, Fiber Reinforcement Concrete, Curved Bridge Design, Finite Element Analysis

Sinead Mac Namara
Ph.D. (Princeton University), Affiliated Faculty
- Teaching Interests: Structural Analysis and Design
- Research Interests: Thin-shell concrete in nuclear containment structures

Peter W. Plumley
Ph.D. (UC-Santa Cruz), Research Associate Professor
- Teaching Interests: Geology/Tectonics, Renewable Energy, Climate Change, Freshman Engineering
- Research Interests: Science Education, K-12 Outreach

Suresh Santanam
Sc.D. (Harvard University), Associate Professor, Biomedical and Chemical Engineering Department; Director, Industrial Assessment Center
• Teaching Interests: Air Pollution, Environmental Regulations, Control System Design, Green Engineering, Process Control, Experimental Methods and Statistics, Advanced Chemical Engineering Design, Industrial Toxicology
• Research Interests: Air Quality Monitoring and Control, Indoor Air Quality, Human Performance and IAQ, Energy Efficiency, Green Chemical Processes, Air Pollution Exposure Modeling, Source Apportionment

Robert Tanchak
M.S. Manufacturing Engineering (Syracuse University) Adjunct Faculty
• Teaching Interests: Statics, Dynamics, Engineering Computations, Production/MFG processes, Materials

Eric Wing
B. Tech. (SU NY-Delhi), Adjunct Faculty
C&S Companies
• Teaching Interests: BIM, Advanced BIM

Abdallah H. Yabroudi
M.S. (Syracuse University), Adjunct Faculty
CEO and Managing Director, Dubai Contracting Company
• Teaching Interests: Construction Engineering and Project Management