ENTREPRENEURSHIP AND INNOVATION, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

Program Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requirements for the Minor</td>
<td>18-19</td>
</tr>
</tbody>
</table>

Requirements for the Minor

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 ([https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10](https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10)). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

Prescribed Courses

- **Prescribed Courses: Require a grade of C or better**
  - ENGR 310 Entrepreneurial Leadership 3
  - ENGR/IST/MGMT 425 New Venture Creation 3
  - MGMT 215 Entrepreneurial Mindset 3

Additional Courses

Additional Courses: Require a grade of C or better

Select 9 or more credits from one of the clusters listed below.

1. Students may not use a required course from their major in their chosen cluster. Other courses, such as technical electives, out-of-college electives, and general education courses may be able to be used to meet requirements in major as well as the ENTI Minor. In all clusters, students may substitute up to 3 credits of research topics, internship or independent studies courses focused on relevant entrepreneurship or innovation topics in consultation with an adviser. Each cluster is structured to provide a clear course “path” so any student from any major can complete the cluster and therefore the ENTI minor.

Arts Cluster

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AA 323</td>
<td>Arts Enterprise Development¹</td>
<td>3</td>
</tr>
<tr>
<td>AA 424</td>
<td>Arts Entrepreneurship Capstone Research Project¹</td>
<td>3</td>
</tr>
</tbody>
</table>

Choose one 3-credit course from the following list:

- AA 121 Design Thinking and Creativity 3
- AA 322 Arts Marketing
- GD 304 Practical Communications
- PHOTO 404 Professional Photography Capstone Seminar: Self-Marketing and Professional Presence

² It is possible to substitute other 3-credit courses not on this list, per Arts Cluster Director approval. Can be taken concurrently, do not need to be taken in sequence.

Bio-Tech Cluster

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MICRB 201</td>
<td>Introductory Microbiology</td>
<td>3-4</td>
</tr>
<tr>
<td>MICRB 201H</td>
<td>Introductory Microbiology</td>
<td></td>
</tr>
<tr>
<td>BMB/MICRB 251</td>
<td>Molecular and Cell Biology I</td>
<td></td>
</tr>
<tr>
<td>BMB 251H</td>
<td>Molecular and Cell Biology I</td>
<td></td>
</tr>
<tr>
<td>BIOL 230W</td>
<td>Biology: Molecules and Cells</td>
<td></td>
</tr>
<tr>
<td>BIOL 230M</td>
<td>Honors Biology: Molecules and Cells</td>
<td></td>
</tr>
</tbody>
</table>

Choose one of the following advanced courses for the Bio-Tech cluster:

- BIOL 405 Molecular Evolution
- BIOL 409 Biology of Aging
- BIOL 412 Ecology of Infectious Diseases
- BIOL 415 Ecotoxicology
- BIOL 416 Biology of Cancer
- BIOL 419 Ecological and Environmental Problem Solving
- BIOL 419H Ecological and Environmental Problem Solving
- BIOL 424 Seeds of Change: The Uses of Plants
- BIOL 426 Developmental Neurobiology
- BIOL 432 Developmental Genetics
- BIOL 439 Practical Bioinformatics
- BIOL 443 Evo-devo: Evolution of Developmental Mechanisms
- BIOL 451 Biology of RNA
- BIOL/ANTH 460 Human Genetics
- BIOL 461 Contemporary Issues in Science and Medicine
- BIOL 467 Molecular Basis of Neurological Diseases
- BIOL/BBH 469 Neurobiology
- BIOTC/BIOL/HORT 459 Advances and Applications of Plant Biotechnology
- BMB 401 General Biochemistry
- BMB 442 Laboratory in Proteins, Nucleic Acids, and Molecular Cloning
- BMB/MICRB 480 Cancer Development and Progression
- BMB 482 Introduction to Computational Biology
- BMB 484 Functional Genomics
- BMB/VBSC 485 Human Genomics and Biomedical Informatics
- CHEM 402 Chemistry in the Environment
- CHEM 423W Chemical Spectroscopy
- CHEM 425W Chromatography and Electrochemistry
- CHEM 431W Organic and Inorganic Preparations
- CHEM 459W Advanced Experimental Physical Chemistry

¹ AA 323 and AA 424 must be taken in sequence: AA 323 in Fall, AA 424 in Spring.
Entrepreneurship and Innovation, Minor

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 476</td>
<td>Biological Chemistry</td>
<td></td>
</tr>
<tr>
<td>FRNSC/CHEM 427W</td>
<td>Forensic Chemistry</td>
<td></td>
</tr>
<tr>
<td>MATH 405</td>
<td>Advanced Calculus for Engineers and Scientists I</td>
<td></td>
</tr>
<tr>
<td>MATH 406</td>
<td>Advanced Calculus for Engineers and Scientists II</td>
<td></td>
</tr>
<tr>
<td>MATH 448</td>
<td>Mathematics of Finance</td>
<td></td>
</tr>
<tr>
<td>MATH 450</td>
<td>Mathematical Modeling</td>
<td></td>
</tr>
<tr>
<td>MATH 484</td>
<td>Linear Programs and Related Problems</td>
<td></td>
</tr>
<tr>
<td>MATH 486</td>
<td>Mathematical Theory of Games</td>
<td></td>
</tr>
<tr>
<td>MICRB 401</td>
<td>Microbial Physiology and Structure</td>
<td></td>
</tr>
<tr>
<td>PHYS 462</td>
<td>Applications of Physics in Medicine</td>
<td></td>
</tr>
<tr>
<td>PHYS 465</td>
<td>Network analysis of biological systems</td>
<td></td>
</tr>
<tr>
<td>PHYS 472</td>
<td>Elements of Nuclear Physics and its Applications to Medical Imaging and Treatments</td>
<td></td>
</tr>
</tbody>
</table>

Choose one of the following capstone courses for the Bio-Tech cluster:  
1. BIOTC/MICRB 416 Microbial Biotechnology  
2. BIOTC/BIOL/HORT 459

Note: if a course is taken to satisfy 400-level elective, it cannot also be used to satisfy capstone requirement.

### Digital Entrepreneurship and Innovation Cluster

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IST 237</td>
<td>Digital Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>IST 337</td>
<td>Technologies for Digital Entrepreneurs</td>
<td>3</td>
</tr>
<tr>
<td>IST 437</td>
<td>Digital Design &amp; Innovation 1</td>
<td>3</td>
</tr>
</tbody>
</table>

1. IST 237 is prerequisite for IST 437.

### Food and Bio-Innovation Cluster

Select up to 6 credits of the following 200-300 level courses in the College of Agricultural Sciences:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEE 201</td>
<td>Interpersonal Skills for Tomorrow's Leaders</td>
<td></td>
</tr>
<tr>
<td>AEE 311</td>
<td>Developing Youth Leadership through Organization and Program Structure</td>
<td></td>
</tr>
<tr>
<td>AGBM 200</td>
<td>Introduction to Agricultural Business Management</td>
<td></td>
</tr>
<tr>
<td>AGBM 302</td>
<td>Food Product Marketing</td>
<td></td>
</tr>
<tr>
<td>AGBM 308W</td>
<td>Strategic Decision Making in Agribusiness</td>
<td></td>
</tr>
<tr>
<td>AGBM 338</td>
<td>Agribusiness in the Global Economy</td>
<td></td>
</tr>
<tr>
<td>ANSC 201</td>
<td>Animal Science</td>
<td></td>
</tr>
<tr>
<td>ANSC 306</td>
<td>Swine Production and Management</td>
<td></td>
</tr>
<tr>
<td>ANSC 308</td>
<td>Sheep and Goat Production and Management</td>
<td></td>
</tr>
<tr>
<td>ANSC 309</td>
<td>Beef Cattle Production and Management</td>
<td></td>
</tr>
<tr>
<td>ANSC 310</td>
<td>Dairy Cattle Production and Management</td>
<td></td>
</tr>
<tr>
<td>ANSC 311</td>
<td>Poultry Production and Management</td>
<td></td>
</tr>
<tr>
<td>ANSC 324</td>
<td>Value Determination of Meat Animals</td>
<td></td>
</tr>
<tr>
<td>ANSC 327</td>
<td>Horse Production and Management</td>
<td></td>
</tr>
<tr>
<td>ANSC 350</td>
<td>Dairy Problem Solving</td>
<td></td>
</tr>
<tr>
<td>BRS/BE 391</td>
<td>Communication Skills for BE and BRS Students</td>
<td></td>
</tr>
<tr>
<td>BRS/BE 392</td>
<td>Leadership Skills for BE and BRS Students</td>
<td></td>
</tr>
<tr>
<td>CED 375</td>
<td>Community, Local Knowledge, and Democracy</td>
<td></td>
</tr>
<tr>
<td>ERM 300</td>
<td>Basic Principles and Calculations in Environmental Analysis</td>
<td></td>
</tr>
<tr>
<td>FDSC 200</td>
<td>Introductory Food Science</td>
<td></td>
</tr>
<tr>
<td>FDSC 206</td>
<td>Improving Food Quality</td>
<td></td>
</tr>
<tr>
<td>HORT 250</td>
<td>Landscape Contracting Design/Build Principles</td>
<td></td>
</tr>
</tbody>
</table>
Entrepreneurship and Innovation, Minor

Select at least 3 credits of the following 400 level courses in the College of Agricultural Sciences:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGBM 407</td>
<td>Farm Planning and Financial Management</td>
</tr>
<tr>
<td>AGBM 408</td>
<td>Financial Decision Making for Agribusiness</td>
</tr>
<tr>
<td>AGBM 440</td>
<td>Food Product Innovation Management</td>
</tr>
<tr>
<td>AGBM 445</td>
<td>AgTech Entrepreneurship</td>
</tr>
<tr>
<td>AGBM/HORT 455</td>
<td>Retail Horticulture Business Management</td>
</tr>
<tr>
<td>AGBM 460</td>
<td>Managing the Food System</td>
</tr>
<tr>
<td>ANSC 410</td>
<td>Advanced Dairy Herd Management</td>
</tr>
<tr>
<td>ANSC 429</td>
<td>Advanced Beef Cattle Production</td>
</tr>
<tr>
<td>ANSC 450</td>
<td>Dairy Farm Management Systems</td>
</tr>
<tr>
<td>BRS/ERM 402</td>
<td>Foundations of Sustainable Business</td>
</tr>
<tr>
<td>BRS 429W</td>
<td>Biorenewable Systems Analysis and Management</td>
</tr>
<tr>
<td>BRS 437</td>
<td>Bioproduct Marketing and Sales</td>
</tr>
<tr>
<td>CED 417</td>
<td>Power, Conflict, and Community Decision Making</td>
</tr>
<tr>
<td>CED 425</td>
<td>International Community and Economic Development</td>
</tr>
<tr>
<td>CED 430W</td>
<td>Principles of Community Economic Development</td>
</tr>
<tr>
<td>ERM 411</td>
<td>Legal Aspects of Resource Management</td>
</tr>
<tr>
<td>ERM 412</td>
<td>Resource Systems Analysis</td>
</tr>
<tr>
<td>ERM 413W</td>
<td>Case Studies in Ecosystem Management</td>
</tr>
<tr>
<td>FDSC 411</td>
<td>Managing Food Quality</td>
</tr>
<tr>
<td>FDSC 430</td>
<td>Unit Operations in Food Processing</td>
</tr>
<tr>
<td>FDSC 444</td>
<td>Arguing about Food</td>
</tr>
<tr>
<td>FDSC/INTAG 460</td>
<td>International Food Production</td>
</tr>
<tr>
<td>FOR 440</td>
<td>Forest and Conservation Economics</td>
</tr>
<tr>
<td>HORT 410W</td>
<td>Issues in Landscape Contracting</td>
</tr>
<tr>
<td>HORT 453</td>
<td>Flower Crop Production and Management</td>
</tr>
<tr>
<td>HORT/AGBM 455</td>
<td>Retail Horticulture Business Management</td>
</tr>
<tr>
<td>TURF 436W</td>
<td>Case Studies in Turfgrass Management</td>
</tr>
</tbody>
</table>

Hospitality Management Cluster

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM 482</td>
<td>Hospitality Real Estate</td>
<td>3</td>
</tr>
<tr>
<td>or HM 484</td>
<td>Hospitality Entrepreneurship and Innovation</td>
<td></td>
</tr>
</tbody>
</table>

Select 6 credits of the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>HM 413</td>
<td>New Product Development for Commercial Foodservice</td>
<td></td>
</tr>
<tr>
<td>HM 432</td>
<td>Contemporary Issues in Restaurant Management</td>
<td></td>
</tr>
<tr>
<td>HM 483</td>
<td>Revenue Management</td>
<td></td>
</tr>
<tr>
<td>HM 496</td>
<td>Independent Studies</td>
<td></td>
</tr>
</tbody>
</table>

New Media Cluster

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 271</td>
<td>Principles of Journalism</td>
<td>3</td>
</tr>
</tbody>
</table>

Select 6 credits from the following:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM 361</td>
<td>Entrepreneurial Journalism</td>
<td></td>
</tr>
<tr>
<td>COMM 362</td>
<td>Podcasting</td>
<td></td>
</tr>
<tr>
<td>COMM 461</td>
<td>Magazine Writing</td>
<td></td>
</tr>
<tr>
<td>COMM 461A</td>
<td>Digital Magazine Production</td>
<td></td>
</tr>
<tr>
<td>COMM 484</td>
<td>Emerging Telecommunications Technologies</td>
<td></td>
</tr>
</tbody>
</table>

New Ventures Cluster

Select 9-10 credits from the following area:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA 241</td>
<td>Legal Environment of Business</td>
<td></td>
</tr>
<tr>
<td>&amp; BA 242</td>
<td>Social and Ethical Environment of Business</td>
<td></td>
</tr>
<tr>
<td>or BA 243</td>
<td>Social, Legal, and Ethical Environment of Business</td>
<td></td>
</tr>
<tr>
<td>BA 250</td>
<td>Small Business Management</td>
<td></td>
</tr>
<tr>
<td>BLAW 243</td>
<td>Legal Environment of Business</td>
<td></td>
</tr>
<tr>
<td>BLAW 341</td>
<td>Business Law I: Introduction to Contracts, Liability Issues, and Intellectual Property</td>
<td></td>
</tr>
<tr>
<td>MGMT/ENGR/IST 426</td>
<td>Invention Commercialization</td>
<td></td>
</tr>
<tr>
<td>MGMT 427</td>
<td>Managing an Entrepreneurial Start-Up Company</td>
<td></td>
</tr>
<tr>
<td>MGMT 427W</td>
<td>Managing an Entrepreneurial Start-up</td>
<td></td>
</tr>
<tr>
<td>MGMT 451W</td>
<td>Business, Ethics, and Society</td>
<td></td>
</tr>
</tbody>
</table>

Social Entrepreneurship Cluster

Required courses to be taken in the following order:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 451</td>
<td>Social Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>EDSGN 452</td>
<td>Projects in Humanitarian Engineering</td>
<td>2</td>
</tr>
<tr>
<td>EDSGN 453</td>
<td>Design for Developing Communities</td>
<td>1</td>
</tr>
<tr>
<td>EDSGN 454</td>
<td>Humanitarian Engineering and Social Entreprenurship Field Experience</td>
<td>0.5</td>
</tr>
<tr>
<td>ENGR 455</td>
<td>Humanitarian Engineering and Social Entrepreneurship Reflection and Research Dissemination</td>
<td>3</td>
</tr>
</tbody>
</table>

Technology Based Entrepreneurship Cluster

Required Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 407</td>
<td>Technology-Based Entrepreneurship</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 411</td>
<td>Entrepreneurship Business Basics</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 415</td>
<td>Technology Launch for Entrepreneurs</td>
<td>3</td>
</tr>
</tbody>
</table>

Students may only count one of the following course options BA 241 and BA 242 or BA 243, BLAW 243, or BLAW 341 towards the minor.

Students may only count one of the following course options BA 241 and BA 242, BLAW 243, or BLAW 341 towards the minor.

1 Students may only count one of the following course options BA 241 and BA 242, or BA 243, BLAW 243, or BLAW 341 towards the minor.

1 ENGR 407 and ENGR 411 should be taken in sequence or concurrent.