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

Requirement	Credits
Requirements for the Minor	18-19

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). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

Code	Title	Credits
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]		9-10

[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

Code	Title	Credits
Required Courses		
AA 323	Arts Enterprise Development [1]	3
AA 424	Arts Entrepreneurship Capstone Research Project [1]	3
Choose one 3-credit course from the following list: [2]		3
AA 121	Design Thinking and Creativity	
AA 322	Arts Marketing	
GD 304	Practical Communications	
PHOTO 404	Professional Photography Capstone Seminar: Self-Marketing and Professional Presence	

[1] AA 323 and AA 424 must be taken in sequence: AA 323 in Fall, AA 424 in Spring.

[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

Code	Title	Credits
Required Courses		
Choose one foundational course for the Bio-Tech cluster from the following list:		3-4
BMB/MICRB 251	Molecular and Cell Biology I	
BMB 251H	Molecular and Cell Biology I	
BIOL 230W	Biology: Molecules and Cells	
BIOL 230M	Honors Biology: Molecules and Cells	
MICRB 201	Introductory Microbiology	
MICRB 201H	Introductory Microbiology	
Choose one of the following advanced courses for the Bio-Tech cluster:		3-4
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 431	Reproductive Biology	
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	Plant Tissue Culture and Biotechnology	
BIOTC/AGRO 460	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	Environment Chemistry: Atmosphere	
CHEM 423W	Chemical Spectroscopy	
CHEM 425W	Chromatography and Electrochemistry	
CHEM 431W	Organic and Inorganic Preparations	

CHEM 459W	Advanced Experimental Physical Chemistry	
CHEM 476	Biological Chemistry	
FRNSC 427W	Forensic Chemistry	
MATH 405	Advanced Calculus for Engineers and Scientists I	
MATH 406	Advanced Calculus for Engineers and Scientists II	
MATH 448	Mathematics of Finance	
MATH 450	Mathematical Modeling	
MATH 484	Linear Programs and Related Problems	
MATH 486	Mathematical Theory of Games	
MICRB 401	Microbial Physiology and Structure	
PHYS 462	Applications of Physics in Medicine	
PHYS 465	Network analysis of biological systems	
PHYS 472	Elements of Nuclear Physics and its Applications to Medical Imaging and Treatments	
Choose one of the following capstone courses for the Bio-Tech cluster: [1]		3
BIOTC/MICRB 416	Microbial Biotechnology	
BIOTC/BIOL/ HORT 459	Plant Tissue Culture and Biotechnology	

[1] 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

Code	Title	Credits
Required Courses		
IST 237	Digital Entrepreneurship	3
IST 337	Technologies for Digital Entrepreneurs	3
IST 437	Digital Design & Innovation [1]	3

[1] IST 237 is prerequisite for IST 437.

Entrepreneurship as Advocacy Cluster

Code	Title	Credits
Required Courses		
LA 202	Innovation and Entrepreneurship in the Liberal Arts [1]	3
LA 424	Liberal Arts Venture Development [1]	3
Select 3 credits from the following list:		3
AFAM 100N	Black Freedom Struggles	
AFAM/SOC/ WMNST 103	Racism and Sexism	
AFAM/LHR/ WMNST 136	Race, Gender, and Employment	
AFAM/HIST/ WMNST 213Y	African American Women's History	
CAS/ENGL 137H	Rhetoric and Civic Life I	
CAS 175N	Persuasion and Propaganda	
CAS 210	Landmark Speeches on Democracy and Dissent	
CAS 220	Persuasion	

CAS 222N/ AYFCE 211N/ CIVCM 211N	Foundations: Civic and Community Engagement	
CAS 321	Rhetoric and Law	
CAS 373	The Rhetorics of War and Peace	
ENGL 162N	Communicating Care	
ENGL 228	Introduction to Disability Studies in the Humanities	
ENGL 236N	Inequality: Economics, Philosophy, Literature	
LHR 100	Exploring Work and Employment	
LHR 201	Employment Relationship: Law and Policy	
PLSC 202	American Public Policy	
PLSC 210N	Rights in America	
PLSC 291	Introduction to Peace and Conflict Studies	
PSYCH 100	Introductory Psychology	
SOC 1	Introductory Sociology	
SOC 5	Social Problems	
SOC/CRIM/ CRIMJ 12	Criminology	
SOC 23	Population and Policy Issues	
WMNST 100	Introduction to Women's and Gender Studies	
WMNST 105N	Living in a Diverse World	
WMNST 200	Global Feminisms	

[1] LA 202 and LA 424 should be taken in sequence.

Food and Bio-innovation Cluster

Code	Title	Credits
Select up to 6 credits of the following 200-300 level courses in the College of Agricultural Sciences:		6
AEE 201	Interpersonal Skills for Tomorrow's Leaders	
AEE 311	Developing Youth Leadership through Organization and Program Structure	
AGBM 200	Introduction to Agricultural Business Management	
AGBM 302	Food Product Marketing	
AGBM 308W	Strategic Decision Making in Agribusiness	
AGBM 338	Agribusiness in the Global Economy	
ANSC 201	Animal Science	
ANSC 306	Swine Production and Management	
ANSC 308	Sheep and Goat Production and Management	
ANSC 309	Beef Cattle Production and Management	
ANSC 310	Dairy Cattle Production and Management	
ANSC 311	Poultry Production and Management	
ANSC 324	Value Determination of Meat Animals	
ANSC 327	Horse Production and Management	
ANSC 350	Dairy Problem Solving	
BRS/BE 391	Communication Skills for BE and ABSM Students	
BRS/BE 392	Leadership and Ethics for BE and ABSM Students	
CED 375	Community, Local Knowledge, and Democracy	
ERM 300	Basic Principles and Calculations in Environmental Analysis	
FDSC 200	Introductory Food Science	
FDSC 206	Improving Food Quality	
HORT 250	Landscape Contracting Design/Build Principles	

	Select at least 3 credits of the following 400 level courses in the College of Agricultural Sciences:	3
AGBM 407	Farm Planning and Financial Management	
AGBM 408	Financial Decision Making for Agribusiness	
AGBM 440	Food Product Innovation Management	
AGBM 445	AgTech Entrepreneurship	
AGBM/HORT 455	Retail Horticulture Business Management	
AGBM 460	Managing the Food System	
ANSC 410	Advanced Dairy Herd Management	
ANSC 429	Advanced Beef Cattle Production	
ANSC 450	Dairy Farm Management Systems	
BRS/ERM 402	Foundations of Sustainable Business	
BRS 429W	Agricultural and Biorenewable Systems Analysis and Management	
BRS 437	Bioproduct Marketing and Sales	
CED 417	Power, Conflict, and Community Decision Making	
CED 425	International Community and Economic Development	
CED 430W	Principles of Community Economic Development	
ERM 411	Legal Aspects of Resource Management	
ERM 412	Resource Systems Analysis	
ERM 413W	Case Studies in Ecosystem Management	
FDSC 411	Managing Food Quality	
FDSC 430	Unit Operations in Food Processing	
FDSC 444	Arguing about Food	
FDSC/INTAG 460	International Food Production	
FOR 440	Forest and Conservation Economics	
HORT 410W	Issues in Landscape Contracting	
HORT 453	Flower Crop Production and Management	
HORT/AGBM 455	Retail Horticulture Business Management	
TURF 436W	Case Studies in Turfgrass Management	

Hospitality Management Cluster

Code	Title	Credits
HM 482	Hospitality Real Estate	3
or HM 484	Hospitality Entrepreneurship and Innovation	
	Select 6 credits of the following:	6
HM 413	New Product Development for Commercial Foodservice	
HM 432	Contemporary Issues in Restaurant Management	
HM 483	Revenue Management	
HM 496	Independent Studies	

New Media Cluster

Code	Title	Credits
COMM 271	Principles of Journalism	3
	Select 6 credits from the following:	6
COMM 361	Entrepreneurial Journalism	
COMM 362	Podcasting	
COMM 461	Magazine Writing	
COMM 461A	Digital Magazine Production	

COMM 484	Emerging Telecommunications Technologies	
COMM 484A	Wireless Devices and Global Markets	
COMM 492	Internet Law and Policy	
COMM 493	Entrepreneurship in the Information Age	

New Ventures Cluster

Code	Title	Credits
	Select 6-7 credits from the following category: [1]	6-7
BA 241 & BA 242	Legal Environment of Business and Social and Ethical Environment of Business	
or BA 243	Social, Legal, and Ethical Environment of Business	
or BLAW 243	Legal Environment of Business	
or BLAW 341	Business Law I: Introduction to Contracts, Liability Issues, and Intellectual Property	
BA 250	Small Business Management	
BA 322	Negotiation Skills for Business Professionals	
MGMT 365	Social Entrepreneurship	
MGMT/ENGR/IST 426	Invention Commercialization	
MGMT 427	Managing an Entrepreneurial Start-Up Company	
MGMT 427W	Managing an Entrepreneurial Start-up	
MGMT 451	Business, Ethics, and Society	
MGMT 451W	Business, Ethics, and Society	
MGMT 453	Creativity and Innovation	
	Select 3 credits from the following category: [1]	3
MGMT 426	Invention Commercialization	
MGMT 427	Managing an Entrepreneurial Start-Up Company	
MGMT 427W	Managing an Entrepreneurial Start-up	
MGMT 451	Business, Ethics, and Society	
MGMT 451W	Business, Ethics, and Society	
MGMT 453	Creativity and Innovation	

[1] Courses cannot double count in these categories.

Social Entrepreneurship Cluster

Code	Title	Credits
	Required courses to be taken in the following order:	
ENGR 451	Social Entrepreneurship	3
EDSGN 452	Projects in Humanitarian Engineering	2
EDSGN 453	Design for Developing Communities	1
EDSGN 454	Humanitarian Engineering and Social Entrepreneurship Field Experience	0.5
ENGR 455	Humanitarian Engineering and Social Entrepreneurship Reflection and Research Dissemination	3

Technology Based Entrepreneurship Cluster

Code	Title	Credits
Required Courses		
ENGR 407	Technology-Based Entrepreneurship [1]	3
ENGR 411	Entrepreneurship Business Basics [1]	3
ENGR 415	Launching Innovation: Ideas to Opportunities	3

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