Applicants should submit the following:

- prerequisite courses within 1-2 semesters of admission.
- a completed Graduate School online application with the application fee.
- official transcripts from all post-secondary institutions attended
- three (3) letters of professional recommendations from individuals who can evaluate the applicant’s potential;
- a personal statement of professional interest, goals, and experience;
- test scores from the Graduate Record Examination (GRE); and
- a statement of interest in a graduate assistantship, if desired (full-time study required).

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants. See GCAC-305 Admission Requirements for International Students for more information.

**Prerequisite Courses**

Students may be admitted to the program from various engineering/technology disciplines. Students applying for admission are expected to have B.S. degree in engineering/engineering technology and completed the following core courses:

- Physics I and II (one year of college physics);
- Calculus I and II (differential and integral calculus);
- Differential equations;
- Chemistry (one semester);
- Statics;
- Dynamics; and
- Strength of materials.

**Degree Requirements**

**Master of Science (M.S.)**

All graduate students in Civil Engineering are required to adhere to the requirements of the Graduate School, as found in the Graduate Degree Programs Bulletin. The requirements of the Graduate School, however, are minimum requirements and the policies, procedures, and regulations listed below are additional and more specific for graduate students pursuing the M.S. in Civil Engineering degree. Advisers will call pertinent regulations to the attention of their advisees, but it should be understood that it is the student’s personal responsibility to see that all requirements are satisfied.

The M.S. CE program at PSH is structured to take full advantage of the specialty areas of expertise of the CE Graduate Faculty. The M.S. degree with the thesis track requires 31 credits at the 400, 500, 600, or 800 level, including 24 course credits with at least 12 credits at the 500 level, one colloquium credit (CE 590), and six thesis credits (CE 600 or CE 610). The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School, and the student must pass a thesis defense.

The M.S. degree with the non-thesis track also requires 31 credits at the 400, 500, or 800 level, including 27 course credits with at least 15 credits at the 500 level, one colloquium credit (CE 590), and three research/paper credits (ENGR 594).
All M.S. CE students are required to take an advanced math or statistics course (EMCH 524A or STAT 500), and EMCH 500 or CE 437, and colloquium (CE 590). Students will take 12 (thesis) or 15 (non-thesis) credits of civil engineering courses, selected from offerings in structural, construction, transportation, water resources, and environmental with 9 (thesis) or 12 (non-thesis) credits at the 500-level.

**Elective Courses.** Students will take six (6) additional elective credits at either the 400- or 500-level. These electives may be taken from civil engineering courses or courses offered by other departments that meet the objective of the M.S. CE degree. The student can work with their adviser to select courses that either focus on a specific area of civil engineering or that provide a robust in-depth background of multiple areas of civil engineering. A maximum of four 400-level courses (12 credits) may be taken for the M.S. CE degree.

**Culminating Experience.** For a thesis, original research, requiring at least two semesters of work (up to 6 credits), is expected. The work should be an in-depth investigation intended to extend the state of knowledge in a specialty area. The thesis must be accepted by the advisers and/or committee members, the head of the graduate program, and the Graduate School, and the student must pass a thesis defense. For the non-thesis track, a scholarly paper is required while the student is enrolled in ENGR 594. The paper should be an inquiry in a specialty area. The paper must be accepted by the advisers and/or committee members, the head of the graduate program, and the student must pass the paper defense.

**Additional Requirements.** A maximum of three credits of independent study (CE 596) may be applied towards the M.S. CE degree program, but the undergraduate individual study course (CE 496) will not count towards program credit requirements.

All students are expected to complete one credit of colloquium (CE 590) during the first two semesters of study. Degree requirements must be completed during a six-year period.

Penn State Harrisburg’s M.S. CE program is distinct and independent of the M.S. CE program offered at the University Park campus.

### Environmental Option

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EMCH 524A or STAT 500</td>
<td>Applied Statistics 3</td>
<td></td>
</tr>
<tr>
<td>EMCH 500 or CE 437</td>
<td>Solid Mechanics 3</td>
<td></td>
</tr>
<tr>
<td>Required Environmental Option Courses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVE 591</td>
<td>Research Methods in Environmental Engineering 1</td>
<td></td>
</tr>
<tr>
<td>ENVE 569</td>
<td>Environmental Risk Assessment 3</td>
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<tr>
<td>Select 3 credits of environmental chemistry or biology from the following list:</td>
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<td></td>
</tr>
<tr>
<td>CE 570</td>
<td>Environmental Aquatic Chemistry</td>
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</tr>
<tr>
<td>ENVE 540</td>
<td>Biodegradation and Bioremediation</td>
<td></td>
</tr>
<tr>
<td>ENVE 550</td>
<td>Chemical Fate and Transport</td>
<td></td>
</tr>
<tr>
<td>Select 3 credits of design engineering in environmental and water resources:</td>
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<td></td>
</tr>
<tr>
<td>ENVE 411</td>
<td>Water Supply and Pollution Control</td>
<td></td>
</tr>
<tr>
<td>ENVE 415</td>
<td>Hydrology</td>
<td></td>
</tr>
<tr>
<td>ENVE 417</td>
<td>Hydraulic Design</td>
<td></td>
</tr>
<tr>
<td>CE 462</td>
<td>Open Channel Hydraulics</td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CE 555</td>
<td>Groundwater Hydrology: Analysis and Modeling</td>
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</tr>
<tr>
<td>CE 571</td>
<td>Physical-Chemical Treatment Processes</td>
<td></td>
</tr>
<tr>
<td>CE 572</td>
<td>Biological Treatment Processes</td>
<td></td>
</tr>
</tbody>
</table>

### Minor

A graduate minor is available in any approved graduate major or dual-title program. The default requirements for a graduate minor are stated in Graduate Council policies listed under GCAC-600 Research Degree Policies (http://gradschool.psu.edu/graduate-education-policies/) and GCAC-700 Professional Degree Policies (http://gradschool.psu.edu/graduate-education-policies/), depending on the type of degree the student is pursuing:

- GCAC-611 Minor - Research Doctorate (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-611-minor-research-doctorate/)
- GCAC-641 Minor - Research Master’s (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-641-minor-research-masters/)
- GCAC-709 Minor - Professional Doctorate (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-700/gcac-709-professional-doctoral-minor/)
- GCAC-741 Minor - Professional Master’s (https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-700/gcac-741-masters-minor-professional/)

### Student Aid

Graduate assistantships available to students in this program and other forms of student aid are described in the Tuition & Funding (http://gradschool.psu.edu/graduate-funding/) section of The Graduate School’s website. Students on graduate assistantships must adhere to the course load limits (http://gradschool.psu.edu/graduate-education-policies/gsad gsad-900/gsad-901-graduate-assistants/) set by The Graduate School.

### Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Civil Engineering (CE) Course List (https://bulletins.psu.edu/university-course-descriptions/graduate/ce/)
**Contact**

**Campus**
Harrisburg

**Graduate Program Head**
Vahid Motevalli

**Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)**
Seroj Mackertich-Sengerdy

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Heather Lookenbill
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777 W. Harrisburg Pike, W236
Olmsted
Middletown PA 17057
hpl5273@psu.edu
(717) 948-6124

**Program Website**
View (https://harrisburg.psu.edu/
science-engineering-technology/
civil-structural-construction/
masters-science-civil-engineering/)