

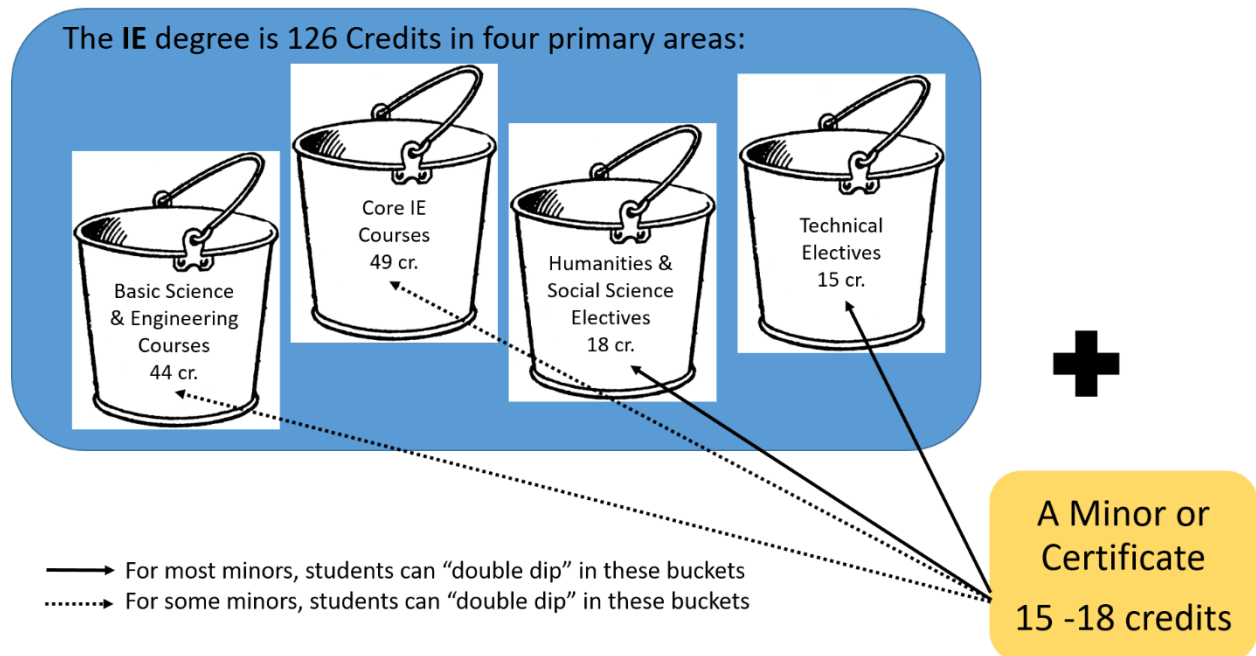
# IE+

## Pursue Your Passion, Elevate Your Experience, Leverage Your Degree

IE + is a program designed to help students pursue a passion, elevate their academic experience, and leverage their degree by earning a minor, certificate, and/or certification in any area for which Pitt provides such an opportunity. In this document you will find examples of minors, certificates, and certifications that you might obtain. The requirements listed are accurate as of June, 2020 but please be sure to verify the details for any program that you may be interested at the links provided.

For clarification:

- Minors – Degree programs focused in a specific discipline, noted on diplomas and transcripts
- Certificates – University or Swanson School of Engineering programs that often cross disciplines, separate certificates typically awarded, noted on transcript
- Certifications – provided by outside organizations (typically recognized nationally)
- Concentrations – internal to IE, noted on transcript (as a “sub-plan” under the BSIE), not on diploma (not part of the IE + program)



## **Minors**

The examples in this document are just that, examples (in no particular order)! As an IE student, you are able to pursue any minor that the University offers and that interests you. The examples are intended to show you how you can easily use the requirements in a minor to “double count” for requirements in the BSIE program. This would include the 15 required technical elective credits and the 18 required Humanities / Social Science (H/SS) credits for the BSIE. This will allow you to, in many cases, earn the minor without needing to take any additional credits beyond the required 126 required credits or a minimal number beyond (3-6 credits more in most cases). Note that the “breadth” requirement for your H/SS courses can be waived for students earning a minor in a social science or humanities area. The “2 IE courses” for technical elective requirement can be waived for student earning a minor in a technical area. Please note that IE students are still subject to the International Requirement that means, depending on whether you travel, you need 1 or 3 “globally focused” courses (see the definition here: <https://www.engineering.pitt.edu/Departments/Industrial/Content/Undergraduate/Undergraduate-International-Requirement/> ). You can find “globally focused” courses in just about all of the various minor areas of interest.

A full list of minors available at the University of Pittsburgh can be found here:

<https://www.pitt.edu/academics/undergraduate>

Note: Students must apply for any official minor they will complete or have completed at the time they apply for graduation.

**Mathematics** <http://www.mathematics.pitt.edu/>

Students can earn a minor in mathematics by completing at least 15 credits in mathematics courses distributed as follows.

1. At least 9 credits of courses numbered 0250 or higher, excluding MATH 0400.
2. At least 6 credits of courses numbered 1000 or higher.
3. However, students cannot count both 0280 and 1180, nor can they count both 0290 and 1270.

Grade requirements a letter grade of C or higher is required in each course for completion of this minor. Students may not take any course for the minor on an S/NC basis. Note: Students must apply for any official minor they will complete or have completed at the time they apply for graduation.

**Advising:** UGDMath@pitt.edu

**For the BSIE:** You can count both MATH 280 and 290 (6 of the 15 required credits) which are already required for the IE degree. Any MATH course higher than 400 can be used as a technical elective in IE (so you can have 3 of your 5 required technical electives satisfied by MATH courses - (the other 9 of the 15 required credits for the minor). The only exceptions are courses that may duplicate material in a required IE course.

**Economics** <https://www.econ.pitt.edu/>

A Minor in Economics is 15 credits. To receive a minor in economics, students must complete:

ECON 0100

ECON 0110

ECON 1100 or 1110 or 0150

2 Elective Economics Courses

A minimum of QPA of 2.0 in minor courses is required for graduation. ½ of credits must be taken at Pitt/Oakland Campus.

**Advising:** econadv@pitt.edu, Tel: 412-648-1740

**For the BSIE:** ECON 100 and 110 can be used as social science electives; ECON 1100 or 1110 can be used either as social science electives or technical electives and can satisfy the depth requirement for H/SS electives regardless of whether you are using them for social science or technical electives. Note that ECON 0150 CANNOT be used as it duplicates material in IE 1070 and 1071. Depending on the Elective Economics Courses you take they also can be used for social science or technical electives.

**Sociology** <http://sociology.pitt.edu/>

1. Entry level course, Sociology 0002 (Sociology of Everyday Life) or Sociology 0005 (Societies) or Sociology 0010 (Introduction to Sociology)
2. Sociology 0230 (Social Research Methods)
3. Sociology 0150 (Social Theory)
4. First elective (lower level)
5. Second elective at an upper level, Sociology 1000-1999.

**Advising:** Daniel Romesberg, socdept@pitt.edu, Office: WWPH 2411, Tel: 412-648-7580

**For the BSIE:** Sociology courses can be used to satisfy social science electives with the exception of those listed here: <https://www.engineering.pitt.edu/First-Year/First-Year/Advising/Approved-Electives/>. Note that Sociology 230 is included in the “not approved” list at that link. This minor would therefore require at least 3 additional credits beyond the 126 required for the BSIE. Breadth can be waived if you wish to earn this minor.

**Theater** <https://www.play.pitt.edu/>

Required:

THEA 0880 (run crew)

Two of the three following courses:

THEA 0505\*, THEA 0804\*, THEA 0810\*

Choose nine credits of theatre electives from any of the remaining theater courses listed below:

THEA 0505\*, THEA 0804\*, THEA 0810\*, THEA 0825, THEA 0830, THEA 0840, THEA 0842, THEA 0880, THEA 1100, THEA 1101, THEA 1102, THEA 1103, THEA 1104, THEA 1108, THEA 1109, THEA 1110, THEA 1111, THEA 1120, THEA 1227, THEA 1229, THEA 1230, THEA 1235, THEA 1240, THEA 1241, THEA 1245, THEA 1246, THEA 1338, THEA 1341, THEA 1342, THEA 1343, THEA 1365, THEA 1366, THEA 1390,

THEA 1391, THEA 1392, THEA 1480, THEA 1481, THEA 1482, THEA 1483, THEA 1484, THEA 1485, THEA 1500, THEA 1501, THEA 1903

\* These courses cannot count for both the required course and the 9 credits of theatre electives.

**Advising:** Gianni Downs, Gdowns@pitt.edu, Office: CL 1617B, Tel: 412-624-3459

**For the BSIE:** Theater Arts courses can be used as humanities electives with the exception of those listed here: <https://www.engineering.pitt.edu/First-Year/First-Year/Advising/Approved-Electives/>. This minor is 18 credits so it would likely require you to take at least 3 additional credits beyond the 126 required for the BSIE unless one of the THEA courses is a writing requirements course. Breadth can be waived if you wish to earn this minor.

**Political Science** <http://www.polisci.pitt.edu/>

Students may complete a minor in Political Science, which consists of a sequence of five courses in one of the four substantive fields.

- Complete one core course in a substantive field (0200 American Politics, 0300 Comparative Politics, 0500 World Politics, or 0600 Political Theory)
- Complete four upper-level courses in the same substantive field as the core course, under the direction of an undergraduate advisor.
- For example, a student interested in American Politics might earn a minor by completing the core course (PS 0200) and four upper level courses in American Politics (e.g., PS 1211 Legislative Politics, PS 1212 American Presidency, PS 1261 American Public Policy, and PS 1275 Religion and Politics).

**Advising:** Meredith Long, MTLong@Pitt.edu, Office: WWPH 4605, Tel: 412-648-7250; Andrew Lotz, ANL7@pitt.edu, Office: WWPH 4603, Tel: 412-648-7269

**For the BSIE:** Political Science courses can be used to satisfy social science electives with the exception of those listed here: <https://www.engineering.pitt.edu/First-Year/First-Year/Advising/Approved-Electives/>. If you plan correctly, you would not need to take any additional credits beyond the 126 required for the BSIE. Note if you have AP credit for PS 200 (common) you can likely use it for the minor. Breadth can be waived if you wish to earn this minor.

**Applied Statistics** <https://www.stat.pitt.edu/>

The minor in applied statistics requires 16 credits, consists of the following courses,

- STAT 1000 (Applied Statistical Methods). Acceptable substitutes include STAT 1100 (Statistics and Probability for Business Management), ENGR 0020 (Probability and Statistics for Engineers 1), and STAT 0200 (Basic Applied Statistics)
- STAT 1221 (Applied Regression)
- Three additional courses from STAT 12XX through 17XX, excluding STAT 1223

**Advising:** Carl Bodenschatz, CBoden@pitt.edu, Office: 1804 WWPH, Tel: 412-624-9085

**For the BSIE:** IE students can seek permission to substitute the combination of IE 1070 and IE 1071 (equivalent to ENGR 0020) for the STAT 1000 requirement. The rest of the STAT courses for the minor can be used as technical electives (and the requirement of two IE courses for technical electives can be waived).

**Philosophy** <http://www.philosophy.pitt.edu/>

The philosophy minor requires six three-credit courses (18 credits total) to be distributed as follows:

1. One (1) course in logic, selected from
  - PHIL 0500 (Introduction to Logic)
  - PHIL 1500 (Symbolic Logic)
2. One (1) course in the history of ancient philosophy, selected from
  - PHIL 0200 (History of Ancient Philosophy)
  - PHIL 1020 (Plato)
  - PHIL 1040 (Aristotle)
3. One (1) course in the history of modern philosophy, selected from
  - PHIL 0210 (History of Modern Philosophy)
  - PHIL 1110 (Rationalism)
  - PHIL 1140 (Empiricism)
4. One (1) course in moral, social, or political philosophy, selected from
  - PHIL 0300 (Introduction to Ethics) is preferred,
  - PHIL 0320 (Social Philosophy)
  - PHIL 0330 (Political Philosophy)
  - PHIL 0350 (Philosophy and Public Issues)
  - A 1000 level course in the 1300s (Value Theory, Social and Political Philosophy).
5. Elective Courses: Two additional 1000-level courses must be completed beyond any used in 1-4.

Note: At least one of the above four courses (numbers 1-4) must be taken at the 1000 level.

**Advising:** Thomas Berry, TBerry@pitt.edu, Office: CL 1009-B, Tel: 412-624-5793

**For the BSIE:** Philosophy courses can be used as humanities electives with the exception of those listed here: <https://www.engineering.pitt.edu/First-Year/First-Year/Advising/Approved-Electives/>. This minor is 18 credits so it would likely require you to take at least 3 additional credits beyond the 126 required for the BSIE unless one of the PHIL courses is a writing requirements course. Breadth can be waived if you wish to earn this minor.

**Computer Science** <https://cs.pitt.edu/>

The total number of credits are 16. CS 0401 requires programming experience as a prerequisite. A student without any programming background would be advised to take the 3 credit course CS 0007 as preparation for CS 0401. The minor is essentially 5 of the 6 courses that are considered the “core” of the CS major. This is a rigorous minor. This minor is not intended for casual students interested in computer literacy.

A computer science minor consists of 16 credits.

CS 0401, CS 0445, CS 1501  
Any two of three: CS 0441, CS0447, CS 0449

Declare a minor:

<https://na2.docusign.net/Member/PowerFormSigning.aspx?PowerFormId=7ad7bcb2-03db-4265-a8f1-9a4f1a32c703>

**Advising:** John Ramirez, [ramirez@cs.pitt.edu](mailto:ramirez@cs.pitt.edu), Tel: 412-624-8441

**For the BSIE:** CS 401 is pre-approved as a technical elective for IE students and CS 445 and CS 1501 can also be approved by your advisor to use as technical electives. CS 441 is not approved since it duplicates material covered in other BSIE course. CS 447 and 449 can also be approved. The “2 IE courses” for technical electives requirement can be waived. If carefully planned, IEs can earn this minor without taking additional credits beyond the 126 required for the BSIE.

**Gender, Sexuality, and Women’s Studies** <http://www.gsws.pitt.edu/>

A minor in Gender, Sexuality, and Women's Studies minor requires 18-credits. Transfer courses will be accepted on a case-by-case basis up to a maximum of 2 courses. Students may have no more than 6 credits counted toward another unit’s certificate, major, or minor. A cumulative QPA of 2.00 is required in courses applying to the minor.

- GSWS 0100 Introduction to Gender, Sexuality, and Women's Studies
- GSWS 0500 Introduction to Feminist Theory
- GSWS 0550 Sex and Sexualities
- 2 Elective GSWS or Cross-listed Courses (any level): Specific examples can be found here: <http://www.gsws.pitt.edu/students/gender-sexuality-womens-studies-minor>
- 1 Upper-level GSWS Seminar (GSWS 1120-GSWS 1910). GSWS 1910 Senior Capstone may count for this requirement, but is not required for the minor. Specific examples can be found here: <http://www.gsws.pitt.edu/students/gender-sexuality-womens-studies-minor>

**Advising:** Frayda Cohen [FRCST5@Pitt.edu](mailto:FRCST5@Pitt.edu), Office: CL 402C

**For the BSIE:** GSWS courses are considered “interdisciplinary” so can typically be counted either as humanities or social science electives. You’ll note some courses that you can choose for this minor are from other areas. Simply consult the [SSOE approved list](#) of H/SS electives to see what you can double count. You may only be able to double count 6 credits given the specific rules for this minor so it will likely require you to take additional credits beyond those required for the BSIE.

**English Literature** <http://www.englishlit.pitt.edu/>

The minor consists of 18 credits. Students take the first two core courses (ENGLIT 0505 and 0506) plus four electives from any concentration; two of those electives must be 1000-level or higher, and we recommend one of the project seminars as part of that final pair.

**Advising:** Mark Kemp, [mkemp@pitt.edu](mailto:mkemp@pitt.edu), Office: CL 501, Tel: 412-624-6656; Jeff Aziz [jeffaziz@pitt.edu](mailto:jeffaziz@pitt.edu), Office: CL 501-C, Tel: 412-624-6559; Lori Campbell, [lmc5@pitt.edu](mailto:lmc5@pitt.edu), Office: CL 501-C, Tel: 412-624-6559,

**For the BSIE:** English Literature courses can be used as humanities electives with few, if any exceptions. This minor is 18 credits but in this minor there are plenty of “W” course options. Breadth can be waived if you wish to earn this minor.

**Africana Studies** <http://www.africanastudies.pitt.edu/>

The Africana Studies minor requires the completion of 15 credits and a minimum QPA of 2.0 in departmental courses is required. The minor is designed to allow students to focus on one cultural cluster in the Department of Africana Studies: African-American culture, African culture, or Multidisciplinary. Any exceptions must be approved by the Africana studies advisor. All tracks are 15 credits.

#### African American Culture Track Requirements

Core course: AFRCNA 0031: Introduction to Africana Studies; 3 cr.

Two lower-level courses from subset; 6 cr.

Two upper-level courses from subset; 6 cr.

#### African Culture Track Requirements

Core course: AFRCNA 0031: Introduction to Africana Studies; 3 cr.

Two lower-level courses from subset; 6 cr.

Two upper-level courses from subset; 6 cr.

#### Multidisciplinary Track Requirements

Core course: AFRCNA 0031: Introduction to Africana Studies; 3 cr.

One lower-level humanities course from subset; 3 cr.

One lower-level social sciences course from subset; 3 cr.

One upper-level humanities course from subset; 3 cr.

One upper-level social sciences course from subset; 3 cr.

A list of minor course options (subsets) for the African American Culture, African Culture, and Multidisciplinary tracks are available <http://www.africanastudies.pitt.edu/academic-programs/africana-studies-minor/minor-course-options>.

**Advising:** Oronde Sharif, senegal1@pitt.edu, Office: 4142 Wesley W. Posvar Hall, Tel: 412-648-2276

**For the BSIE:** All three-credit courses in AFRCNA below 1760 are approved for social science electives. Breadth can be waived if you wish to earn this minor.

**Dance** <https://www.education.pitt.edu/academics/health-physical-activity-and-exercise/minor-dance>

Minor Application: <https://app.education.pitt.edu/admissions/minor>

Students pursuing this minor will need to earn an additional 18 credits of HPA courses (or accepted substitutes) listed in the Plan of Study and will receive a minor advisor to assist in course planning upon acceptance into the program. Many of the courses on the Plan of Study are offered once per year and are prerequisites for latter courses and therefore need to be planned accordingly.

The Pitt Dance Ensemble, a registered University group whose purpose is to promote dance as an art form, provides dance minors with additional opportunities to perform, choreograph, teach, and attend weekly classes taught by local and national dance professionals. It also provides students with opportunities to attend local, state, and regional dance performances. An overall GPA of 2.5 or higher is required for graduation.

Dance courses

HPA 0060 - INTRODUCTION TO DANCE

HPA 0473 - DANCE PEDAGOGY

HPA 1241 - TEACHING EXPERIENCE 1

HPA 1242 - TEACHING EXPERIENCE 2

HPA 0033 - BALLET 1

HPA 0041 - JAZZ 1

HPA 0031 - MODERN DANCE 1

HPA 0044 - DANCE PRODUCTION

HPA 0040 - CHOREOGRAPHY

HPA 0244 - DANCE PRODUCTION 2

Additional Dance Courses (Choose 3.0 credits from the following 4 courses):

HPA 0196 - FIRST AID AND CPR

HPA 0032 - MODERN DANCE 2

HPA 0034 - BALLET 2

HPA 0042 - JAZZ 2

**For the BSIE:** Dance courses are not specifically approved for credit towards the BSIE degree requirements. Speak to your advisor about how you may be able to fit these courses into your class schedule and possibly count them a few for humanities electives.



## **Certificates**

Again, the examples in this document are just that, examples (in no particular order)! As an IE student, you are able to pursue any certificate that the University offers and that interests you. The examples are intended to show you how you can easily use the requirements in a minor to “double count” for requirements in the BSIE program. This would include the 15 required technical electives credits and the 18 required Humanities / Social Science (H/SS) credits for the BSIE. This will allow you to, in many cases, earn the certificate without needing to take any additional credits beyond the required 126 required credits or a minimal number beyond. Note that the “2 IE courses” for technical electives requirement can be waived for student earning a certificate.

### **Supply Chain Management**

<https://www.engineering.pitt.edu/Departments/Industrial/Content/Undergraduate/Undergraduate-Minors,-Certificates,-and-Concentrations/>

The requirements include:

1. IE 1080 (Supply Chain Analysis)
2. BUSSCM 1730 (Managing Global Supply Chains)
3. CBA Supply Chain Elective Course, either BUSSCM 1740 (Purchasing and Supply Management) or BUSSCM 1750 (Revenue Management).
4. Industrial Engineering Elective Course, chose from one of the following courses:
  - IE 1076 Total Quality Management
  - IE 1079 Logistics and Supply Chain Engineering
  - IE 1101 Facility Logistics
  - IE 1102 Lean Six Sigma I (Green Belt)
5. Global Supply Chain Project Elective Course, chosen from ENGR 1228, Global Supply Network & Manufacturing Culture in Latin America, ENGR 1625, Engineering and Business Collaboration in India, ENGR 1600, International Technology: Innovation and Leadership, or BUSSPP 1740, Global Strategy and Competitive Advantage (does not require travel). *Other international project courses may also be considered.*

In addition, the student must obtain a grade of C or better in each course counted toward the certificate, and a minimum QPA of 2.25 (C+ average) across all courses in the certificate.

**Advising:** Dr. Mike Sherwin; [mdsherwin@pitt.edu](mailto:mdsherwin@pitt.edu)

**For the BSIE:** IE 1080 is, of course, already a required course and the other courses can all be counted as technical electives. Earning this certificate does not require any additional credits beyond the 126 required for the BSIE.

**Sustainability** <https://www.engineering.pitt.edu/MCSI/Sustainability-Certificate/>

Required Courses:

ENGR 1905: Current Issues in Sustainability (3 credits)

ENGR 1907: Sustainability Capstone Experience (3 credits)  
CEE 1610: Engineering & Sustainable Development (3 credits)

Electives: Select three electives. Only one elective can be in the student's major department.

Introduction to Environmental Science (GEOL 0840)  
Environmental Geology (GEOL 0860)  
Groundwater Geology (GEOL 1051)  
Environmental Geochemistry (GEOL 1515)  
Geomorphology (GEOL 1060)  
Environmental Policy (GEOL 1334)  
Sustainability (GEOL 1333)  
Sustainability Flash Lab, (GEOL 1904)  
GIS, GPS, and Computer Methods (GEOL 1445)  
Reading the Earth: Wyoming Field Studies in Ecology and Paleontology (Honors 1540, off-campus: Wyoming)  
Ecology Summer Field Course, University Honors College (BIOSC 0740, off-campus: Wyoming)  
Forest Ecology (BIOSC 1160, off-campus: Pymatuning Laboratory of Ecology)  
Conservation Biology (BIOSC 1610, off-campus: Pymatuning Laboratory of Ecology)  
Wetland Ecology (BIOSC 1310, off-campus: Pymatuning Laboratory of Ecology)  
Ecological Field Studies (BIOSC 1220, off-campus: Pymatuning Laboratory of Ecology)  
Ecology and Natural Resources of Ecuador (BIOSC 1220, off-campus: Ecuador)  
Environmental History (HIST 1695)  
Cities in Historical Perspective (HIST 1019)  
Computers and Sustainability (CS 0090)  
Gender and Sustainability (GSWS 1450)  
Urban Sustainability (URBNST 1614)  
Introduction to Urban Studies (URBNST 0080)  
Introduction to Development Economics (ECON 0530)  
Introduction to Resource and Environmental Economics (ECON 0360)  
Environmental Economics (ECON 1360, has prerequisite)  
Contemporary U.S. Energy Policy (PIA 2231, has prerequisite)  
Energy Production and the Local Economy (PIA 2008, has prerequisite)  
Approaches to the Built Environment (HAA 0940)  
Sculpture: Eco Art (SA1340, not offered regularly, has prerequisite)  
Global Environmental Politics (PS 1542)  
Environmental Literature (ENGLIT 1005)  
Contemporary Environmental Literature (ENGLIT 0710)  
Society and the Environment (SOC 1445)

**Advising:** Dr. David Sanchez; [davidsanchez@pitt.edu](mailto:davidsanchez@pitt.edu)

**For the BSIE:** The 3 required courses can be used as technical electives. The 3 electives depend on what type of course but most can either be used as a social science, humanities, or technical elective. Seek approval from your advisor or the undergraduate program director. With careful planning earning this certificate does not require any additional credits beyond the 126 required for the BSIE.

## **Certifications**

Students that take IE 1123, Project Management, which can be taken as one of you five required technical electives towards your BSIE requirements can become eligible for certification by the Project Management Institute (<https://www.pmi.org/>). The course credit hours in IE 1123 are enough to cover the 35 hours of project management education that are required as part of becoming certified.

Students that take II02, Lean Six Sigma I are able to earn the LSS Green Belt certification in tandem with taking the course.

Students that take IE 1122, Fundamentals of Systems Engineering are eligible to become certified as Systems Engineers through the International Council on Systems Engineering (INCOSE - <https://www.incose.org/>). This is done as part of the exams taken for the course.