**EI**

* The two required EF courses are EI.
* English 264 (Writing Fiction) is a double-dip AAH and EI
* English 494 (Cultural Rhetorics) is a triple dip WC, GCUS and EI. Recommended prereq of English 355 (which COSC students take) or permission of instructor
* MUCO 380 is a double dip GCI/EI, but it has a prereq chain in music.
* PUBH 201 (Introduction to Public Health): Double Dip SS and EI – no prereq
* THEA 373 (Introduction to Sound Design): Double Dip AAH and EI– no prereq
* Getting EI for a lab course or senior design shouldn’t be hard, but I don’t really think it’s necessary.

**WC/OC Combinations**

### CE 205 - Professional Development I

**2** **Credit Hours**

Introduction to civil engineering specialties, history, and achievements. Professional responsibility, communication, and organizations.  
  
***Satisfies General Education Requirement:*** (OC) (WC)  
(RE) Prerequisite(s): [EF 151](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CE+205&filter%5B3%5D=1&filter%5B31%5D=1#tt8377)\* or [EF 157](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CE+205&filter%5B3%5D=1&filter%5B31%5D=1#tt9700)\*; and [ENGL 102](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CE+205&filter%5B3%5D=1&filter%5B31%5D=1#tt2838)\*, [ENGL 132](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CE+205&filter%5B3%5D=1&filter%5B31%5D=1#tt8515)\*, [ENGL 290](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CE+205&filter%5B3%5D=1&filter%5B31%5D=1#tt4317)\*, or [ENGL 298](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CE+205&filter%5B3%5D=1&filter%5B31%5D=1#tt4177)\*.  
Registration Restriction(s): Civil and environmental engineering majors; minimum student level – sophomore.

### EF 437 - Honors: Interdisciplinary Senior Design I

**3** **Credit Hours**

The first part of a two-course sequence where teams of students from both the Tickle College of Engineering and Haslam College of Business partner with industry sponsors to design and build authentic products and processes. Working closely with an industry liaison engineer and a faculty coach, students gain practical experience in teamwork and communication, problem-solving and engineering design, and develop leadership, management and people skills. Weekly workshop activities adapt lecture topics to individual projects. Students learn firsthand how to develop products and processes that meet customer requirements on time and within budget. The sequence is serving students in the Heath Integrated Business and Engineering Program (Heath IBEP) and others within the two colleges.  
  
***Satisfies General Education Requirement:*** (WC) (OC)  
(RE) Prerequisite(s): [ENGL 102](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=EF+437&filter%5B3%5D=1&filter%5B31%5D=1#tt1548)\*, [ENGL 132](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=EF+437&filter%5B3%5D=1&filter%5B31%5D=1#tt8227)\*, [ENGL 290](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=EF+437&filter%5B3%5D=1&filter%5B31%5D=1#tt9618)\*, or [ENGL 298](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=EF+437&filter%5B3%5D=1&filter%5B31%5D=1#tt5720)\*.  
Registration Restriction(s): Senior standing and consent of instructor.

**WC Courses of note.**

English 355 is required for COSC and it is WC.

A lot of English 200+ courses give WC and AH so students may double-dip. They have English 102 as a prereq, but that is required of our majors anyway.

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| **BCMB 409 - Perspectives in Biochemistry and Cellular and Molecular Biology**  **3** **Credit Hours**  Current issues in biochemistry, cell biology, and molecular biology. Emphasis on current developments and their applications, societal and economic impacts, and moral and ethical implications. An oral presentation and a referenced library-research essay are required. A capstone course. Writing-emphasis course.  ***Satisfies General Education Requirement:*** (WC) *(RE) Prerequisite(s):* [BCMB 311](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&search_database=Search&search_db=Search&cpage=1&ecpage=1&ppage=1&spage=1&tpage=1&location=33&filter%5Bkeyword%5D=BCMB+409#tt5790) or [BCMB 401](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&search_database=Search&search_db=Search&cpage=1&ecpage=1&ppage=1&spage=1&tpage=1&location=33&filter%5Bkeyword%5D=BCMB+409#tt2227) or [BCMB 412](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&search_database=Search&search_db=Search&cpage=1&ecpage=1&ppage=1&spage=1&tpage=1&location=33&filter%5Bkeyword%5D=BCMB+409#tt5135); [ENGL 102](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&search_database=Search&search_db=Search&cpage=1&ecpage=1&ppage=1&spage=1&tpage=1&location=33&filter%5Bkeyword%5D=BCMB+409#tt372)\*, [ENGL 132](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&search_database=Search&search_db=Search&cpage=1&ecpage=1&ppage=1&spage=1&tpage=1&location=33&filter%5Bkeyword%5D=BCMB+409#tt660)\*, [ENGL 290](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&search_database=Search&search_db=Search&cpage=1&ecpage=1&ppage=1&spage=1&tpage=1&location=33&filter%5Bkeyword%5D=BCMB+409#tt4399)\*, or [ENGL 298](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&search_database=Search&search_db=Search&cpage=1&ecpage=1&ppage=1&spage=1&tpage=1&location=33&filter%5Bkeyword%5D=BCMB+409#tt4518)\*. *Recommended Background:* 9 additional hours of biochemistry and cellular and molecular biology or related courses. *Registration Restriction(s):* Minimum student level – senior. |

### CBE 415 - Advanced Chemical and Biomolecular Engineering Laboratory

**3** **Credit Hours**

Solve open-ended problems in a chemical and biomolecular engineering laboratory environment. Incorporate principles of design of experiments and simulation tools in design and analysis.  
  
***Satisfies General Education Requirement:*** (WC)  
(RE) Prerequisite(s): [CBE 340](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt6738) and [CBE 360](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt9955); [ENGL 102](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt5139)\*, [ENGL 132](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt6164)\*, [ENGL 290](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt7686)\*, or [ENGL 298](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt8463)\*.  
(RE) Corequisite(s): [CBE 301](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt9508) and [CBE 350](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+415&filter%5B3%5D=1&filter%5B31%5D=1#tt2031).  
Registration Restriction(s): Chemical engineering major.

### HEM 449 - Advanced Synthesis Laboratory

**2** **Credit Hours**

Modern techniques of synthesis and characterization of organic and inorganic molecules and materials; handling air sensitive materials; chromatographic purification, spectroscopic characterization, X-ray structure determination.  
  
***Satisfies General Education Requirement:*** (WC)  
(RE) Prerequisite(s): [CHEM 260](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt4660) and [CHEM 269](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt639) or [CHEM 359](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt5966) and [CHEM 330](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt7573) and [CHEM 339](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt7537); and [ENGL 102](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt3887)\*, [ENGL 132](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt5268)\*, [ENGL 290](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt4056)\*, or [ENGL 298](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=chem+449&filter%5B3%5D=1&filter%5B31%5D=1#tt7985)\*.

### CLAS 299 - Research Practicum in Classics

**3** **Credit Hours**

Introduction to research methods in major subdisciplines of Classics (Latin and Greek literature, history, archaeology, iconography, epigraphy, papyrology, and numismatics). Step-by-step instruction in techniques for writing a good research paper and constructing an effective argument using the recognized evidentiary standards of the discipline. Writing-emphasis course.  
  
***Satisfies General Education Requirement:*** (WC)  
(RE) Prerequisite(s): [ENGL 102](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CLAS+299&filter%5B3%5D=1&filter%5B31%5D=1#tt1632)\*, [ENGL 118](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CLAS+299&filter%5B3%5D=1&filter%5B31%5D=1#tt5377)\*, [ENGL 132](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CLAS+299&filter%5B3%5D=1&filter%5B31%5D=1#tt3514)\*, [ENGL 290](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CLAS+299&filter%5B3%5D=1&filter%5B31%5D=1#tt2097)\*, or [ENGL 298](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CLAS+299&filter%5B3%5D=1&filter%5B31%5D=1#tt1294)\*.

### IE 250 - Leadership in Industrial Engineering

**1** **Credit Hours**

Aspects of leadership in a professional environment will be studied from current literature reading and discussions. Industry professionals will periodically lead the class to enlighten students to aspects of the practice of industrial engineering. Regular submission of written papers on assigned and discussed topics will be critically reviewed to emphasize key aspects of professional level written communications including content, format, and referencing.  
  
***Satisfies General Education Requirement:*** (WC)  
(RE) Prerequisite(s): [ENGL 102](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=IE+250&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt1233)\*, [ENGL 132](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=IE+250&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt2124)\*, [ENGL 290](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=IE+250&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt1607)\*, or [ENGL 298](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=IE+250&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt3322)\*.  
Registration Restriction(s): Industrial engineering major; minimum student level – sophomore.

**OC Courses of note:**

**Phil 244 (Professional Responsibility) – 3 Credit hours, no prereqs does both AH and OC!**

### CMST 210 - Public Speaking

**3** **Credit Hours**

Preparation and delivery of informative and persuasive speeches. Topics include research, organization, adapting to an audience, topic selection, reasoning, and evaluating the discourse of others.  
  
***Satisfies General Education Requirement:*** (OC)

### CMST 240 - Business and Professional Communication

**3** **Credit Hours**

Basic principles of communication within organizations. Topics and activities may include organizational/communication theory, group problem solving, case studies, interviewing, and formal presentations.  
  
***Satisfies General Education Requirement:*** (OC)

### ESS 301 - Professional Development

**1** **Credit Hours**

Techniques of effective professional communications, professional ethics, interviewing, and the job search. Introduction of requirements for professional certification in various disciplines.  
  
***Satisfies General Education Requirement:*** (OC)  
Registration Restriction(s): Environmental and soil science major or permission of instructor.

**CBE 320 - Chemical and Biomolecular Engineering Laboratory**

**3** **Credit Hours**

Experiments in unit operations such as pumps, heat exchangers, distillation columns, and fermenters. Application of the principles of transport phenomena.  
  
***Satisfies General Education Requirement:*** (OC)  
*(RE) Prerequisite(s):* [CBE 201](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+320&filter%5B3%5D=1&filter%5B31%5D=1#tt8039), [CBE 240](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+320&filter%5B3%5D=1&filter%5B31%5D=1#tt1079), and [CBE 250](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+320&filter%5B3%5D=1&filter%5B31%5D=1#tt2255).  
*(RE) Corequisite(s):* [CBE 301](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+320&filter%5B3%5D=1&filter%5B31%5D=1#tt9544) and [CBE 350](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=CBE+320&filter%5B3%5D=1&filter%5B31%5D=1#tt9149)

### BSE 404 - Engineering Project Management

**3** **Credit Hours**

Fundamentals and theory of engineering design and engineering project management, ethical and legal responsibilities in biosystems engineering, incorporation of economic considerations in engineering design, individual professional development, and multiple oral presentations of technical information related to the senior design project.  
  
***Satisfies General Education Requirement:*** (OC)  
(RE) Prerequisite(s): Three of [BSE 411](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt7001) or [BSE 417](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt8957); [BSE 426](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt3278) or [BSE 427](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt2325); [BSE 431](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt1605) or [BSE 437](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt9368); [BSE 451](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt445) or [BSE 457](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt4462).  
(RE) Corequisite(s): [BSE 400](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt4735) and [BSE 444](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+404&filter%5B3%5D=1&filter%5B31%5D=1#tt2045).

**AOC Courses of note:**

### BSE 403 - Design Presentation and Reporting

**1** **Credit Hours**

Partner course to [BSE 402](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+403&filter%5B3%5D=1&filter%5B31%5D=1#tt4323) Senior Design II, emphasizing professional presentation and reporting of technical material associated with the two-semester Senior Design project.  
  
(RE) Prerequisite(s): [BSE 400](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+403&filter%5B3%5D=1&filter%5B31%5D=1#tt2096) and [BSE 404](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+403&filter%5B3%5D=1&filter%5B31%5D=1#tt2165)\* and [BSE 444](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+403&filter%5B3%5D=1&filter%5B31%5D=1#tt3291).  
(RE) Corequisite(s): [BSE 402](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=BSE+403&filter%5B3%5D=1&filter%5B31%5D=1#tt2959).

(BSE 402 is 5 credit hours, BTW).

### EF 438 - Honors: Interdisciplinary Senior Design II

**3** **Credit Hours**

The second part of the [EF 437](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=EF+438&filter%5B3%5D=1&filter%5B31%5D=1#tt4415)\*/EF 438 sequence where teams of students from both the Tickle College of Engineering and Haslam College of Business partner with industry sponsors to design and build authentic products and processes. Working closely with an industry liaison engineer and a faculty coach, students gain practical experience in teamwork and communication, problem-solving and engineering design, and develop leadership, management and people skills. Weekly workshop activities adapt lecture topics to individual projects. Students learn firsthand how to develop products and processes that meet customer requirements on time and within budget. The sequence is serving students in the Heath Integrated Business and Engineering Program (Heath IBEP) and others within the two colleges.  
  
(RE) Prerequisite(s): [EF 437](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=EF+438&filter%5B3%5D=1&filter%5B31%5D=1#tt4689)\*.  
Registration Restriction(s): Senior standing and consent of instructor.

### SS 462 - Environmental Climatology

**3** **Credit Hours**

Study of global energy budget, past climates, climate variability, climate distribution, and climate change. Emphasis on global warming and its potential impacts on ecosystems, societies, and global sustainability. Students are required to apply quantitative, computer, and oral communication skills to analyze and report climate data for environmental planning.  
  
Recommended Background: Computer proficiency.

### CR 495 - Senior Seminar: Perspectives in Microbiology

**3** **Credit Hours**

Development of professional skills (oral presentation, critical analysis and writing) with consideration of microbiological problems of current and historical interest. The historical background, impact on society, future directions of the science of microbiology are discussed. Emphasis on oral presentations and written reports and the development of constructive critical technique.  
  
***Satisfies General Education Requirement:*** (OC)  
(RE) Prerequisite(s): [BIOL 220](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=MICR+495&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt1387).  
Registration Restriction(s): Minimum student level – senior.

### MSE 489 - Materials Design

**3** **Credit Hours**

Design projects involving materials selection and performance.  
  
***Satisfies General Education Requirement:*** (OC)  
(RE) Prerequisite(s): [MSE 304](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=MSE+489&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt771)\* with a grade of C or better, [MSE 340](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=MSE+489&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt1539), [MSE 360](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=MSE+489&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt1488), [MSE 390](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=MSE+489&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt3471), [MSE 480](https://catalog.utk.edu/search_advanced.php?cur_cat_oid=32&ecpage=1&cpage=1&ppage=1&pcpage=1&spage=1&tpage=1&search_database=Search&filter%5Bkeyword%5D=MSE+489&filter%5Bexact_match%5D=1&filter%5B3%5D=1&filter%5B31%5D=1#tt3259).  
Registration Restriction(s): Minimum student level – senior.