



# the Bulletin

**AUGUST 2008 - UNDERGRADUATE ISSUE**[→ Explore a Different Issue](#)

## Academic Information

In this section, you can locate specifics on various academic areas, and the programs and courses they offer.

Use the menu to the right to explore by department/program, major/minor, or courses. These search options produce three common elements: a description, a list of majors and minors, and a list of courses. Each of these elements can be collapsed or expanded. The main elements can be expanded and collapsed by using the link directly to the right of the element title. Individual majors and minors and individual courses can be expanded and collapsed by using the + / - box to the left of the individual item title.



You can print any page of content by clicking the icon that will be located at the top of the page, directly to the right of the page title. The displayed material will be reformatted into a print-friendly version.

[Search](#) [Academic Information](#) [General Information](#)

### Explore by Department / Program:

Accounting  
Air Force Aerospace Studies, ROTC  
American Studies  
Biology

[Explore](#)

### Explore by Major / Minor:

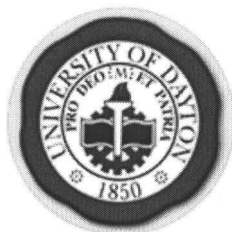
Accounting (ACC)  
Adolescence to Young Adult Educatio... (EYA)  
Aerospace Engineering (AAE)  
Aerospace Engineering Concentration (AEC)

[Explore](#)

### Explore by Courses:

Accounting (ACC)  
Air Force Aerospace Studies, ROTC (AES)  
American Studies (AMS)  
Anthropology (ANT)

[Explore](#)



# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## School of Business Administration

### (ACC) Accounting (Collapse Description)

The mission of the Department of Accounting is to prepare our students for successful professional careers by providing high quality educational programs in accounting within an environment that connects learning, scholarship, leadership, and service creating distinctive graduates able to add value to employers, clients, and society.

An accounting major must earn credit in at least seven upper-level accounting courses. Six specific courses are required: ACC 303, 305, 306, 341, 401, and 420. One additional accounting course is typically required.<sup>8,11</sup> All upper-division accounting courses require a minimum grade of "C" in all prerequisite accounting courses, except that ACC 303 and ACC 305 require a minimum of "C+" in ACC 207 and ACC 208. Students should consult with their academic advisor about selecting accounting and other elective courses appropriate to particular career goals. Students should also consult their advisor or the chairperson about opportunities for professional work-experience, double majors and minors, foreign exchange opportunities, requirements for professional examinations (e.g., CPA), etc.

Students may complete a 150 semester hour program required to become a CPA in Ohio and numerous other states. The MBA program, with an optional concentration in accounting, is particularly useful in this regard. Our integrated B.S./M.B.A. program allows for the completion of both degrees, plus professional work experience, foreign exchange experience and a second major or minor, in five years. Consult the department chairperson or an advisor for more information.

### Faculty

Ronnie J. Burrows, Chairperson  
 Professors Emeriti: Clark, Eley, Fioriti, Roehm, Rosenzweig  
 Mahrt Chair in Accounting: Donna Street  
 Professors: Castellano, Street  
 Associate Professors: Brady, Burrows, Geary, Greenlee, Larson  
 Assistant Professor: Randolph  
 Lecturers: Carlson, Livesay, Shankar, Shishoff

### Majors/Minors (Collapse All)

Major/Minor Name

Bachelor of Science with a major in Accounting (ACC)

		Sem. Hrs.
First-Year		31
BAI 103L <sup>1</sup>	BUSINESS COMPUTING LABORATORY	1
BAI 150	BUSINESS EDUCATIONAL PLANNING	1
BAI 151	BUSINESS INTEGRATION EXPERIENCE	1
CMM 110 <sup>2</sup>	GROUP DECISION MAKING	1
ENG 101 <sup>3</sup>	COLLEGE COMPOSITION I	3
ENG 102 <sup>3</sup>	COLLEGE COMPOSITION II	3
HST 103	THE WEST AND THE WORLD	3
MTH 128 <sup>4</sup>	FINITE MATHEMATICS	3
MTH 129	CALCULUS FOR BUSINESS	3
PHL 103	INTRODUCTION TO PHILOSOPHY	3
REL 103	INTRODUCTION TO RELIGION	3
Physical and Life Science elective <sup>5</sup>		3
Social Science elective <sup>6</sup>		3



Search

Academic Information

General Information

### Explore by Department / Program:

Accounting  
 Air Force Aerospace Studies, ROTC  
 American Studies  
 Biology

Explore

### Explore by Major / Minor:

Accounting (ACC)  
 Adolescence to Young Adult Educatio... (EYA)  
 Aerospace Engineering (AAE)  
 Aerospace Engineering Concentration (AEC)

Explore

### Explore by Courses:

Accounting (ACC)  
 Air Force Aerospace Studies, ROTC (AES)  
 American Studies (AMS)  
 Anthropology (ANT)

Explore

Sophomore-Year		32
ACC 207	INTRODUCTION TO FINANCIAL ACCOUNTING	3
ACC 208	INTRODUCTION TO MANAGERIAL ACCOUNTING	3
CMM 111 <sup>2</sup>	INFORMATIVE PUBLIC SPEAKING	1
CMM 113 <sup>2</sup>	INTERVIEWING	1
DSC 210	STATISTICS FOR BUSINESS I	3
DSC 211	STATISTICS FOR BUSINESS II	3
ECO 203	PRINCIPLES OF MICROECONOMICS	3
ECO 204	PRINCIPLES OF MACROECONOMICS	3
MGT 201	LEGAL ENVIRONMENT OF BUSINESS	3
Business Writing Requirement <sup>7</sup>		3
Physical and Life Science elective <sup>5</sup>		3
HST elective		3
Junior-Year		
First-Term		16
ACC 303	MANAGERIAL ACCOUNTING	3
ACC 305	INTERMEDIATE FINANCIAL ACCOUNTING I	4
MGT 301	ORGANIZATIONAL BEHAVIOR	3
MIS 301	INFORMATION SYSTEMS IN ORGANIZATIONS	3
MKT 301	PRINCIPLES OF MARKETING	3
Second-Term		15
ACC 306	INTERMEDIATE FINANCIAL ACCOUNTING II	3
ACC 341	ACCOUNTING INFORMATION SYSTEMS I	3
FIN 301	INTRODUCTION TO FINANCIAL MANAGEMENT	3
OPS 301	SURVEY OF OPERATIONS MANAGEMENT	3
--- PHL 313	BUSINESS ETHICS (PHL 313)	3
or REL 368	CHRISTIAN ETHICS AND THE BUSINESS WORLD (REL 368)	
Senior-Year		
First-Term		17
ACC 401	AUDITING PRINCIPLES	4
ACC 420	FEDERAL INCOME TAXATION	4
MGT 490 <sup>8</sup>	MANAGING THE ENTERPRISE	3
Arts Study elective		3
General elective <sup>9,10</sup>		3
Second-Term		12
ACC elective <sup>8,11</sup>		3
ECO elective <sup>9</sup>		3
PHL or REL elective <sup>10</sup>		3
General elective <sup>10</sup>		3

<sup>1</sup>A proficiency test for BAI 103L is available for those with adequate background.

<sup>2</sup>CMM 110, 111 and 113 may be taken during different years than indicated here. Some academic majors recommend taking some of these courses during the junior year. See faculty advisor for other sequencing possibilities.

<sup>3</sup>Students placed in ENG 114 or 198 must take a three semester hour nonbusiness elective.

<sup>4</sup>MTH 102 is recommended to be taken before MTH 128 for students with insufficient knowledge of secondary mathematics. MTH 102 does not count toward minimum graduation requirement.

<sup>5</sup>SBA majors must complete six hours of physical and life sciences. Select from biology, chemistry, physics, or geology. Majors may complete two introductory courses from different disciplines. No lab is required.

<sup>6</sup>SBA majors must complete an additional social science course in ANT, CJS, POL, PSY, SOC, or SWK; in addition to completing ECO 203 and 204, and an economics elective.

<sup>7</sup>Students starting Fall 2005: Select from ENG 370, ENG 371, or ENG 372. Students enrolled before Fall 2005: Select from ENG 370, ENG 371, ENG 372, CMM 321, CMM 322, CMM 344, CMM 351, or CMM 420.

<sup>8</sup>May be waived, and replaced by general electives, for students electing to complete a combined B.S. with a major in accounting and an MBA. Consult an advisor or the chair of the department for details.

<sup>9</sup>Select any 300 or 400 level economics course.

<sup>10</sup>A minimum of 54 sem. hrs. of all academic work must be at the 300-400 level. Students completing the combined BS/MBA program should likely schedule additional MBA courses. Consult with your accounting advisor.

<sup>11</sup>Accounting majors completing a second major in the SBA can often substitute or waive one or more courses. Consult an advisor for further information.

#### Minor in Accounting (ACC)

	Sem. Hrs.
<b>Accounting</b>	<b>19</b>
ACC 207 INTRODUCTION TO FINANCIAL ACCOUNTING	3
ACC 208 INTRODUCTION TO MANAGERIAL ACCOUNTING	3
ACC 305 INTERMEDIATE FINANCIAL ACCOUNTING I	4
ACC 306 INTERMEDIATE FINANCIAL ACCOUNTING II	3
ACC electives <sup>1</sup>	6-8

<sup>1</sup>In consultation with the chairperson.

#### Courses (Collapse All Courses)

Code	Title	Sem. Hrs.
ACC 200	INTRODUCTION TO ACCOUNTING	3
	Introduction to primarily financial and secondarily managerial accounting concepts, terminology, purposes, and applications for the nonbusiness student. Not open to students in the School of Business Administration or to those with credit in ACC 207.	
ACC 207	INTRODUCTION TO FINANCIAL ACCOUNTING	3
	Introduction to financial accounting concepts, procedures, and terminology. The accounting framework for recording transactions and reporting to parties external to the organization.	
	<b>Prerequisite(s):</b> (BAI 103L or equivalent (may be taken as a corequisite); sophomore standing) or permission of department chairperson.	
ACC 208	INTRODUCTION TO MANAGERIAL ACCOUNTING	3
	Management use of accounting data in planning and controlling organization activities; cost accounting and analysis of data for management decision making.	
	<b>Prerequisite(s):</b> ACC 207; BAI 103L or equivalent.	
ACC 300A	PRINCIPLES OF FINANCIAL ACCOUNTING	2
	An introduction to the concepts and procedures underlying financial accounting and financial statements, and the use of financial accounting information for decision making. Credit may not be earned for both ACC 300A and either ACC 200 or ACC 207.	
	<b>Prerequisite(s):</b> Engineering major; sophomore standing; permission of department chairperson.	
ACC 300B	PRINCIPLES OF MANAGERIAL ACCOUNTING	2
	An introduction to the concepts underlying the preparation and use of accounting data by managers as they plan, control, and make decisions within an organization. Credit may not be earned for both ACC 300B and ACC 208.	
	<b>Prerequisite(s):</b> Engineering major; sophomore standing; permission of department chairperson.	



ACC 303	MANAGERIAL ACCOUNTING	3
<p>The production, dissemination, and interpretation of financial and nonfinancial information for use within an organization. Information for planning, decision making, and control. Study of typical cost accounting systems in various organizations.</p> <p><b>Prerequisite(s):</b> (ACC 207, 208, with minimum grades of "C+"; junior standing) or permission of department chairperson.</p>		
ACC 305	INTERMEDIATE FINANCIAL ACCOUNTING I	4
<p>Part I (part II in ACC 306) of a comprehensive treatment of financial accounting concepts, principles, and procedures used in the preparation and analysis of financial statements.</p> <p><b>Prerequisite(s):</b> (ACC 207, 208, with minimum grades of "C+"; junior standing) or permission of department chairperson.</p>		
ACC 306	INTERMEDIATE FINANCIAL ACCOUNTING II	3
<p>Part II of comprehensive treatment of financial accounting concepts, principles, and procedures used in the preparation and analysis of financial statements.</p> <p><b>Prerequisite(s):</b> ACC 305.</p>		
ACC 341	ACCOUNTING INFORMATION SYSTEMS I	3
<p>Study of designs of accounting systems, including their impact on management decision making and control. Emphasis on (1) a systems approach to the flow of data, (2) system internal control, and (3) computer applications in accounting.</p> <p><b>Prerequisite(s):</b> ACC 305; (MIS 301 or permission of department chairperson).</p>		
ACC 401	AUDITING PRINCIPLES	4
<p>Study of the concepts, standards, and procedures used to judge and report on the degree of correspondence between quantifiable information and established criteria; the ethical, regulatory, and professional responsibilities of the auditor and introduction to internal, operational, and governmental auditing.</p> <p><b>Prerequisite(s):</b> ACC 306, 341 (may be taken as a corequisite with permission of department chairperson).</p>		
ACC 402	ACCOUNTING FOR NOT-FOR-PROFIT ORGANIZATIONS	3
<p>Study of the principles, techniques, and procedures related to financial reporting of governmental units and other not-for-profit entities</p>		
ACC 404	ADVANCED STRATEGIC COST MANAGEMENT	3
<p>Study of processes focused on strategic cost management. Topics include balanced scorecards, activity-based costing management, target costing, lean accounting, six sigma, environmental accounting, and performance measurement and control systems.</p> <p><b>Prerequisite(s):</b> (ACC 303; OPS 301) or permission of department chairperson.</p>		
ACC 408	ADVANCED FINANCIAL ACCOUNTING	3
<p>Study of accounting business combinations, consolidated financial statements, government organizations, multinational subsidiaries, and foreign currency transactions, including an introduction to IFRS.</p> <p><b>Prerequisite(s):</b> ACC 305.</p>		
ACC 412	INTERNATIONAL ACCOUNTING	3
<p>Introduction to issues of international business as they relate to accounting; accounting practices in selected countries, and activities of the International Accounting Standards Board.</p> <p><b>Prerequisite(s):</b> ACC 305 or permission of department chairperson.</p>		
ACC 420	FEDERAL INCOME TAXATION	4
<p>Study of federal income tax laws and their application to individuals, partnerships, and corporations. The historical, social, economic, and political influence on taxation laws are emphasized. Consideration is given to legal, moral, business, and personal factors involved in taxation.</p>		

**Prerequisite(s):** ACC 305 or ACC 208 with permission of department chairperson.

ACC 421 TAXES AND BUSINESS STRATEGY 3

Primary emphasis is given to developing a framework that articulates how effective tax planning affects business decisions. An advantage of the framework over a strictly rules-based course is that it can be applied to current and future tax regimes, as well as across tax jurisdictions. Significant emphasis is given to understanding how to account for income taxes for financial statement purposes. Although not a rule-based course per se, application of the effective tax planning framework to cases and problem-solving exercises will increase students' knowledge of U.S. tax rules and the factors that shape them.

**Prerequisite(s):** ACC 305, 420.

ACC 430 LAW FOR THE ACCOUNTING PROFESSION 3

Study of major laws affecting the public and private practice of accounting; contracts, property, commercial code, bankruptcy, business organizations, legal responsibility, and government regulations. Credit does not apply to requirements for ACC major.

**Prerequisite(s):** ACC 305; MGT 201; permission of department chairperson.

ACC 441 ACCOUNTING INFORMATION SYSTEMS II 3

Examination of accounting systems with exposure to systems design and evaluation, complex spreadsheet applications, decision support systems, and data base management applications.

**Prerequisite(s):** ACC 341 or permission of instructor.

ACC 491 HONORS THESIS 3

Selection, design, investigation, and completion of an independent original research thesis under the guidance of a departmental faculty member. Restricted to students in the University Honors Program with permission of program director and chairperson.

ACC 492 HONORS THESIS 3

Selection, design, investigation, and completion of an independent original research thesis under the guidance of a departmental faculty member. Restricted to students in the University Honors Program with permission of program director and chairperson.

ACC 497 PROFESSIONAL WORK EXPERIENCE 1 - 6

Supervised accounting work experience in association with a participating public accounting, industrial, commercial, educational, health-care, or governmental organization. May be used for general elective credit only. Option two grading only. Maximum of three credits toward graduation requirements. Permission of chairperson required.

ACC 499 INDEPENDENT STUDY IN ACCOUNTING 1 - 6

Directed readings, independent study, and research projects in selected fields of accounting. Periodic conferences with instructor.

**Prerequisite(s):** Senior status in accounting; permission of department chairperson and instructor.





## the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

### College of Arts and Sciences

#### (AES) Air Force Aerospace Studies, ROTC (Collapse Description)

As a University of Dayton student, you have the opportunity to become an Air Force officer through a cooperative agreement with Wright State University's Department of Aerospace Studies. We offer the Air Force Reserve Officer Training Corps (ROTC) program to full-time University of Dayton students pursuing a baccalaureate degree. While all courses are taken through the University of Dayton, leadership laboratories and classes for junior and senior years are typically taught at Wright State University, the host site of the area Air Force ROTC detachment.

The Air Force ROTC program is designed to produce Air Force officers who will be successful leaders and managers. All officers will be placed in positions of responsibility, facing challenging and rewarding career opportunities while using the most advanced technology in the world.

The Air Force ROTC program is organized in two portions: the General Military Course (GMC), typically taken during freshman and sophomore years, and the Professional Officer Course (POC), usually taken during junior and senior years or during the last two years prior to graduation. At a minimum, officers will need to complete the POC portion of the program.

- The GMC is a no-obligation introduction to the Air Force. The course covers the development and history of air power and the organization of the contemporary United States Air Force.
- The POC curriculum covers communicative skills, Air Force management and leadership, American defense policy, and regional world studies. Air Force ROTC students have additional opportunities to participate in challenging and rewarding activities that include piloting a sail-plane, trips to air force bases, orientation flights, official military functions and ceremonies, and one on-one mentoring with an active duty Air Force officer.

This program is open to all majors. All Air Force ROTC students have the opportunity to apply for scholarships that pay partial or full tuition, books, and fees, plus a \$300 - \$500 monthly stipend depending on your progress in the program. These scholarships are available on a competitive basis to students who demonstrate academic and leadership potential. Scholarships with the greatest availability are in the areas of engineering, mathematics, computer science, and physics. High school students should apply for a scholarship no later than December 1st of their senior year. Apply at [www.afrotc.com](http://www.afrotc.com). In-college students will apply for scholarships through their Air Force ROTC instructor. If you are a freshman or sophomore seeking a challenge or wish to give Air Force ROTC a trial run, sign up for the Aerospace Studies 121 course. All other students should contact the Department of Aerospace Studies, Wright State University, Dayton, Ohio 45435, phone: 937-775-2730, email: [afrotc@wright.edu](mailto:afrotc@wright.edu) (website: [www.wright.edu/academics/prog/rotc/home.htm](http://www.wright.edu/academics/prog/rotc/home.htm)), or the University of Dayton Admissions Office at 1-937-229-1000 or e-mail: [info@udayton.edu](mailto:info@udayton.edu).

#### Courses (Collapse All Courses)

Code	Title	Sem. Hrs.
AES 120	General Military Course (GMC), Leadership Laboratory Applied Air Force Reserve Officer Training Corps (AFROTC) training. This lab provides an opportunity for students to apply Air Force procedures, techniques, and knowledge. Students will learn the Air Force organizational structure as well as customs and courtesies. GMC cadets will also develop their followership and teamwork skills in a cadet led, cadre supervised Lab environment. Requires participation in two weekly physical training sessions. Taken concurrently with 100-level AES courses. (Pass/Fail)	0
AES 121	Aerospace Studies: Foundations of the United States Air Force I	1

Search Academic Information General Information

#### Explore by Department / Program:

Accounting  
Air Force Aerospace Studies, ROTC  
American Studies  
Biology

Explore

#### Explore by Major / Minor:

Accounting (ACC)  
Adolescence to Young Adult Educatio... (EYA)  
Aerospace Engineering (AAE)  
Aerospace Engineering Concentration (AEC)

Explore

#### Explore by Courses:

Accounting (ACC)  
Air Force Aerospace Studies, ROTC (AES)  
American Studies (AMS)  
Anthropology (ANT)

Explore

A survey course designed to introduce students to the United States Air Force and the Air Force Reserve Officer Training Corps (AFROTC). Featured topics include the mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force officer career opportunities, group leadership problems, and an introduction to communication skills.

**Corequisite(s):** AES 120.

AES 122 Aerospace Studies: Foundations of the United States Air Force II 1

A survey course designed to introduce students to the United States Air Force and the Air Force Reserve Officer Training Corps (AFROTC). Featured topics include the mission and organization of the Air Force, officership and professionalism, military customs and courtesies, Air Force officer career opportunities, group leadership problems, and an introduction to communication skills.

**Corequisite(s):** AES 120.

AES 220 Field Training Preparation (FTP) Leadership Laboratory 0

Applied Air Force Reserve Officer Training Corps (AFROTC) training. This lab further develops skills and concepts introduced in the General Military Course Leadership Laboratory. Students are prepared mentally and physically for the demanding requirements of upcoming Field Training summer program. Training is cadet led where students will display their ability to apply Air Force concepts and procedures. Requires participation in two weekly physical training sessions. Taken concurrently with 200-level AES courses. (Pass/Fail)

AES 221 Aerospace Studies: Evolution of United States Air Force, Air and Space Power I 1

A survey course designed to provide students with an overview of the general aspects of air and space power through a historical perspective. It begins with the first military application of balloons through the actions in Afghanistan and Iraq. It also shapes communication skills introduced in the freshman year.

**Corequisite(s):** AES 220.

AES 222 Aerospace Studies: Evolution of United States Air Force, Air and Space Power II 1

A survey course designed to provide students with an overview of the general aspects of air and space power through a historical perspective. It begins with the first military application of balloons through the actions in Afghanistan and Iraq. It also shapes communication skills introduced in the freshman year.

**Corequisite(s):** AES 220.

AES 330 Intermediate Cadet Leadership (ICL) Laboratory: Applied Air Force ROTC Training 0

The ICL lab builds the foundation of leadership skills required as an Air Force Officer. Cadets apply leadership/management concepts learned in Field Training and previous aerospace studies classes and labs to assist in training the General Military Course cadets. Requires participation in two weekly physical training sessions. Taken concurrently with 300-level AES courses. (Pass/Fail)

AES 331 Aerospace Studies: Air Force Leadership Studies I 3

This course is a study of quality leadership and management fundamentals, professional military knowledge, Air Force doctrine, leadership ethics, and communication skills. Students use case studies to examine Air Force leadership and management situations.

**Prerequisite(s):** AES 330.

AES 332 Aerospace Studies: Air Force Leadership Studies II 3

This course is a study of quality leadership and management fundamentals, professional military knowledge, Air Force doctrine, leadership ethics, and communication skills. Students use case studies to examine Air Force leadership and management situations.

**Corequisite(s):** AES 330.

AES 430 Senior Cadet Leadership (SCL) Laboratory: Applied Air Force ROTC Training 0

This lab prepares students for progression into active duty life. As in the Intermediate Cadet Leadership Lab, students take leadership roles in execution of leadership labs for the cadet wing. Students hone leadership fundamentals learned in previous courses and labs to a level commensurate to entry into the active duty Air Force. Requires participation in two weekly physical training sessions. Taken concurrently with 400-level AES courses. (Pass/Fail)

AES 431 Aerospace Studies: National Security Affairs and Preparation for Active Duty I 3

This course examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Topics focus on the military as a profession, officership, military justice, civilian control of the military, and current issues. Considered the capstone ROTC course with continued refinement of communication skills.

**Corequisite(s):** AES 430.

AES 432 Aerospace Studies: National Security Affairs and Preparation for Active Duty II 3

This course examines the national security process, regional studies, advanced leadership ethics, and Air Force doctrine. Topics focus on the military as a profession, officership, military justice, civilian control of the military, and current issues. Considered the capstone ROTC course with continued refinement of communication skills.

**Corequisite(s):** AES 430.





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ [Explore a Different Issue](#)

## College of Arts and Sciences

### (AMS) American Studies (Collapse Description)

In this interdisciplinary program, students take courses in their choice of eleven fields, thereby learning the skills of integrating, coordinating and making connections. The program, one of over three hundred nationwide, is most appropriate for those whose interests encompass several traditional majors.

#### American Studies Committee

Una M. Cadegan (History), Director  
Kimble (Psychology), Moore (Religious Studies),  
Ruggiero (Economics), Street (Music)

#### Majors/Minors

Major/Minor Name

☐ Bachelor of Arts with a major in American Studies (AMS)

	Sem. Hrs.
<b>American Studies</b>	<b>9</b>
AMS 300, 301, 400	
First area courses	24
Select courses from group A or B or C	15
Select supporting courses in the elected disciplines	9
Second area courses	9
Select from one of the two remaining groups	
Third area courses	6
Select from the remaining group	

#### Groups

##### Group A

ENG 305, 317<sup>1</sup>, 319<sup>1</sup>, 320<sup>1</sup>, 325, 327, 329<sup>1</sup>, 331<sup>1</sup>, 332<sup>1</sup>, 335,  
337, 339, 380<sup>1</sup>, 383<sup>1</sup>, 451, 453, 455, 468, 490<sup>1</sup>  
MUS 304, 305, 306, 307, 327, 328, 404<sup>1</sup>  
VAH 370, 480, 482, 483, 490<sup>1</sup>

##### Group B

HST 342, 344, 346, 347, 351, 352, 355, 360, 361, 365, 369,  
370, 372, 373, 374, 375, 376, 377, 378, 380, 385, 391,  
398, 399, 490, 495, 499<sup>1</sup>  
PHL 307, 310, 311, 314, 317, 318, 320, 323, 331, 332, 340<sup>1</sup>,  
361  
REL 326, 327, 328, 364, 367, 372, 373, 375, 376, 485

##### Group C

ANT 315, 335, 449  
ECO 310, 346, 347, 390, 441, 442, 445, 460, 461, 471, 485  
POL 301, 303, 310, 311, 313, 314, 316, 335, 350, 360, 408,  
411, 413, 450  
PSY 334, 341, 351, 361, 363, 443, 461, 462, 471  
SOC 321, 328, 337, 339, 341, 343, 351, 352, 435



[Search](#) [Academic Information](#) [General Information](#)

#### Explore by Department / Program:

Accounting  
Air Force Aerospace Studies, ROTC  
American Studies  
Biology

[Explore](#)

#### Explore by Major / Minor:

Aerospace Engineering (AAE)  
Aerospace Engineering Concentration (AEC)  
Africana Studies (AFS)  
American Studies (AMS)

[Explore](#)

#### Explore by Courses:

Accounting (ACC)  
Air Force Aerospace Studies, ROTC (AES)  
American Studies (AMS)  
Anthropology (ANT)

[Explore](#)

## Liberal Studies Curriculum

## Humanities and Fine Arts

Philosophy and Religious Studies	12
History	6
Literature: English or Foreign Language	3
Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities (may include courses from group A & B)	3-9
Social Sciences	12
Mathematics (excludes MTH 102, 204, 205)	3
Natural Sciences	11

Communication Competencies 0-9

Introduction to the University: ASI 150 0-1

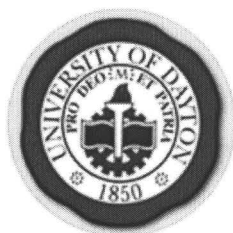
**General Education courses/academic electives to total at least 125**

<sup>1</sup>This course can be counted only when the material is appropriate to American Studies. Consult program director.

**Courses (Collapse All Courses)**

Code	Title	Sem. Hrs.
AMS 300	AMERICAN CULTURES	3
	Study of American artifacts to discern how they indicate the periods in the life of the civilization and how like artifacts can be used to determine the stages of development of various peoples. (Will not satisfy humanities breadth requirement.)	
AMS 301	INTERPRETATIONS OF AMERICAN CULTURE	3
	Critical study of various interpretations of American culture through more than a hundred years	
AMS 400	INTERDISCIPLINARY RESEARCH	3
	Study of the principles of interdisciplinary scholarship; what can and probably cannot be accomplished by it; successful interdisciplinary accomplishments. Students will complete interdisciplinary projects	
AMS 477	HONORS THESIS PROJECT	3
	First of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for 3 semester hours each in two separate disciplines in consultation with the department chairpersons. <b>Prerequisite(s):</b> Approval of University Honors Program	
AMS 478	HONORS THESIS PROJECT	3
	Second of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for 3 semester hours each in two separate disciplines in consultation with the department chairpersons. <b>Prerequisite(s):</b> Approved 477 and approval of University Honors Program	





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## College of Arts and Sciences

### (BIO) Biology (Collapse Description)

The Bachelor of Science program in biology is designed to prepare a student for a career in the life sciences. Graduates of the program are competitive for entry into graduate programs in biology as well as professional schools, such as medical, dental, osteopathic, and veterinary science.

The department has two primary areas of focus: environmental/ecological science and basic biomedical science. The former includes ecology, population biology, ecological physiology, environmental microbiology, community and restoration ecology, entomology and analysis of biological data, evolutionary biology, and plant physiology, as well as environmental biology in the narrow sense. The biomedical science course offerings include molecular biology, cell biology, general and medical microbiology, immunology, genetics, mammalian physiology, and developmental biology. In addition, advanced undergraduates may enroll in graduate courses for undergraduate credit with the consent of the chairperson.

In line with the two areas of research interests, the department encourages students (in consultation with their advisors) to declare one of the two as an area of concentration of study no later than the end of their sophomore year. For the student more interested in a broad approach to biology, the department recommends a third option, the general biology option (any combination of upper-level biology courses that fulfills the program requirements).

The department offers a research mentorship program for upper-level students majoring in biology. The program allows a student to work closely with both faculty and graduate students in laboratory and/or field research. Participation in the program is based on the recommendation of a member of the faculty. The mentorship program is designed to provide a significant advantage for those students who intend to enter a graduate program.

The department also offers a combined Bachelor and Master of Science degree in Biology. This accelerated program is designed for students who display strong potential for research in biology. It provides a liberal arts education, a broad background in biology, the development of expertise in a biological subfield and a thorough introduction to research instrumentation and techniques. Graduates from the program are prepared for either direct entry into the job market or continuation toward the Ph.D. A detailed description of the B.S.-M.S. program may be obtained from the departmental office.

A minor in biology consists of twenty semester hours.

### Faculty

Jayne B. Robinson, Chairperson  
Distinguished Service Professor: Noland  
Professors Emeriti: Chantell, Geiger, Laufersweiler, Ramsey  
Professors: Burky, Kearns, Robinson, Rowe, Tsonis, Williams  
Associate Professors: Friesse, Krane, Nielsen, D. Wright, S. Wright  
Assistant Professors: Benbow, Gadagkar, Hong, McEwan, Singh  
Adjunct Faculty: Del Rio-Tsonis, Hussain, Schlager  
Lecturers: Fetherson, Kavanaugh, Kico

### Majors/Minors (Collapse All)

Major/Minor Name

Bachelor of Science with a major in Biology (BIO)

**Biology<sup>1</sup>**

BIO 151, 151L, 152, 152L, 299, 310, 312, 420

Sem. Hrs.

**44**

16



Search Academic Information General Information

#### Explore by Department / Program:

Accounting  
Air Force Aerospace Studies, ROTC  
American Studies  
Biology

Explore

#### Explore by Major / Minor:

Engineering Technology (EGT)  
English (ENG)  
Entrepreneurship (ENT)  
Environmental Biology (EVB)

Explore

#### Explore by Courses:

Arabic (ARA)  
Art Education (VAE)  
Art History (VAH)  
Biology (BIO)

Explore



Environmental/Ecological (select two) <sup>2</sup>	7
BIO 301, 310L, 311, 314-314L, 320-320L, 330-330L, 340-340L, 360-360L, 370, 402-402L, 409-409L, 435-435L, 439, 441, 444-444L, 450-450L, 452-452L, 459-459L, 461-461L, 489	
Basic Biomedical (select two) <sup>3</sup>	7
BIO 309-309L, 312L <sup>4</sup> , 403-403L, 404, 411-411L, 415, 425-425L, 427, 439, 440-440L, 442-442L, 445, 460, 462, 466-466L, 470, 480-480L	
Electives: Four courses, two with accompanying laboratories, from the above groups. <sup>5</sup>	14
<b>Breadth Requirement</b>	
Natural Sciences	24
CHM 123-123L, 124-124L, 313-313L, 314-314L PHY 201-201L, 202-202L	
Mathematics	6
MTH 148-149	
Social and Behavioral Sciences	6
Humanities <sup>6</sup>	9
Philosophy and Religious Studies	12
General electives	8-9
Communication Competencies	0-9
<b>Introduction to the University: ASI 150</b>	<b>0-1</b>
<b>General Education courses/academic electives to total at least</b>	<b>120</b>

<sup>1</sup>The Department of Biology supports national standards established by the National Institutes of Health for the responsible, humane treatment and housing of animals. The biology curriculum contains some laboratory courses in which dissection and vivisection are necessary and required in order to convey an understanding of certain biological concepts. All students are expected to participate in such laboratory exercises in the introductory biology sequence, BIO 151L and BIO 152L which involve dissection and/or vivisection. In other elective formal laboratory courses in which dissection and vivisection occur, it is expected that students will participate in all aspects of the laboratory. No alternatives to dissection or vivisection will be offered in these courses. It is ultimately the responsibility of students to make certain that they enroll in courses in which they are able to participate in all required exercises, and to obtain information from each instructor as to the specific laboratory course content and requirements. The Biology Department maintains an updated list of laboratory courses in which dissection and/or vivisection is required in order to assist students in the selection of course work.

<sup>2</sup>One with accompanying laboratory.

<sup>3</sup>One with accompanying laboratory. BIO 462 strongly recommended as one of two courses.

<sup>4</sup>Qualifies as a laboratory elective for any category.

<sup>5</sup>One of the following Non-BIO science courses may include CHM 201/201L; CHM 420; MTH 367; CPS 111, CPS 132; GEO 208; GEO 308. Other Non-BIO science courses may be included with the approval of the chairperson.

<sup>6</sup>HST 340, 341 or 342 are highly recommended.

#### Bachelor of Science with a major in Environmental Biology (EVB)

Environmental biology is a science specialization based upon the fundamentals of biology and ecology, applying interdisciplinary skills, knowledge and principles to the environmental problems facing society today. Students entering this dynamic field could become directly involved in addressing some of the significant global problems related to human impact on the environment. In addition to the standard base of courses required of most biology majors, the curriculum also requires a challenging core of environmentally related science courses and course work drawn from a multidisciplinary elective pool that includes offerings in the humanities and social sciences.

Internship Program: Majors will participate in the EVB internship program (BIO

499, see course prerequisites), where they will have the unique opportunity to obtain valuable training and experience under the mentorship of established scientists and other environmental professionals.

	Sem. Hrs.
<b>Environmental Biology</b>	<b>46</b>
BIO 151-151L, 152-152L, 299, 310-310L, 312, 420, 459, 479L, 499	25
Field Oriented Courses (select three) <sup>1</sup>	11
BIO 301, 312L <sup>2</sup> , 320-320L, 330-330L, 340-340L, 350-350L, 360-360L, 370, 402-402L, 409-409L, 421, 435-435L, 441, 444-444L, 450-450L, 452-452L, 459L <sup>2</sup> , 489, 499	
Laboratory Oriented Courses (select three) <sup>3</sup>	10
BIO 309-309L, 311, 312L <sup>2</sup> , 314-314L, 402-402L, 403-403L, 411-411L, 415, 421, 439, 440-440L, 441, 442-442L, 445, 450-450L, 459L <sup>2</sup> , 460, 461-461L, 462, 470, 480-480L, 489, 499	
<b>Breadth Requirement</b>	
Natural Sciences	32
CHM 123-123L, 124-124L, 313-313L, 314-314L	
GEO 115-115L, 116-116L	
PHY 201-201L, 202-202L	
Mathematics, Computer Science	9
MTH (148-149 or 168-169 <sup>4</sup> ), 367 <sup>5</sup>	
Social and Behavioral Sciences	6
- - - (ANT 150 or PSY 101)	
And elective	
Humanities	9
Philosophy and Religious Studies	12
Communication Competencies <sup>6</sup>	0-9
Elective	0-9
Other non-science elective	0-3
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>120-127</b>

<sup>1</sup>At least two courses with accompanying laboratory. One non-BIO science course approved for science majors may be included in this section with permission. BIO 499 requires the permission of the EVB Program Director.

<sup>2</sup>Qualifies only as a laboratory elective; satisfies either BIO laboratory elective area.

<sup>3</sup>At least one course with accompanying laboratory. One non-BIO science course approved for science majors may be included in this section with permission. BIO 499 requires the permission of the EVB Program Director.

<sup>4</sup>MTH 168 - MTH 169 by placement.

<sup>5</sup>Other appropriate statistics courses may be substituted with the approval of the Department Chairperson.

<sup>6</sup>If composition requirement is waived, student should select another elective from the Liberal Studies Curriculum. ENG 378 strongly recommended for students whose background is weak in this area.

Minor in Biology (BIO)

	Sem. Hrs.
<b>Biology</b>	<b>20</b>
BIO 151-151L, 152-152L, 310, 312	14
Select six additional semester hours (300- or 400-level)	6

**Courses** (Collapse All Courses)

Code	Title	Sem. Hrs.
BIO 101	GENERAL BIOLOGY I	3
A study of the more important biological processes and principles through analysis and synthesis, dealing primarily with the organizational aspects of living things. For the nonscience major.		
BIO 101L	GENERAL BIOLOGY LABORATORY I	1
Examination of biological concepts using basic biological techniques and stressing an investigational and experimental approach. One two-hour laboratory per week. <b>Corequisite(s):</b> BIO 101.		
BIO 104	INTRODUCTORY BIOLOGY FIELD COURSE	3
An introduction to the ecology, behavior, morphology, taxonomy, and life history of plants and animals. One week on campus; three weeks in the Rocky Mountains near Denver, Colorado; one week of travel to and from the field site. For non-biological science majors only. Third term only. <b>Corequisite(s):</b> GEO 104; (BIO 104L or GEO 104L).		
BIO 104L	INTRODUCTORY BIOLOGY FIELD LABORATORY	1
Field trip laboratory in the biological sciences to accompany BIO 104. GEO 104L can be substituted for this course. Third term only.		
BIO 151	CONCEPTS OF BIOLOGY I	3
Study of the molecular and cellular organization of organisms. Topics also include bioenergetics, genetics, and evolution. Core biology course for majors in sciences such as biology, premedicine, and others.		
BIO 151L	CONCEPTS OF BIOLOGY LABORATORY I	1
An introduction to biological laboratory procedures and instrumentation through a series of observational and experimental exercises at the cellular level. Core biology course. <b>Prerequisite(s):</b> BIO 151 (may be taken as corequisite).		
BIO 152	CONCEPTS OF BIOLOGY II	3
Continuation of BIO 151. Study of taxonomic diversity, plant and animal organismal physiology, and ecology and animal behavior. Core biology course. <b>Prerequisite(s):</b> BIO 151.		
BIO 152L	BIOLOGY LABORATORY INVESTIGATIONS II	1
Biological laboratory exercises at the organism and the system level. Emphasis on both plant and animal behavior. Core biology course. <b>Prerequisite(s):</b> BIO 152 (may be taken as corequisite).		
BIO 299	BIOLOGY SEMINAR	1
Introduction to biological journals and abstracting materials. Practice in reviewing, abstracting, and presenting biological information. Primarily for sophomores.		
BIO 301	EVOLUTION	3
Theory and evidence of organic evolution, with emphasis on microevolutionary change and population genetics. <b>Prerequisite(s):</b> (BIO 101, 102) or (BIO 151, 152); BIO 312 recommended.		
BIO 309	COMPARATIVE ANATOMY OF THE VERTEBRATES	3
Study of changes that have occurred in the chordate body with the passage of time, and analysis of their significance. <b>Prerequisite(s):</b> Minimum of one year of introductory biology.		
BIO 309L	COMPARATIVE ANATOMY LABORATORY	1
Dissection and study of the anatomical structure of representative vertebrate animals. Course to accompany BIO 309. <b>Corequisite(s):</b> BIO 309.		
BIO 310	ECOLOGY	3

Interrelationship of plants, animals, and micro-organisms with the physical-chemical environment: nutrient cycles, energy flow, ecosystems, and factors affecting distribution and abundance of organisms.

**Prerequisite(s):** One year of biology.

BIO 310L ECOLOGY LABORATORY

1

Measurement of population, community, and environmental variables in terrestrial and aquatic systems. The lab is field-based using local ecological resources. One three-hour laboratory per week and weekend field trips.

**Corequisite(s):** BIO 310.

BIO 311 INTRODUCTORY ENTOMOLOGY

3

Classification, physiology, ecology, and impact of insects on society.

**Prerequisite(s):** BIO 151, 152.

BIO 312 GENERAL GENETICS

3

Study of the principles of variation and heredity covering both Mendelian and molecular genetics. Core biology course.

**Prerequisite(s):** BIO 152

BIO 312L GENETICS LABORATORY

1

Exploration of heredity using molecular genetic methods. One three-hour laboratory per week.

**Corequisite(s):** BIO 312.

BIO 314 PLANT BIOLOGY

3

Consideration of structure, function, reproduction, and inheritance as applicable in the plant patterns of life. Emphasis on the vascular plants.

**Prerequisite(s):** Minimum of one course in biology.

BIO 314L PLANT BIOLOGY LABORATORY

1

Laboratory exercises to accompany BIO 314. Emphasis on generalized structure and function of plants. One three-hour laboratory each week.

BIO 320 MARINE BIOLOGY

2

Introduction to the diversity of marine life including the physical-chemical environment. Third term only.

BIO 320L MARINE BIOLOGY LABORATORY

2

Examination of marine organisms and processes. Laboratory work conducted on UD campus and at off-campus field sites in the south. Third term only.

BIO 330 ANIMAL BEHAVIOR

3

An evolutionary approach to the study of animal behavior, emphasizing both proximate mechanisms and functional explanations of the survival value of behavior.

**Prerequisite(s):** One year of biology.

BIO 330L ANIMAL BEHAVIOR LABORATORY

1

Field and laboratory exercises to accompany BIO 330. Should be taken concurrently with BIO 330. One three-hour laboratory each week and occasional Saturday field trips.

BIO 340 CULTURE, BIODIVERSITY, AND RESOURCES MANAGEMENT

3

Field lecture course addressing cultural impacts on biodiversity and conciliatory demands for resource management to preserve the integrity of unique global environments. An experiential study of culture, regional geological morphology and weather-patterns, economic development, the freshwater-marine continuum, resource utilization, environmental law and management on conservation of unique biological habitats and organisms.

**Prerequisite(s):** Permission of instructor.

**Corequisite(s):** BIO 340L.

BIO 340L CULTURE, BIODIVERSITY, AND RESOURCES MANAGEMENT LAB

1 - 2

Lab field course on culture, biodiversity and balanced resource management to preserve integrity of unique global environments and compromises with economic development. Assessment of biodiversity in diverse biomes (e.g. elevational and rainforest-desert gradients, watersheds, coral reef systems) will be assessed with experimental design, data collection and analysis. May fulfill only one laboratory requirement for the Biology major.

**Prerequisite(s):** Permission of instructor.

**Corequisite(s):** BIO 340.

BIO 350 APPLIED MICROBIOLOGY 3

Fundamentals of applied and environmental microbiology for environmental scientists and engineers. Introduction to microorganisms and their role in bioenvironmental engineering and industrial processes. For non-biological science majors only.

**Prerequisite(s):** Introductory biology; general and organic chemistry.

BIO 350L APPLIED MICROBIOLOGY LABORATORY 1

An introductory laboratory to acquaint students with basic microbiology laboratory techniques as applied to environmental pollution and industrial fermentations.

BIO 359 SUSTAINABILITY AND THE BIOSPHERE 3

Study of the principles of sustainability. All areas of sustainability will be covered with emphasis on ecological facets of sustainability. Discussion of loss of habitat and biodiversity in the context of sustaining natural resources for future generations.

**Prerequisite(s):** (BIO 151,152) or permission of instructor.

BIO 360 ISLAND ENVIRONMENTAL BIOLOGY 3

Field lecture course on environments of Pacific Islands. Study of volcanic geology, island morphology/weather-patterns, native culture, economic development, freshwater-marine continuum and water resource utilization on unique biological habitats.

**Prerequisite(s):** Permission of instructor.

**Corequisite(s):** BIO 360L.

BIO 360L ISLAND ENVIRONMENTAL BIOLOGY LAB 1 - 2

Lab field course on Pacific Islands. Ecology of elevational and rainforest-desert gradients, volcanic mountain streams, watersheds, and coral systems with experimental design, data collection and analysis.

**Prerequisite(s):** Permission of instructor.

**Corequisite(s):** BIO 360.

BIO 370 CONSERVATION BIOLOGY 3

An ecosystem approach to the study of and threat to local, regional, and global biodiversity. Application of ecological principles of conservation of species and habitats.

**Prerequisite(s):** (BIO 101, 102) or (BIO 151, 152).

BIO 395 GLOBAL ENVIRONMENTAL BIOLOGY 3

Presentation of the biological and ecological principles needed for critical discussion and evaluation of current global environmental issues including food production, human population growth, role of humans and pollution in environmental degradation, and conservation of agricultural, forest and other natural resources. No science credit for biology majors.

**Prerequisite(s):** An introductory course in the natural sciences.

BIO 402 VERTEBRATE ZOOLOGY 3

The morphology, physiology, ecology, and distribution of representative vertebrate groups.

**Prerequisite(s):** Junior or senior standing.

BIO 402L VERTEBRATE ZOOLOGY LABORATORY 1

Course to accompany BIO 402. A laboratory focused on the diversity, systematics and ecology of vertebrates. One three-hour laboratory each week.

- BIO 403      PHYSIOLOGY I      3  
A physical-chemical examination of the physiological events occurring in a living system with emphasis on physiology of the cell, excretion, nerves, muscles, bone, blood, heart, circulation, and respiration.  
**Prerequisite(s):** (BIO 101, 102) or (BIO 151, 152); CHM 313, 314.
- BIO 403L      PHYSIOLOGY LABORATORY I      1  
Course to accompany BIO 403. Systematic approach to the acquisition and interpretation of information about the physiology of living systems.
- BIO 404      PHYSIOLOGY II      3  
Integrated systems based examination of physiological processes in humans with a special emphasis on molecular mechanisms of pathophysiological conditions in humans and experimental animal systems.  
**Prerequisite(s):** BIO 403.
- BIO 409      ECOLOGICAL RESTORATION      3  
Principles and practices of ecological restoration. The course presents the rationale and knowledge needed to understand, appreciate, plan and perform ecological restoration.  
**Prerequisite(s):** Permission of instructor.
- BIO 409L      ECOLOGICAL RESTORATION LABORATORY      1  
Provides practical applications of the principles of ecological restoration to a variety of ecosystems.  
**Corequisite(s):** BIO 409.
- BIO 411      GENERAL MICROBIOLOGY      3  
Introductory course stressing the physiology, cultivation, and classification of microbial organisms; their role in medicine, agriculture, and industry.  
**Prerequisite(s):** (BIO 101, 102) or (BIO 151, 152); CHM 313, 314.
- BIO 411L      GENERAL MICROBIOLOGY LABORATORY      1  
Lab exercises focusing on the basic techniques involved in the isolation and identification of bacteria, including assessment of biochemical activities, growth characteristics of bacteria, and the impact of the environment on microbial growth. One three-hour laboratory per week.  
**Corequisite(s):** BIO 411.
- BIO 415      NEUROBIOLOGY      3  
Structure and function of the brain and nervous system. Emphasis on understanding cellular and molecular events within the nervous system using model organisms.  
**Prerequisite(s):** BIO 151, 152; CHM 123, 124.
- BIO 420      SEMINAR      1  
Practice in development, presentation, and discussion of papers dealing with biological research problems  
**Prerequisite(s):** Junior or senior standing.
- BIO 421      BIOLOGICAL PROBLEMS      1 - 2  
Laboratory research problems. Topics arranged with faculty advisors.  
**Prerequisite(s):** Permission of department chairperson.
- BIO 422      BIOLOGICAL PROBLEMS      1 - 2  
Library research problems. Topics arranged with faculty advisors.  
**Prerequisite(s):** Permission of department chairperson.
- BIO 425      PARASITOLOGY      3  
Introduction to the morphology, life history, and clinical significance of parasites and other symbionts.  
**Prerequisite(s):** (BIO 101, 102) or (BIO 151, 152).
- BIO 425L      PARASITOLOGY LABORATORY      1  
Course to accompany BIO 425. Recognition of common human parasites. Study of both living and preserved forms. One three-hour period each week.

BIO 427	IMMUNOLOGY	3
Discussions of antigens, antibodies, antigenicity, immunogenicity, and antigen-antibody reactions including hypersensitivity, immune tolerance, and transplants.		
<b>Prerequisite(s):</b> (BIO 403 or 411 or 440 or 442) or CHM 420; junior or senior standing.		
BIO 435	MICROBIAL ECOLOGY	3
Study of the diversity and activity of microorganisms and the interrelationships between microorganisms and their environments with emphasis on aquatic ecosystems.		
<b>Prerequisite(s):</b> BIO 411; CHM 313, 314.		
BIO 435L	MICROBIAL ECOLOGY LABORATORY	1
Examination of the methods of isolation and enumeration of microorganisms and techniques for determining their activities in the field and laboratory.		
BIO 439	ANALYSIS AND INTERPRETATION OF BIOLOGICAL DATA	3
Introducing the nature of some of the important types of data that are generated in biological research, the databases that warehouse such data, the principles involved in the analysis of such data, the use of appropriate software to analyze such data, and the biological interpretation of the results of analysis.		
<b>Prerequisite(s):</b> BIO 151, 152.		
BIO 440	CELL BIOLOGY	3
Function, structure, composition, heredity, and growth of cells. Analysis of cell concept in biochemical terms.		
<b>Prerequisite(s):</b> (BIO 101, 102) or (BIO 151, 152); CHM 313, 314.		
BIO 440L	CELL BIOLOGY LABORATORY	1
Laboratory exercises to accompany BIO 440. May be taken concurrently with or following BIO 440.		
BIO 441	ENVIRONMENTAL PLANT BIOLOGY	3
Study of the physiological basis for environmental effects on plant metabolism, structure, growth and development, including plant responses to elevated carbon dioxide, acid deposition, and to water stress.		
<b>Prerequisite(s):</b> (BIO 101, 102) or (BIO 151, 152).		
BIO 442	DEVELOPMENTAL BIOLOGY	3
Study of animal development, including morphological patterns of development, mechanisms of cellular differentiation, cell-cell interactions during development, and mechanisms of differential gene expression. Emphasis on understanding development at the cellular and molecular levels.		
<b>Prerequisite(s):</b> (BIO 101, 102) or (BIO 151, 152); CHM 313, 314.		
BIO 442L	DEVELOPMENTAL BIOLOGY LABORATORY	1
Exploration of the development of key model organisms from the morphological and molecular perspectives with an emphasis on basic developmental laboratory techniques. One three-hour laboratory per week.		
<b>Corequisite(s):</b> BIO 442.		
BIO 444	PLANT DIVERSITY	3
Broad survey of the major divisions of the plant kingdom; consideration of algae, fungi, bryophytes, vascular plant groups; includes generalized life histories, ecological and physiological characteristics, and evolutionary relationships.		
BIO 444L	PLANT DIVERSITY LABORATORY	1
Laboratory studies of the plant groups, including life cycles and evolutionary, physiological, and ecological adaptations. One three-hour laboratory each week.		
BIO 445	EVOLUTION AND DEVELOPMENT	3

A molecular and population genetic examination of the evolution of animal form. Topics include comparative developmental biology, population genetics, and molecular evolution.

**Prerequisite(s):** BIO 312.

BIO 450      COMPARATIVE ANIMAL PHYSIOLOGY      3

Organized on a function-system basis, course dealing with environment-organism interaction and with integrative systems of the principle phyla of animals.

BIO 450L      COMPARATIVE ANIMAL PHYSIOLOGY LABORATORY      1

Examination of physiological responses to the physical environment. Variations of the physical environment are examined in the field. Study of animals under controlled laboratory conditions with experimental design, data collection and analysis to assess physiological adaptations. One three-hour laboratory or field trip per week.

**Corequisite(s):** BIO 450.

BIO 452      BIOLOGY OF RIVERS AND LAKES      3

The biological interrelationships of organisms in rivers, streams, lakes and ponds including biodiversity, ecological/evolutionary adaptations and structure of aquatic ecosystems.

**Prerequisite(s):** Any introductory course in biology (BIO 101 or BIO 151 or BIO 152 or SCI 230 or SCI 240).

BIO 452L      BIOLOGY OF RIVERS AND LAKES LABORATORY      1

Laboratory and field exercises emphasizing the biological, chemical and physical attributes of freshwater ecological systems. One laboratory or field trip per week.

**Prerequisite(s):** Any introductory course in biology (BIO 101 or BIO 151 or BIO 152 or SCI 230 or SCI 240).

BIO 459      ENVIRONMENTAL ECOLOGY      3

The application of current ecological knowledge and principles toward the study of human impact on the environment. Emphasis on ecosystem dynamics, applied ecology, disturbance ecology, and approaches to solving global environmental problems.

**Prerequisite(s):** BIO 430 or permission of instructor.

BIO 459L      ENVIRONMENTAL ECOLOGY LABORATORY      1

Analytical approach to studying applied ecology and human impact on the environment. Emphasis on laboratory and field approaches to solving environmental problems through the use of ecological principles.

**Prerequisite(s):** BIO 459 (may be taken as corequisite).

BIO 460      INTRODUCTION TO BIOINFORMATICS      3

This course introduces the concepts involved in bioinformatics, using the appropriate material from the disciplines of biology, chemistry and computer science, among others.

**Prerequisite(s):** (BIO 152; junior or senior standing) or permission of instructor.

BIO 461      INVERTEBRATE ZOOLOGY      3

Survey of the structure, activities, life histories, and relationships of the invertebrate animals, with some emphasis on their origin and development.

**Prerequisite(s):** (BIO 101, 102) or (BIO 151, 152).

BIO 461L      INVERTEBRATE ZOOLOGICAL LABORATORY      1

Examination of the structure and function of the major invertebrate phyla. Survey of representative animals with an emphasis on observational skills for analysis of the structural adaptations of live animals. One three-hour laboratory each week.

**Corequisite(s):** BIO 461.

BIO 462      MOLECULAR BIOLOGY      3



Analysis of the nature of the gene and gene action. Particular attention to genetic regulation and to recent advances in molecular genetics.

**Prerequisite(s):** BIO 312; CHM 314.

BIO 466 BIOLOGY OF INFECTIOUS DISEASE 3  
The nature of infectious diseases, host-parasite relationships in resistance and infection, defense mechanism (antigen-antibody response); survey of the bacteria causing disease in humans.  
**Prerequisite(s):** BIO 411.

BIO 466L BIOLOGY OF INFECTIOUS DISEASE LABORATORY 1  
Laboratory experiments to demonstrate immunological, serological, determinative, and medical bacteriology. Two two-hour laboratory periods each week.

BIO 470 CANCER BIOLOGY 3  
Study of growth patterns and causes of cancer at the cellular and molecular levels. Discussion of the hereditary and environmental factors that contribute to the development of the disease in cancer patients. Description of the research being conducted to understand and cure the disease.  
**Prerequisite(s):** BIO 440.

BIO 477 HONORS THESIS PROJECT 3  
First of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.  
**Prerequisite(s):** Approval of University Honors Program.

BIO 478 HONORS THESIS PROJECT 3  
Second of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.  
**Prerequisite(s):** Approved 477 and approval of University Honors Program.

BIO 479L ENVIRONMENTAL INSTRUMENTATION LABORATORY 2  
The understanding and use of field and laboratory based equipment to study current environmental issues. Emphasis on team-centered approaches to investigating environmental problems. Same as GEO 479L.  
**Prerequisite(s):** (BIO 151, 152; GEO 115, 116) or permission of instructor.

BIO 480 PRINCIPLES OF MICROSCOPY 3  
Focus on basic principles and theory of light and electron microscopy, and how these techniques address fundamental questions in science.  
**Prerequisite(s):** (BIO 151, 152) or permission of instructor.

BIO 480L PRINCIPLES OF MICROSCOPY LABORATORY 1  
Application and practice of light and electron microscopy.  
**Prerequisite(s):** BIO 480 (may be taken as corequisite).

BIO 489 MYCOLOGY 3  
Introductory course stressing the interrelationship between fungi and the rest of the biological world. Emphasis on the basic biology and ecology of fungi, decomposition, species interactions, plant pathology and medical mycology.  
**Prerequisite(s):** One year of introductory biology.

BIO 499 ENVIRONMENTAL BIOLOGY INTERNSHIP 3  
Majors will have the opportunity to obtain valuable training and experience under the mentorship of established scientists and professionals. Emphasis on approaches to solving environmental problems including such research

areas as bioremediation, risk assessment, and ecological restoration. May be repeated up to six semester hours.

**Prerequisite(s):** Junior or senior standing; permission of program director.

©2003-2006 University of Dayton - 300 College Park, Dayton, Ohio 45469  
A Web Application by the Internet Development Division | [Privacy Policy](#)





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## School of Business Administration

### (BAI) Business Interdisciplinary Studies

#### Courses (Collapse All Courses)

Code	Title	Sem. Hrs.
BAI 103L	BUSINESS COMPUTING LABORATORY	1
Introduction to business software skills including Microsoft Excel, FrontPage and PowerPoint. Overview of UD computer ethics policies.		
BAI 150	BUSINESS EDUCATIONAL PLANNING	1
Introduction to the School of Business Administration, the University, and educational planning.		
BAI 151	BUSINESS INTEGRATION EXPERIENCE	1
Integrated introduction to major business processes and decision making.		
BAI 199	BUSINESS SCHOLARS FORUM I	1
Exploration and discussion of a wide range of business topics. Weekly sessions led by faculty members and guest professionals in their areas of expertise. Open only to first-year Business Scholars or with permission of the Dean's office.		
BAI 201	BUSINESS SCHOLARS FORUM II	1
Similar to BAI 199 with topics geared toward sophomore Business Scholars. Open only to sophomore Business Scholars or with permission of the Dean's office.		
BAI 400	DEAN'S LEADERSHIP LABORATORY	1
Upper-class student participation in first-year student advising program. Permission of dean's office required.		
BAI 497	LABORATORY WORK EXPERIENCE	3 - 6
Under faculty sponsorship and in association with a participating industrial, commercial, educational, health-care, or governmental organization; practical experience in work associated with the student's major or minor concentration. (See internship coordinator for details.) Does not count toward major. Permission of dean is required.		



Search Academic Information General Information

#### Explore by Department / Program:

Air Force Aerospace Studies, ROTC  
American Studies  
Biology  
Business Interdisciplinary Studies

Explore

#### Explore by Major / Minor:

Accounting (ACC)  
Adolescence to Young Adult Educatio... (EYA)  
Aerospace Engineering (AAE)  
Aerospace Engineering Concentration (AEC)

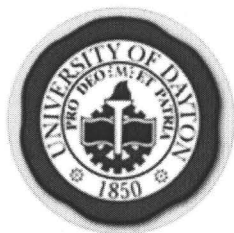
Explore

#### Explore by Courses:

Art Education (VAE)  
Art History (VAH)  
Biology (BIO)  
Business Interdisciplinary Studies (BAI)

Explore





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## School of Engineering

### Chemical and Materials Engineering (Collapse Description)

Chemical engineering applies the principles of the physical sciences, economics, and human relations to research, design, build, and supervise facilities that convert raw materials into useful products and services.

The majority of chemical engineers are involved in the chemical process industries that produce many of the materials and items needed in everyday life. These include medicine, food, fertilizers, plastics, synthetic fibers, petroleum, petrochemicals, ceramics, and pulp and paper products. A chemical engineer may pursue a professional career in many other fields, such as energy conversion, pollution control, medical research, and materials development in aerospace and electronic industries. Chemical engineers are employed in research, development, design, production, sales, consulting, and management positions. They are also found in government and education. Many use a chemical engineering education as a stepping stone to law, medicine, or corporate management.

The curriculum in chemical engineering serves as basic training for positions in these diverse areas of the manufacturing industry or for graduate study leading to advanced degrees. The first part of the chemical engineering curriculum provides a firm foundation in mathematics, physics, and chemistry. The chemistry background is stressed. The second part of the curriculum offers a balance between classroom and laboratory experience in stressing chemical engineering topics such as transport phenomena, thermodynamics, kinetics and reactor design, separation processes, fluid flow and heat transfer operations, process control, and process design. The development of design tools, communication, and interpersonal skills is integrated throughout the curriculum. The curriculum allows minors in emerging technologies such as bioengineering, environmental engineering and materials engineering. Those interested in attending medical / dental school can pursue a premed preparation as part of their curriculum.

The educational objectives of the chemical engineering program are to produce graduates who:

- have successful careers in the chemical process industry with the skills necessary to pursue opportunities to work in multidisciplinary and non-traditional industries and positions.
- are successful at prestigious graduate, medical, and law schools.
- are committed to performing ethically while serving their professions, companies, and communities.
- from the depth of their foundations in engineering principles and the breadth of their general educations, exhibit strong critical thinking, technical, and professional skills; and engage in continuous intellectual and personal growth.

### Faculty

Tony E. Saliba, Chairperson  
Professors Emeriti: Lu, Snide  
Professors: Browning, Dai, Eylon, Flach, Lee, Myers, T. Saliba, Sandhu  
Associate Professor: Wilkens

### Majors/Minors (Collapse All)

Major/Minor Name

Bachelor of Chemical Engineering (CME)

First-Year

Sem. Hrs.

31-38



Search

Academic Information

General Information

#### Explore by Department / Program:

American Studies  
Biology  
Business Interdisciplinary Studies  
Chemical and Materials Engineering

Explore

#### Explore by Major / Minor:

Physics-Computer Science (PCS)  
Political Journalism  
Political Science (POL)  
Polymer Materials (PME)

Explore

#### Explore by Courses:

Art History (VAH)  
Biology (BIO)  
Business Interdisciplinary Studies (BAI)  
Chemical and Materials Engineering (CME)

Explore

CHM 123-123L	GENERAL CHEMISTRY (CHM 123) GENERAL CHEMISTRY LABORATORY (CHM 123L)	4
CHM 124-124L	GENERAL CHEMISTRY (CHM 124) GENERAL CHEMISTRY LABORATORY (CHM 124L)	4
CME 101	INTRODUCTION TO CHEMICAL ENGINEERING	0 - 1
EGR 100	ENRICHMENT WORKSHOP	0 - 3
EGR 103	ENGINEERING INNOVATION	2
ENG 101-102 or 114 or 198	COLLEGE COMPOSITION I (ENG 101) COLLEGE COMPOSITION II (ENG 102) FRESHMAN WRITING SEMINAR (ENG 114) ENGLISH SCHOLARS' SEMINAR (ENG 198)	3 - 6
HST 103 or 198	THE WEST AND THE WORLD (HST 103) HISTORY SCHOLARS' SEMINAR (HST 198)	3
MTH 168	ANALYTIC GEOMETRY AND CALCULUS I	4
MTH 169	ANALYTIC GEOMETRY AND CALCULUS II	4
PHY 206	GENERAL PHYSICS I - MECHANICS	3
REL 103	INTRODUCTION TO RELIGION	3
Fundamentals of Communication		1

## Sophomore-Year

First-Term		17
CHM 313-313L	ORGANIC CHEMISTRY (CHM 313) ORGANIC CHEMISTRY LABORATORY (CHM 313L)	4
CME 200	PROFESSIONAL DEVELOPMENT SEMINAR	0
CME 203	MATERIAL AND ENERGY BALANCES	3
EGR 202	ENGINEERING THERMODYNAMICS	3
MTH 218	ANALYTIC GEOMETRY AND CALCULUS III	4
PHL 103	INTRODUCTION TO PHILOSOPHY	3
Second-Term		17
CHM 314-314L	ORGANIC CHEMISTRY (CHM 314) ORGANIC CHEMISTRY LABORATORY (CHM 314L)	4
CME 200	PROFESSIONAL DEVELOPMENT SEMINAR	0
CME 281	CHEMICAL ENGINEERING COMPUTATIONS	3
MTH 219	APPLIED DIFFERENTIAL EQUATIONS	3
PHY 207	GENERAL PHYSICS II - ELECTRICITY AND MAGNETISM	3
Fundamentals of Communication		1
General Education elective		3

## Junior-Year

First-Term		16
CME 311	CHEMICAL ENGINEERING THERMODYNAMICS	3
CME 324	TRANSPORT PHENOMENA I	3
CME 381	ADVANCED MATHEMATICS FOR CHEMICAL ENGINEERS	3
EGR 201	ENGINEERING MECHANICS	3
Fundamentals of Communication		1
General Education elective <sup>1</sup>		3
Second-Term		17
CME 306	CHEMICAL REACTION KINETICS AND ENGINEERING	3
CME 325	TRANSPORT PHENOMENA II	3
CME 326L	TRANSPORT PHENOMENA LABORATORY	2
CME 365	SEPARATION TECHNIQUES	3
EGR 203	ELECTRICAL AND ELECTRONIC CIRCUITS	3
General Education elective		3

## Senior-Year

First-Term		17-18
CME 408	SEMINAR	0 - 1
CME 430	CHEMICAL ENGINEERING DESIGN I	3
CME 452	PROCESS CONTROL	3
CME 465	FLUID FLOW AND HEAT TRANSFER PROCESSES	3
CME 466L	CHEMICAL ENGINEERING UNIT OPERATIONS LABORATORY	2
Chemistry or Biology elective <sup>2</sup>		3
General Education elective		3
Second-Term		17-18
CME 408	SEMINAR	0 - 1
CME 431	CHEMICAL ENGINEERING DESIGN II	3
CME 453L	PROCESS CONTROL LABORATORY	2
CME elective <sup>2</sup>		3
General Education elective		3
Engineering/Science electives <sup>2</sup>		6

<sup>1</sup>Must be selected from approved list of PHL or REL ethics courses.

<sup>2</sup>Must be selected from list approved by the Chemical and Materials Engineering Department.

#### Concentration in Energy Systems - Chemical (CES)

This concentration is open to all engineering students. The Energy Systems Concentration provides an interdisciplinary concentration in energy systems and its social consequences. Students completing this concentration will be prepared for jobs in both industrial and building energy systems, a rapidly growing market.

	Sem. Hrs.
<b>Energy Systems - Chemical</b>	<b>37</b>
ASI 320 CITIES AND ENERGY <sup>1,2</sup>	3
CME 203 MATERIAL AND ENERGY BALANCES	3
CME 311 CHEMICAL ENGINEERING THERMODYNAMICS	3
CME 324 TRANSPORT PHENOMENA I	3
CME 325 TRANSPORT PHENOMENA II	3
CME 326L TRANSPORT PHENOMENA LAB	2
CME 430 CHEMICAL ENGINEERING DESIGN I	3
CME 431 CHEMICAL ENGINEERING DESIGN II	3
CME 465 FLUID FLOW AND HEAT TRANSFER PROCESSES	3
CME 466L CHEMICAL ENGINEERING UNIT OPERATIONS LAB	2
CME elective - Select one course from:	3
CME 486/586 PETROLEUM ENGINEERING	3
CME 524/MEE 575 FUNDMNTLS AND APPLICTNS OF FUEL CELLS	3
CME 565 FUNDAMENTALS OF COMBUSTION	3
CME 574 FUNDAMENTALS OF AIR POLLUTION ENGR	3
Select two courses from:	6
Any CME elective course above <sup>3</sup>	3
AEE/MEE 560 PROPULSION SYSTEMS	3
CME 507/MEE 511 ADVANCED THERMODYNAMICS	3
MEE 413/513 PROPULSION	3
MEE 420/569 ENERGY EFFICIENT BUILDINGS	3
MEE 471/571 DESIGN OF THERMAL SYSTEMS	3
MEE 473/573 RENEWABLE ENERGY SYSTEMS	3
MEE 478/578 ENERGY EFFICIENT MANUFACTURING	3

<sup>1</sup>Or other approved humanities elective related to Energy Systems.

<sup>2</sup>Satisfies History requirement.

<sup>3</sup>Course cannot be already chosen as CME elective.

#### Minor in Bioengineering (BIE)

This minor is open to chemical, civil, computer, electrical, and mechanical engineering majors. The program is designed to expose the student to the use of engineering principles in biological systems and applications.

	Sem. Hrs.
<b>Bioengineering</b>	<b>12</b>
BIO 151 or 152 CONCEPTS OF BIOLOGY I (BIO 151)	3
CONCEPTS OF BIOLOGY II (BIO 152)	
CME 490 INTRODUCTION TO BIOENGINEERING	3
CME 491 BIOMEDICAL ENGINEERING	3
Select one course from:	3
BIO 151 CONCEPTS OF BIOLOGY I	3
BIO 152 CONCEPTS OF BIOLOGY II	3
BIO 312 GENERAL GENETICS	3
BIO 403 PHYSIOLOGY I	3
BIO 411 GENERAL MICROBIOLOGY	3
BIO 440 CELL BIOLOGY	3
CHM 420 BIOCHEMISTRY	3
CHM 451 GENERAL BIOCHEMISTRY I	3
CHM 452 GENERAL BIOCHEMISTRY II	3
CME 492 CHEMICAL SENSORS AND BIOSENSORS	3

#### Minor in Chemical Processing (CHP)

This minor is open to civil, computer, electrical, and mechanical engineering majors. The program is designed to acquaint the student with industrial operations in the chemical process industries such as heat exchange, distillation, extraction, humidification, etc. The elective courses cover a wide range of topics to accommodate the student's special interests.

	Sem. Hrs.
<b>Chemical Processing</b>	<b>9</b>
CME 203 MATERIAL AND ENERGY BALANCES	3
CME 365 SEPARATION TECHNIQUES	3
Select one course from:	3
CME 306 CHEMICAL REACTION KINETICS AND ENGINEERING	3
CME 430 CHEMICAL ENGINEERING DESIGN I	3
CME 452 PROCESS CONTROL	3
CME 465 FLUID FLOW AND HEAT TRANSFER PROCESSES	3
CME 499 SPECIAL PROBLEMS IN CHEMICAL ENGINEERING	1 - 6

#### Minor in Composite Materials Engineering (CMA)

This minor is open to civil, chemical, and mechanical engineering majors. The program is designed to expose the student to the design, processing, and characterization of composite materials and their various applications in industry.

	Sem. Hrs.
<b>Composite Materials Engineering</b>	<b>12</b>
Select four courses from:	12
CEE/MAT 540 COMPOSITE DESIGN	3
CEE/MAT 541 EXPERIMENTAL MECHANICS OF COMPOSITE MATERIALS	3
CEE/MAT 543 ANALYTICAL MECHANICS OF COMPOSITE MATERIALS	3
CEE/MAT 544 MECHANICS OF COMPOSITE STRUCTURES	3
CME/MAT 509 INTRODUCTION TO POLYMER SCIENCE	3

CME 510 or	PHYSICAL PROPERTIES OF POLYMERS	3
MAT 510	HIGH PERFORM THERMOSTAT	3
POLYMERS		
CME 512/MAT 542	ADV COMPOSITES-MATERIALS &	3
PROCSNG		
MAT 527	METHODS OF POLYMER ANALYSIS	3

Minor in Materials Engineering (MAT)

This minor is open to all engineering majors. A general overview of materials with choice courses in polymers, composites, nanomaterials, and material characterization.

	Sem. Hrs.
<b>Materials Engineering</b>	<b>12</b>
Select four courses from:	12
CME/MAT 509	INTR POLYMER SCIENCE-
THERMOPLASTICS	3
CME 510 or	PHYSICAL PROPERTIES OF
POLYMERS	3
MAT 510	HIGH PERFORM THERMOSTAT
POLYMERS	3
CME/MAT 511	PRINCIPLES OF CORROSION
	3
CME 512/MAT 542	ADV COMPOSITES-MATERIALS &
PROCSNG	3
CME/MAT 526	POLYMER ENGINEERING
	3
CME/MAT 527	METHODS OF POLYMER ANALYSIS
	3
CME/MAT 579	ENERGY MATERIALS
	3
MAT 501	PRINCIPLES OF MATERIALS I
	3
MAT 502	PRINCIPLES OF MATERIALS II
	3
MAT 504	TECHNIQUES OF MATERIALS
ANALYSIS	3
MAT 507	INTRODUCTION TO CERAMIC
MATERIALS	3
MAT 508	PRINCIPLES OF MATERIAL SELECTION
	3
MAT 513	ADVANCED MAGNETIC MATERIALS
	3
MAT 521	NONDESTRUCTIVE EVALUATION
	3
MAT 530	INTRO-ANALYTCL ELECTRON
MICROSCOPY	3
MAT 535	HIGH-TEMPERATURE MATERIALS
	3
MAT 541	EXPERMNTL MECHNCS-COMPOSITE
MATRLS	3
MAT 543	ANALYTCL MECHNCS-COMPOSITE
MATRLS	3
MAT 544	MECHANICS OF COMPOSITE
STRUCTURES	3
MAT 590	SELECTED READINGS IN MATERIALS
ENGR	3
MAT 595	SPECIAL PROBLEMS IN MATERIALS
ENGR	3
MAT 604	NANOSTRUCTURED MATERIALS
	3
MEE 312	ENGINEERING MATERIALS I
	3
MEE 505	THERMODYNAMICS OF SOLIDS
	3

Minor in Polymer Materials (PME)

This minor is open to all engineering majors. Coverage of polymers including thermosets and thermoplastics and composite materials in which polymers are used as constituents. Methods of polymer processing and polymer characterization are also included.



	Sem. Hrs.
<b>Polymer Materials</b>	<b>12</b>
CME/MAT 509 INTRODUCTION TO POLYMER SCIENCE	3
CME 510 or PHYSICAL PROPERTIES OF POLYMERS	3
MAT 510 HIGH PERFORM THERMOSTAT POLYMERS	3
Select two courses from:	6
CME 512/MAT 542 ADVANCED COMPOSITES	3
CME/MAT 527 METHODS OF POLYMER ANALYSIS	3
CME/MAT 528 CHEMICAL BEHAVIOR OF MATERIALS	3
MAT 540 COMPOSITE DESIGN	3
MAT 541 EXPERMNTL MECHNCS OF COMPSTE	3
MATRLS	
MAT 543 ANALYTCL MECHNCS OF COMPSTE	3
MATRLS	
MAT 544 MECHANICS OF COMPOSITE	3
STRUCTURES	

Courses (Collapse All Courses)

Code	Title	Sem. Hrs.
CME 101	INTRODUCTION TO CHEMICAL ENGINEERING	0 - 1
	Introduction to the chemical engineering faculty, facilities, and curriculum; survey of career opportunities in chemical engineering. Introduction to the University first-year experience.	
CME 198	RESEARCH AND INNOVATION LABORATORY	1 - 6
	Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.	
CME 200	PROFESSIONAL DEVELOPMENT SEMINAR	0
	Presentations on contemporary and professional engineering subjects by students, faculty, and engineers in active practice. The seminar addresses topics in key areas that complement traditional courses and prepare distinctive graduates, ready for life and work. Registration required for all sophomore students.	
CME 203	MATERIAL AND ENERGY BALANCES	3
	Introductory course on the application of mass and energy conservation laws to solve problems typically encountered in chemical process industries. <b>Prerequisite(s):</b> CHM 123; MTH 168. <b>Corequisite(s):</b> EGR 202.	
CME 281	CHEMICAL ENGINEERING COMPUTATIONS	3
	Development of computational skills and digital data acquisition with an emphasis on algorithm development and problem solving. Applications to problems typically encountered in chemical engineering. <b>Prerequisite(s):</b> CME 203.	
CME 298	RESEARCH AND INNOVATION LABORATORY	1 - 6
	Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.	
CME 306	CHEMICAL REACTION KINETICS AND ENGINEERING	3

Chemical kinetics, ideal reactor analysis and design, and heterogeneous catalysis.

**Prerequisite(s):** CME 311.

CME 311      CHEMICAL ENGINEERING THERMODYNAMICS      3  
Development of the fundamental principles of thermodynamics, particularly with respect to chemical engineering processes.  
**Prerequisite(s):** CME 203; MTH 218.

CME 324      TRANSPORT PHENOMENA I      3  
Viscosity, shell momentum balances, isothermal equations of change, thermal conductivity, shell energy balances, non-isothermal equations of change, diffusivity, concentration profiles.  
**Prerequisite(s):** CME 203, 281; MTH 219.  
**Corequisite(s):** CME 381.

CME 325      TRANSPORT PHENOMENA II      3  
Multidimensional transport, dimensionless parameters, turbulence, and numerical solution methods.  
**Prerequisite(s):** CME 324, 381.

CME 326L      TRANSPORT PHENOMENA LABORATORY      2  
Viscosity, conductivity, diffusion coefficient measurements, velocity, temperature, concentration profiles, engineering instrumentation, and experimental error analysis.  
**Prerequisite(s):** CME 324.  
**Corequisite(s):** CME 325.

CME 365      SEPARATION TECHNIQUES      3  
Equilibrium staged separations: distillation, extraction, absorption, evaporation and drying with an emphasis on distillation.  
**Prerequisite(s):** CME 311, 324.

CME 381      ADVANCED MATHEMATICS FOR CHEMICAL ENGINEERS      3  
Study of analytical and numerical techniques to support upper-level chemical engineering classes. Vector analysis, matrices, differential equations, numerical integration and differentiation, root finding, and curve fitting.  
**Prerequisite(s):** CME 281; MTH 219.

CME 398      RESEARCH AND INNOVATION LABORATORY      1 - 6  
Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.

CME 408      SEMINAR      0 - 1  
Presentation of lectures on contemporary chemical engineering subjects by students, faculty, and engineers in active practice. Registration required of senior students only.

CME 409      INTRODUCTION TO POLYMER ENGINEERING      3  
Introduction to the chemistry, structure, and properties of polymers; polymer synthesis and processing.  
**Prerequisite(s):** CHM 314; CME 311.

CME 410      PHYSICAL PROPERTIES OF POLYMERS      3  
Survey of high performance thermoset resins with focus on structural applications. The survey will include types of thermosets, chemistry, processing, properties, cost, suppliers, and applications. Characterization techniques and typical properties will also be reviewed. The course will also involve a fundamental discussion on cross-linked polymer structure-processing-property relationships, the glassy state, rubber elasticity, time-temperature superposition, and cure kinetics.  
**Prerequisite(s):** (CME 409; general chemistry; organic chemistry;

differential equations) or permission of instructor.

CME 412    ADVANCED COMPOSITES    3

Materials and processing. Comprehensive introduction to advanced fiber reinforced polymeric matrix composites. Constituent materials and composite processing will be emphasized with special emphasis placed on structure-property relationships, the role of matrix in composite processing, mechanical behavior, and laminate processing. Specific topics will include starting materials, material forms, processing, quality assurance, test methods, and mechanical behavior.

**Prerequisite(s):** (CME 409 or CME 509 or MAT 501) or permission of instructor.

CME 430    CHEMICAL ENGINEERING DESIGN I    3

Study of the principles of process development, plant design, and economics.

**Prerequisite(s):** CME 203.

CME 431    CHEMICAL ENGINEERING DESIGN II    3

Application of the principles of process development, plant design, and economics.

**Prerequisite(s):** CME 306, 365, 430, 465.

CME 432    CHEMICAL PRODUCT DESIGN    3

Application of the design process to products based on chemical technology. Coverage of the entire design process from initial identification of product needs, to the generation and selection of product ideas, and culminating in the manufacture of a new product.

CME 452    PROCESS CONTROL    3

Mathematical models, Laplace transform techniques, and process dynamics. Feedback control systems, hardware, and instrumentation. Introduction to frequency response, advanced techniques, and digital control systems.

**Prerequisite(s):** CME 381.

CME 453L    PROCESS CONTROL LABORATORY    2

Project-oriented study of process dynamics and control using computer-based data acquisition and control systems.

**Prerequisite(s):** (CME 452, 466L) or permission of instructor.

CME 465    FLUID FLOW AND HEAT TRANSFER PROCESSES    3

Fluid mechanics, transportation and metering of fluids, agitation and mixing, heat transfer and its applications.

**Prerequisite(s):** CME 311, 324.

CME 466L    CHEMICAL ENGINEERING UNIT OPERATIONS LABORATORY    2

Study of the equipment and utilization of various chemical engineering processes.

**Prerequisite(s):** CME 365.

**Corequisite(s):** CME 465.

CME 486    INTRODUCTION TO PETROLEUM ENGINEERING    3

Introduction to the fundamental concepts in petroleum engineering. Petroleum topics include overviews of areas such as petroleum geology, petroleum fluids and thermodynamics, drilling and completion, and production and multiphase flow. In addition this course will cover refinery operations.

CME 490    INTRODUCTION TO BIOENGINEERING    3

Overview of Biomedical Engineering, Transport Phenomena in Physiological Systems, Kinetic, and Reactor Modeling for Physiological Systems. Overview of Biochemical Engineering, Bioreactors, Bioseparation Processes.

**Prerequisite(s):** (CHM 420 or 451); CME 325, 365.

**Corequisite(s):** CME 306 or permission of instructor.

CME 491    BIOMEDICAL ENGINEERING    3

Introduction to the fundamental concepts in biomedical engineering with a special focus on chemical engineering applications. Biomedical topics include overviews of areas such as biomaterials, tissue engineering, biosensors and biomedical engineering technology.

**Prerequisite(s):** (BIO 151; (CHM 420 or 451); CME 324, 365) or permission of instructor.

CME 492 CHEMICAL SENSORS AND BIOSENSORS

3

Analysis performed with chemical sensors complement laboratory analyses and offer the potential for more rapid and on-line analyses in complex sample matrices. The demand for new chemical sensors, biosensors, and sensing concepts is rapidly increasing and associated with the growing need to understand and/or control complex chemical and biochemical processes or detect the presence of toxic chemical or biological agents.

**Prerequisite(s):** Permission of instructor.

CME 498 RESEARCH AND INNOVATION LABORATORY

1 - 6

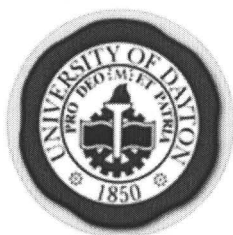
Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.

CME 499 SPECIAL PROBLEMS IN CHEMICAL ENGINEERING

1 - 6

Particular assignments to be arranged and approved by chairperson of the department.





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## College of Arts and Sciences

### (CHM) Chemistry (Collapse Description)

The B.A. program in chemistry provides a framework of scientific courses which serves as a preparation for a number of interdisciplinary professions. The traditional B.S. curriculum has been modified in the B.A. program, most notably in mathematics, physics, and advanced chemistry. The program is sufficiently flexible to afford a wide selection of courses in the humanities. Science courses may be chosen to provide a preparation for professions such as medicine, dentistry, optometry, veterinary medicine, biochemistry, education, and law, as well as for employment in many other areas which require a background in science.

The B.S. program in chemistry is approved by the American Chemical Society for the training of professional chemists. Students in the B.S. program in chemistry are required to conduct an original research project. Satisfaction of this requirement normally begins with enrollment in CHM 495 and selection of a research professor and project during the second term of the junior year. The research project, conducted during the entire senior year, normally requires two work periods of three to four hours each a week. The project culminates in the final term of the senior year with enrollment in CHM 498, the submission of an acceptable thesis, and the presentation of a seminar in CHM 497. Additional research work to a maximum total of six semester hours may be elected provided that the work extends beyond two semesters. Cooperative education students may substitute work experience for research with the prior approval of the department chairperson.

The B.S. program in biochemistry follows a curriculum which satisfies the needs of students who anticipate careers in the life sciences. A mark of distinction and rigor is that each student is required to conduct research, which normally includes a ten-week summer period following their junior year and culminates with the submission of a research thesis and the presentation of a seminar.

A minor in chemistry consists of twenty semester hours.

### Faculty

Mark B. Masthay, Chairperson  
 Professors Emeriti: Knachel, Singer  
 Professors: Fratini, R. Keil, Morrow  
 Associate Professors: Benin, Church, Johnson, Masthay, Swavey  
 Assistant Professors: Crosson, Lopper  
 Visiting Assistant Professor: Gardner  
 Lecturer: Trick

### Majors/Minors (Collapse All)

Major/Minor Name

Bachelor of Arts with a major in Chemistry (CHA)

	Sem. Hrs.
<b>Chemistry<sup>1</sup></b>	<b>36</b>
CHM 123-123L, 124-124L, 201-201L, (302 or (303 & 304)), 313-313L, 314-314L, 496	23-26
CHM electives (select courses from): <sup>2</sup>	10-13
CHM 317, 341, 404, 412, 415, 415L, 417, 418L, 420, 427, 451, 452, 462L, 490L, 498, 499	

Liberal Studies Curriculum

Humanities and Fine Arts

Philosophy and Religious Studies


[Search](#)
[Academic Information](#)
[General Information](#)

#### Explore by Department / Program:

Biology  
 Business Interdisciplinary Studies  
 Chemical and Materials Engineering  
 Chemistry

[Explore](#)

#### Explore by Major / Minor:

Chemical Engineering (CME)  
 Chemical Processing (CHP)  
 Chemistry (CHA)  
 Chemistry (CHM)

[Explore](#)

#### Explore by Courses:

Biology (BIO)  
 Business Interdisciplinary Studies (BAI)  
 Chemical and Materials Engineering (CME)  
 Chemistry (CHM)

[Explore](#)

History	6
Literature: English or Foreign Language	3
Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities	3-9
Social Sciences	12
Mathematics (excludes MTH 102, 204, 205)	8-9
Natural Sciences	8
PHY 201-201L, 202-202L	
Communication Competencies	0-9
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>124</b>

<sup>1</sup>Advanced placement is permitted.

<sup>2</sup>May substitute two upper level courses from other science departments with permission of chairperson.

Bachelor of Science with a major in Biochemistry (BCM)

	Sem. Hrs.
<b>Chemistry<sup>1</sup></b>	<b>37</b>
Year 1	8
CHM 123-123L, 124-124L	
Year 2	12
CHM 201-201L, 313-313L, 314-314L	
Year 3	17
CHM 303-303L, 304, 451, 452, 462L, 495, 498	
Year 4	0
CHM 496, 497	
Biology	11
Year 1	7
BIO 151, 152-152L	
Year 2	4
BIO elective and laboratory	
Breadth Requirement	
Natural Sciences	17
PHY 206, 207, 210L	7
Select courses from:	10
BIO 312, 314, 403, 404, 411, 440, 462, 466	
CHM 404, 412, 415, 415L, 417, 418L, 427, 499	
Mathematics, Computer Science	15
CPS 132	3
MTH 168, 169, 218	12
Foreign Language	6-8
Social and Behavioral Sciences	6
Humanities	9
Philosophy and Religious Studies	12
Communication Competencies	0-9
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>120-127</b>

<sup>1</sup>Advanced placement is permitted.

## Bachelor of Science with a major in Chemistry (CHM)

	Sem. Hrs.
<b>Chemistry<sup>1</sup></b>	<b>49-52</b>
Year 1	8
CHM 123-123L, 124-124L	
Year 2	12
CHM 201-201L, 313-313L, 314-314L	
Year 3	13
CHM 303-303L, 304-304L, 317, 417, 418L, 495	
Year 4	10-13
CHM 415-415L, (420 or (451 & 452)), 496, 497, 498	
CHM electives (select courses from:) <sup>2</sup>	6
CHM 404, 412, 427, 462L, 490L, 499	

## Breadth Requirement

Mathematics, Computer Science <sup>3</sup>	15
CPS 132	3
MTH 168, 169, 218	12
Foreign Language	6-8
Social and Behavioral Sciences	6
Humanities	9
Philosophy and Religious Studies	12
Communication Competencies	0-9
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>120</b>

<sup>1</sup>Advanced placement is permitted.<sup>2</sup>May substitute one approved science course from another department.<sup>3</sup>Should be completed during the first two years.

## Minor in Chemistry (CHM)

	Sem. Hrs.
<b>Chemistry</b>	<b>20</b>
CHM 123-123L, 124-124L, (302 or 303)	11
Nine additional semester hours (300- or 400-level, excludes CHM 490L) <sup>1</sup>	9

<sup>1</sup>In consultation with the chairperson.**Courses (Collapse All Courses)**

Code	Title	Sem. Hrs.
CHM 115	COLLEGE PREPARATORY CHEMISTRY	3
A one-term course for students desiring to enter a science or engineering program but whose background is insufficient for CHM 123-124. Unacceptable for credit toward chemistry requirements in any chemistry program.		
CHM 115L	COLLEGE PREPARATORY CHEMISTRY LABORATORY	1
Course to accompany CHM 115 or to be elected by students in CHM 200 who lack previous chemistry laboratory experience. One three-hour laboratory each week.		
CHM 123	GENERAL CHEMISTRY	3

Comprehensive treatment of the fundamentals of general chemistry.

**Prerequisite(s):** One year of high school chemistry or equivalent.

CHM 123L GENERAL CHEMISTRY LABORATORY 1

Laboratory course to complement CHM 123. One three-hour laboratory session each week.

**Corequisite(s):** CHM 123.

CHM 124 GENERAL CHEMISTRY 3

Comprehensive treatment of the fundamentals of general chemistry.

**Prerequisite(s):** CHM 123.

CHM 124L GENERAL CHEMISTRY LABORATORY 1

Laboratory course to complement CHM 124. One three-hour laboratory session each week.

**Prerequisite(s):** CHM 123L

**Corequisite(s):** CHM 124.

CHM 200 CHEMISTRY AND SOCIETY 3

A course for nonscience majors. The application of chemical principles to the examination of issues such as environmental quality, disease, hunger, synthetic materials, and law enforcement. Depending upon background and experience, a student needing a laboratory course may enroll in either CHM 115L or CHM 123L.

**Prerequisite(s):** One year of high school chemistry or equivalent.

CHM 201 QUANTITATIVE ANALYSIS 3

Application of the principles of chemical equilibrium to the theory and techniques of gravimetric, volumetric, spectrophotometric, and electroanalytical methods of chemical analysis.

**Prerequisite(s):** CHM 124, 124L.

CHM 201L QUANTITATIVE ANALYSIS LABORATORY 1

Course to accompany CHM 201. One three-hour laboratory period each week.

CHM 302 PHYSICAL CHEMISTRY 3

Essential elements of thermodynamics, chemical kinetics, equilibria, and electrochemistry for those with a primary interest in the life sciences. For B.A. chemistry majors and premedical, pre dental, and biology majors.

**Prerequisite(s):** CHM 124.

CHM 303 PHYSICAL CHEMISTRY 3

Fundamentals of thermodynamics, chemical kinetics, electrochemistry, and spectroscopy with a mathematics format. For B.S. chemistry and biochemistry majors and chemical engineers.

**Prerequisite(s):** CHM 201 or equivalent.

**Corequisite(s):** MTH 218.

CHM 303L PHYSICAL CHEMISTRY LABORATORY 1

Course to accompany CHM 303. One three-hour laboratory each week.

**Prerequisite(s):** MTH 218.

CHM 304 PHYSICAL CHEMISTRY 3

Fundamentals of thermodynamics, chemical kinetics, electrochemistry, and spectroscopy with a mathematics format. For B.S. chemistry and biochemistry majors and chemical engineers.

CHM 304L PHYSICAL CHEMISTRY LABORATORY 1

Course to accompany CHM 304. One three-hour laboratory each week.

**Corequisite(s):** MTH 218.

CHM 313 ORGANIC CHEMISTRY 3

Major topics in organic chemistry including synthesis, mechanisms, stereochemistry, and spectroscopy. Required of all chemistry majors and students in the life sciences.

**Prerequisite(s):** CHM 124.



CHM 313L	ORGANIC CHEMISTRY LABORATORY	1
Common separation, purification, and analytical techniques including chromatography and spectroscopy. One three-hour laboratory each week. <b>Corequisite(s):</b> CHM 313.		
CHM 314	ORGANIC CHEMISTRY	3
Major topics in organic chemistry including synthesis, mechanisms, stereochemistry, and spectroscopy. Required of all chemistry majors and students in the life sciences. <b>Prerequisite(s):</b> CHM 313.		
CHM 314L	ORGANIC CHEMISTRY LABORATORY	1
Synthesis and characterization of organic materials utilizing skills from CHM 313L. One three-hour laboratory each week. <b>Prerequisite(s):</b> CHM 313L. <b>Corequisite(s):</b> CHM 314.		
CHM 317	SPECTROSCOPIC IDENTIFICATION OF ORGANIC COMPOUNDS	1
The use of nuclear magnetic resonance, infrared, and mass spectrometry in elucidating structures. Emphasis on interpretation and integration of spectral data in problem solving. <b>Prerequisite(s):</b> (CHM 314, 314L) or equivalent.		
CHM 341	ENVIRONMENTAL CHEMISTRY	3
An introduction to the chemical processes in the environment. Topics include chemical equilibrium in aqueous solution, reaction mechanisms as applied to atmospheric chemistry, and analytical methods commonly applied to environmental samples. <b>Prerequisite(s):</b> CHM 314 or permission of instructor.		
CHM 341L	ENVIRONMENTAL CHEMISTRY LABORATORY	1
A laboratory course to accompany CHM 341. <b>Corequisite(s):</b> CHM 341.		
CHM 404	SPECIAL TOPICS IN PHYSICAL CHEMISTRY	3
Thorough treatment of topics such as electrochemistry, macromolecules, photochemistry, or spectroscopy. May be repeated as topics change. <b>Prerequisite(s):</b> CHM 302 or 303.		
CHM 412	INTERMEDIATE ORGANIC CHEMISTRY	3
Modern theory and practice of organic chemistry. May include structure-reactivity relationships, reaction mechanism, and synthetic topics not normally treated in introductory courses. <b>Prerequisite(s):</b> CHM 302 or equivalent; CHM 313, 314; senior standing.		
CHM 415	ANALYTICAL CHEMISTRY	2
Chemical analysis based on modern instrumentation. Chromatographic, electrochemical, and spectroscopic methods. <b>Prerequisite(s):</b> CHM 201, 201L; (CHM 302 or 304).		
CHM 415L	ANALYTICAL CHEMISTRY LABORATORY	2
Course to accompany CHM 415. Two three-hour laboratory sessions each week. <b>Prerequisite(s):</b> CHM 201L; CHM 302 or equivalent.		
CHM 417	INORGANIC CHEMISTRY	3
An advanced course in modern inorganic chemistry. Atomic structure, principles of bonding and structure, acid-base chemistry, periodicity, coordination compounds, nonaqueous solvents, electrochemistry, molecular symmetry, organometallic compounds, and the chemistry of selected representative elements. <b>Prerequisite(s):</b> CHM 314. <b>Corequisite(s):</b> CHM 302 or 304.		
CHM 418L	INORGANIC CHEMISTRY LABORATORY	1

Laboratory course dealing with the synthesis and characterization of inorganic and organometallic compounds. Topics include vacuum and inert atmosphere techniques, separation and purification, spectroscopic characterization, X-ray diffraction, magnetic moment, and conductance measurements.

**Prerequisite(s):** CHM 201L, 314L.

**Corequisite(s):** CHM 417.

CHM 420 BIOCHEMISTRY

3

The fundamental aspects of the chemistry and biochemistry of carbohydrates, lipids, proteins, and nucleic acids. Enzymology, protein purification, bioenergetics, metabolism of carbohydrates, lipids, amino acids, nucleotides and nucleic acids, elementary molecular biology, and control processes are described. Acceptable preparation for medical school.

**Prerequisite(s):** CHM 314.

CHM 426 BIOSYNTHETIC ORGANIC CHEMISTRY

3

Mechanistic fundamentals of the biosynthesis and transformation of organic natural products, with special emphasis on medicinal compounds, toxins, pheromones and other secondary metabolite structures.

**Prerequisite(s):** (CHM 314, 314L) or equivalent.

CHM 427 MEDICINAL CHEMISTRY

3

The chemical mechanisms of action of the major drug classes will be surveyed with particular emphasis on the facets of organic chemistry that control drug-receptor interactions, metabolism and mechanisms of toxicity and resistance. First term.

**Prerequisite(s):** CHM 314; (CHM 420 or 451).

CHM 451 GENERAL BIOCHEMISTRY I

3

Discussion of the chemistry and biochemistry of carbohydrates, amino acids, proteins, and nucleic acids, including health-science and methodologic aspects. Descriptions of enzymology, protein purification, and carbohydrate metabolism related to such topics as bioenergetics, membranes, and disease processes. Recommended for students desiring entry into graduate and professional schools.

**Prerequisite(s):** CHM 201, 314.

CHM 452 GENERAL BIOCHEMISTRY II

3

Discussion of selected topics in bioenergetics, and metabolism of lipids, amino acids, porphyrins, nucleic acids, and proteins. Current aspects of nutrition, biochemical genetics, endocrinology, regulation, and genetic engineering addressed and related to health-science topics as time permits. Suitable preparation for medical school.

**Prerequisite(s):** CHM 451.

CHM 462L BIOCHEMISTRY LABORATORY

1

Laboratory course to accompany biochemistry lecture courses. Spectrophotometry, pH and dissociation, enzymologic methodology and analytical techniques, chromatographic techniques.

**Corequisite(s):** CHM 420 or 451.

CHM 477 HONORS THESIS PROJECT

3

First of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.

**Prerequisite(s):** Approval of University Honors Program.

CHM 478 HONORS THESIS PROJECT

3

Second of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic

may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.

**Prerequisite(s):** Approved 477 and approval of University Honors Program.

CHM 490L SCIENTIFIC GLASSBLOWING 1

Theory and practice of glass working. Under the supervision of a professional glassblower, students learn to make several standard seals and fabricate pieces of glass apparatus. Enrollment limited. One three-hour laboratory each week. Grading Option Two.

**Prerequisite(s):** Permission of department chairperson.

CHM 495 INTRODUCTION TO RESEARCH SEMINAR 0

Research topics presented by visiting scientists and faculty, and the results of thesis research by senior students. Required of all junior chemistry and biochemistry majors in the B.S. programs. Grading Option two.

CHM 496 PROFESSIONAL PRACTICES SEMINAR 0

After discussions of the chemical literature and information retrieval, resumes, graduate education, and career opportunities, students present technical talks on topics with social, ethical, or historical implications. Required of all chemistry and biochemistry majors, both B.S. and B.A.

CHM 497 RESEARCH SEMINAR 0

A series of seminars as described under CHM 495. Required of all senior chemistry and biochemistry majors in the B.S. programs.

CHM 498 RESEARCH AND THESIS 3

All students in the B.S. programs including co-op students are required to enroll for a minimum of three semester hours in a research course (CHM 498). Students may take additional research semester hours (CHM 499) if the work extends for more than two semesters. Successful completion of research courses requires the submission of a typewritten thesis and the presentation of a seminar. With the prior approval of the department chairperson, B.S. co-op students may substitute work experience for research.

**Prerequisite(s):** Permission of department chairperson.

CHM 499 RESEARCH AND THESIS 1 - 3

All students in the B.S. programs including co-op students are required to enroll for a minimum of three semester hours in a research course (CHM 498). Students may take additional research semester hours (CHM 499) if the work extends for more than two semesters. Successful completion of research courses requires the submission of a typewritten thesis and the presentation of a seminar. With the prior approval of the department chairperson, B.S. co-op students may substitute work experience for research.

**Prerequisite(s):** CHM 498; permission of department chairperson.





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## School of Engineering

### Civil and Environmental Engineering and Engineering Mechanics (Collapse Description)

The Department of Civil and Environmental Engineering and Engineering Mechanics offers a broad-based curriculum leading to a Bachelor of Civil Engineering (BCE) degree. The BCE program offers sufficient elective courses to obtain a concentration in construction, environmental engineering, structures, water resources, geotechnical or transportation.

The mission of the program is to graduate broadly educated, technically competent individuals prepared for professional careers or for advanced studies.

Within the first several years following completion of the program, University of Dayton Bachelor of Civil Engineering graduates are expected to meet the following program educational objectives:

- have successful careers in civil engineering or non-traditional professions, or be completing graduate studies;
- conduct professional and personal endeavors in a responsible and ethical manner;
- accept leadership and service roles in their profession and community;
- be committed to continual professional and personal growth through a process of life-long learning.

Civil engineering is the profession in which knowledge of the mathematical and physical sciences gained by study, experience, and practice is applied with judgment to develop ways to economically utilize the materials and forces of nature in improving and protecting the environment and providing structures and facilities for community, industry, and transportation for the progressive well-being of humanity.

Civil engineers, leading users of high technology in wide-ranging applications in both the public and the private sectors, are essential to the continued improvement of society. Civil engineers can enter traditional fields such as construction, bridge and building design and analysis, highway design and traffic control, water treatment and distribution, environmental engineering, water resources, and geotechnics. Their broad education however, also prepares them for materials engineering, engineering management, and the aerospace, power, and automotive industries. Civil engineering has applications in conceptual and detail design, field operations, computers, and consulting.

Before enrolling in any engineering course required by the Civil Engineering Program, a grade of C- or better must be earned in all of the prerequisites courses for students majoring in civil engineering. Also, courses designated CEE or EGM may be repeated only once by students majoring in civil engineering.

Members of the student chapters of the American Society of Civil Engineers (ASCE), Chi Epsilon, Institute of Transportation Engineers (ITE), and National Society of Professional Engineers (NSPE) have the opportunity to meet regularly with practicing engineers in the Dayton community.

#### Faculty

Faris A. Malhas, Chairperson  
 Professors Emeriti: Bogner, Payne, Phillips, Whitney  
 Distinguished Service Professor: Ryckman  
 Professors: Brockman, Malhas, J. Saliba  
 Assistant Professors: Crosson, Donaldson, Eustace, Taylor  
 Lecturers: Alakkad, Chase  
 Adjunct Assistant Professor: McCrate

#### Majors/Minors (Collapse All)



Search Academic Information General Information

#### Explore by Department / Program:

Business Interdisciplinary Studies  
 Chemical and Materials Engineering  
 Chemistry  
 Civil and Environmental Engineering and ...

Explore

#### Explore by Major / Minor:

Visual Arts Education (EAR)  
 Visual Communication Design (VCA)  
 Visual Communication Design (VCD)  
 Water Resources Engineering (WRE)

Explore

#### Explore by Courses:

Chemical and Materials Engineering (CME)  
 Chemistry (CHM)  
 Chinese (CHI)  
 Civil and Environmental Engineering... (CEE)

Explore

## Major/Minor Name

Bachelor of Civil Engineering (CEE)

			Sem. Hrs.
First-Year			32-35
CEE 101	SEMINAR		0
CHM 123-123L	GENERAL CHEMISTRY (CHM 123) GENERAL CHEMISTRY LABORATORY (CHM 123L)		4
EGR 100	ENRICHMENT WORKSHOP		0 - 3
EGR 103	ENGINEERING INNOVATION		2
EGR 201	ENGINEERING MECHANICS		3
ENG 101-102 or 114 or 198 <sup>1</sup>	COLLEGE COMPOSITION I (ENG 101) COLLEGE COMPOSITION II (ENG 102) FRESHMAN WRITING SEMINAR (ENG 114) ENGLISH SCHOLARS' SEMINAR (ENG 198)		3 - 6
HST 103 or 198	THE WEST AND THE WORLD (HST 103) HISTORY SCHOLARS' SEMINAR (HST 198)		3
MTH 168	ANALYTIC GEOMETRY AND CALCULUS I		4
MTH 169	ANALYTIC GEOMETRY AND CALCULUS II		4
PHL 103	INTRODUCTION TO PHILOSOPHY		3
PHY 206	GENERAL PHYSICS I - MECHANICS		3
REL 103	INTRODUCTION TO RELIGION		3

## Sophomore-Year

First-Term			17
CEE 200	PROFESSIONAL DEVELOPMENT SEMINAR		0
CEE 213	SURVEYING		2
CEE 221L	CIVIL COMPUTATION LABORATORY		2
CHM 124	GENERAL CHEMISTRY		3
EGM 202	DYNAMICS		3
MTH 218	ANALYTIC GEOMETRY AND CALCULUS III		4
PHY 207	GENERAL PHYSICS II - ELECTRICITY AND MAGNETISM		3
Second-Term			17
CEE 200	PROFESSIONAL DEVELOPMENT SEMINAR		0
CEE 214	HIGHWAY GEOMETRICS		2
EGM 303	MECHANICS II		3
EGR 202	ENGINEERING THERMODYNAMICS		3
GEO 218	ENGINEERING GEOLOGY		3
MTH 219	APPLIED DIFFERENTIAL EQUATIONS		3
General Education elective <sup>2</sup>			3
Third-Term			
CEE 215L	SURVEYING FIELD PRACTICE		3

## Junior-Year

First-Term			17
CEE 300	SEMINAR		0
CEE 313-313L	HYDRAULICS (CEE 313) HYDRAULICS LABORATORY (CEE 313L)		4
CEE 316	ANALYSIS OF STRUCTURES I		3
CEE 434-434L	WATER & WASTEWATER ENGINEERING (CEE 434) WATER & WASTEWATER ENGINEERING LABORATORY (CEE 434L)		4
EGR 203	ELECTRICAL AND ELECTRONIC CIRCUITS		3
--- PHL 316 or REL 369	ENGINEERING ETHICS (PHL 316) CHRISTIAN ETHICS AND ENGINEERING (REL 369)		3
Second-Term			17
CEE 300	SEMINAR		0
CEE 311-311L	CIVIL ENGINEERING MATERIALS (CEE 311) CIVIL ENGINEERING MATERIALS LABORATORY (CEE 311L)		3

CEE 312-312L	GEOTECHNICAL ENGINEERING (CEE 312) GEOTECHNICAL ENGINEERING LABORATORY (CEE 312L)	4
CEE 333	WATER RESOURCES ENGINEERING	3
CEE 403	TRANSPORTATION ENGINEERING	3
CEE 411	DESIGN OF STEEL STRUCTURES	3
CMM 110	GROUP DECISION MAKING	1

#### Senior-Year

First-Term		16
CEE 400	SEMINAR	0
CEE 412	DESIGN OF CONCRETE STRUCTURES	3
CEE 425	CIVIL ENGINEERING SYSTEMS	3
CMM 111 or 112	INFORMATIVE PUBLIC SPEAKING (CMM 111) PERSUASIVE PUBLIC SPEAKING (CMM 112)	1
CEE electives <sup>3,4</sup>		6
Technical elective or CEE elective <sup>3,4</sup>		3
Second-Term		16
CEE 400	SEMINAR	0
CEE 450 <sup>5</sup>	CIVIL ENGINEERING DESIGN	3
CMM 113	INTERVIEWING	1
ECO 300	PRINCIPLES OF ECONOMICS	3
HST 343	HISTORY OF CIVIL ENGINEERING	3
CEE elective <sup>3,4</sup>		3
Technical elective or CEE elective <sup>3,4</sup>		3

<sup>1</sup>Three semester hours waived if accepted into ENG 198 or ENG 114.

<sup>2</sup>See General Education Requirement, Chapter V. Some General Education requirements are specific in the program; (e.g. GEO 218); others are to be chosen from the listing of approved courses. Consult advisor.

<sup>3</sup>Select from list approved by the Department of Civil and Environmental Engineering and Engineering Mechanics.

<sup>4</sup>May be used to concentrate studies in the areas of construction, environmental, structures, soils, transportation, and water resources engineering.

<sup>5</sup>Admittance into CEE 450 requires successful completion of all required engineering courses with an average academic unit GPA of no less than 2.0, or the approval of the chair.

#### Minor in Engineering Mechanics (EME)

This minor is open to all engineering majors. The program provides a broad treatment of engineering mechanics including theoretical, numerical, and experimental topics.

<b>Engineering Mechanics</b>	<b>Sem. Hrs.</b>	<b>12</b>
Select four courses from: <sup>1</sup>		12
EGM 303	MECHANICS II	3
EGM 445	FINITE ELEMENT APPLICATIONS	3
CEE/MAT 540	COMPOSITE DESIGN	3
CEE/MAT 541	EXPERMNTL MECHNCS OF COMPSTE MATRLS	3
CEE/MAT 543	ANLYTCL MECHNCS OF COMPOSITE MATRLS	3
CEE/MAT 544	MECHANICS OF COMPOSITE STRUCTURES	3
EGM 503	INTRODUCTION TO CONTINUUM MECHANICS	3
EGM 511	EXPERIMENTAL STRESS ANALYSIS	3
EGM 533	THEORY OF ELASTICITY	3

EGM 540	COMPOSITE DESIGN	3
EGM 546	FINITE ELEMENT ANALYSIS I	3
MEE 504	FUNDAMENTALS OF FLUID MECHANICS	3

<sup>1</sup>Courses selected may not be those already required for student's major.

Minor in Environmental Engineering (EVE)

This minor is open to all non-civil engineering majors. The program defines contemporary problems of pollution and identifies the technological approaches necessary to preserve the quality of our environment.

<b>Environmental Engineering</b>		Sem. Hrs.
		<b>12</b>
Select four courses from: <sup>1</sup>		12
CEE 390 <sup>2</sup>	ENVIRONMENTAL POLLUTION CONTROL	3
CEE 434	WATER & WASTEWATER ENGINEERING	3
CHIM 341	ENVIRONMENTAL CHEMISTRY	3
CEE 562	PHYS & CHEM WATER & WASTEWTR TREAT	3
CEE/CME 563	HAZARDOUS WASTE ENGINEERING	3
CEE 564	SOLID WASTE ENGINEERING	3
CEE/CME 574 I	FUND OF AIR POLLUTION ENGINEERING	3
CEE/CME 575 II	FUND OF AIR POLLUTION ENGINEERING	3
CEE/CME 576	ENVIRONMNTL ENGR SEPARATN PROCESSES	3

<sup>1</sup>Courses selected may not be those already required for student's major. It is recommended the minor include one course pertaining to water, air, and solid,  
<sup>2</sup>Not permissible for CME students.

Minor in Structures (STR)

This minor is open to all non-civil engineering majors. The program provides a broad coverage of general concepts of structural design as applied to buildings, mechanical systems, and machinery.

<b>Structures</b>		Sem. Hrs.
		<b>12</b>
Select four courses from:		12
CEE 311L	CIVIL ENGINEERING MATERIALS LABORATORY	1
CEE 316	ANALYSIS OF STRUCTURES I	3
CEE 411	DESIGN OF STEEL STRUCTURES	3
CEE 412	DESIGN OF CONCRETE STRUCTURES	3
CEE 500	ADVANCED STRUCTURAL ANALYSIS	3
CEE 501	STRUCTURAL ANALYSIS BY COMPUTERS	3
CEE 502	PRESTRESSED CONCRETE	3
CEE 504	STRUCTURAL DYNAMICS	3
CEE 505	PLASTIC DESIGN IN STEEL	3
CEE 507	MASONRY DESIGN	3
CEE 508	DESIGN OF TIMBER STRUCTURES	3
CEE 524	FOUNDATION ENGINEERING	3
CEE 540	COMPOSITE DESIGN	3

Minor in Transportation Engineering (TRE)

This minor is open to all non-civil engineering majors. The program provides broad coverage in the planning, design, operations, and management of the transportation system.

	Sem. Hrs.
<b>Transportation Engineering</b>	<b>12</b>
Select four courses from: <sup>1</sup>	12
CEE 403 TRANSPORTATION ENGINEERING	3
CEE 515 PAVEMENT ENGINEERING	3
CEE 550 HIGHWAY GEOMETRIC DESIGN	3
CEE 551 TRAFFIC ENGINEERING	3
CEE 552 INTELLIGENT TRANSPORTATION SYSTEMS	3
CEE 558 TRAFFIC ENGINEERING RESEARCH	3
CEE 595 SPECIAL PROBLEMS IN CIVIL ENGINEERING	3

<sup>1</sup>Courses selected may not be those already required for student's major.

#### Minor in Water Resources Engineering (WRE)

This minor is open to all non-civil engineering majors. The program provides broad coverage to the general concepts used in water resources engineering including hydraulics and hydrology issues within economic, optimization, operation, and management frameworks.

	Sem. Hrs.
<b>Water Resources Engineering</b>	<b>12</b>
Select four courses from: <sup>1</sup>	12
CEE 313 HYDRAULICS	3
CEE 333 WATER RESOURCES ENGINEERING	3
CEE 580 HYDROLOGY AND SEEPAGE	3
CEE 582 ADVANCED HYDRAULICS	3
CEE 584 OPEN CHANNEL FLOW	3
CEE 595 SPECIAL PROBLEMS IN CIVIL ENGINEERING	3

<sup>1</sup>Courses selected may not be those already required for student's major.

#### Courses (Collapse All Courses)

Code	Title	Sem. Hrs.
CEE 101	SEMINAR	0
Introduction to the civil engineering faculty, facilities, and curriculum; to the career opportunities offered by the civil engineering profession; and to the areas of specialization within civil engineering.		
CEE 198	RESEARCH AND INNOVATION LABORATORY	1 - 6
Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.		
CEE 200	PROFESSIONAL DEVELOPMENT SEMINAR	0
Presentations on contemporary and professional engineering subjects by students, faculty, and engineers in active practice. The seminar addresses topics in key areas that complement traditional courses and prepare distinctive graduates, ready for life and work. Registration required for all sophomore students.		



CEE 213	SURVEYING	2
Theory of measurements, computation, and instrumentation. Boundary and construction surveys, triangulation, and level net adjustments. First term, each year. <b>Corequisite(s):</b> MTH 168.		
CEE 214	HIGHWAY GEOMETRICS	2
Study of circular and spiral curves, vertical curves, grade lines, earthwork and mass diagram, slope and grade stakes, and contour grading. Second term, each year. <b>Prerequisite(s):</b> CEE 213.		
CEE 215L	SURVEYING FIELD PRACTICE	3
Field work and computation in topography, highway surveying, triangulation, level net, celestial observations, evaluation of errors, and preparation of plans. Five eight-hour days a week for three weeks. Summer, each year. <b>Prerequisite(s):</b> CEE 214.		
CEE 221L	CIVIL COMPUTATION LABORATORY	2
Introduction to commonly-used software in civil engineering profession. Emphasis on the use of spreadsheets to solve civil engineering problems. Introduction to computer aided drawing and design and the use of popular CADD packages in the civil engineering profession.		
CEE 298	RESEARCH AND INNOVATION LABORATORY	1 - 6
Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.		
CEE 300	SEMINAR	0
Practice in the presentation and discussion of papers; lectures by staff and prominent engineers. Attendance required of all civil engineering juniors.		
CEE 311	CIVIL ENGINEERING MATERIALS	2
Physical and mechanical properties of construction materials; Portland cement concrete, bituminous materials, wood, ferrous and non-ferrous metals, masonry units; proportioning of concrete mixtures including admixtures. <b>Prerequisite(s):</b> EGM 303. <b>Corequisite(s):</b> CEE 311L.		
CEE 311L	CIVIL ENGINEERING MATERIALS LABORATORY	1
Laboratory experiments in the physical and mechanical properties of construction materials; Portland cement concrete, bituminous materials, wood, ferrous and non-ferrous metals, and masonry units; proportioning of concrete mixtures including admixtures. <b>Prerequisite(s):</b> EGM 303. <b>Corequisite(s):</b> CEE 311.		
CEE 312	GEOTECHNICAL ENGINEERING	3
Principles of soil structures, classification, capillarity, permeability, flow nets, shear strength, consolidation, stress analysis, slope stability, lateral pressure, bearing capacity, and piles. Second term, each year. <b>Prerequisite(s):</b> CEE 313, 313L; EGM 303; GEO 218. <b>Corequisite(s):</b> CEE 312L.		
CEE 312L	GEOTECHNICAL ENGINEERING LABORATORY	1
Laboratory tests to evaluate and identify soil properties for engineering purposes. Design problems are also included. Second term, each year. <b>Corequisite(s):</b> CEE 312.		
CEE 313	HYDRAULICS	3

Basic principles of fluid mechanics in closed conduits and open channels. Principles include fluid statics, conservation of mass, conservation of momentum, conservation of energy, and fluid dynamics. Presentation of fluid mechanics principles through the solution of practical problems and a comprehensive semester project. First term, each year.

**Prerequisite(s):** EGM 202.

**Corequisite(s):** CEE 313L.

CEE 313L HYDRAULICS LABORATORY 1

Laboratory experiments and problems associated with CEE 313. First term, each year.

**Corequisite(s):** CEE 313.

CEE 316 ANALYSIS OF STRUCTURES I 3

Elastic analysis of structures; deflection, moment-area theorems; conjugate-beam; virtual work influence lines; analysis of indeterminate structures using force methods; theories of failure, stiffness matrices, and use of software to analyze structures. First term, each year.

**Prerequisite(s):** EGM 303.

CEE 333 WATER RESOURCES ENGINEERING 3

Integrated study of the principles of water movement and management. Focus areas include hydrology, water distribution, storm water management, and waste water collection.

**Prerequisite(s):** CEE 313, 313L.

CEE 390 ENVIRONMENTAL POLLUTION CONTROL 3

Study of environmental pollution problems relating to air, water, and land resources. Causes and effects of pollution technology for solving problems. Legal and political considerations. For juniors and seniors other than civil engineering students. Credit may not be applied toward civil engineering degree.

**Prerequisite(s):** Some knowledge of chemistry.

CEE 398 RESEARCH AND INNOVATION LABORATORY 1 - 6

Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.

CEE 400 SEMINAR 0

Practice in the presentation and discussion of papers; lectures by staff and prominent engineers. Attendance required of all civil engineering seniors.

CEE 403 TRANSPORTATION ENGINEERING 3

Fundamentals of transportation engineering, including design, construction, maintenance, and economics of transportation facilities. Design of pavement structures and drainage systems.

**Prerequisite(s):** CEE 214.

CEE 411 DESIGN OF STEEL STRUCTURES 3

Design and behavior of structural steel connections, columns, beams, and beams subjected to tension, compression, bending, shear, torsion, and composite action.

**Prerequisite(s):** CEE 316.

CEE 412 DESIGN OF CONCRETE STRUCTURES 3

Design and behavior of reinforced concrete slabs, beams, columns, walls, and footings subjected to tension, compression, bending, shear, and torsion.

**Prerequisite(s):** CEE 311, 316.

CEE 420 ENGINEERING ECONOMICS 1

Basic principles and techniques of economic analysis of engineering projects.

**Prerequisite(s):** MTH 169.

CEE 421 CONSTRUCTION ENGINEERING 3  
Organization, planning, and control of construction projects, including a study of the use of machinery, economics of equipment, methods, materials, estimates, cost controls, and fundamentals of CPM and PERT contracts and bonds and legal aspects of contracting. Departmental elective.

CEE 422 DESIGN AND CONSTRUCTION PROJECT MANAGEMENT 3  
Fundamentals of project management as they relate to the design and construction professional, and the application of project management techniques to the design and construction of major projects. Departmental elective.

CEE 425 CIVIL ENGINEERING SYSTEMS 3  
Analysis and evaluation of civil engineering systems using operations research tools including systems modeling, optimization and probability, and statistics. Civil engineering systems will also be examined from an economic perspective.  
**Prerequisite(s):** Junior or senior status.

CEE 434 WATER & WASTEWATER ENGINEERING 3  
Problems of water pollution; development and design of public water supply and waste water treatment systems; legal, political, ethical, and moral considerations. First term, each year.  
**Prerequisite(s):** CHM 124.  
**Corequisite(s):** CEE 434L.

CEE 434L WATER & WASTEWATER ENGINEERING LABORATORY 1  
Laboratory exercises, demonstrations, and design problems associated with water and wastewater engineering.  
**Corequisite(s):** CEE 434.

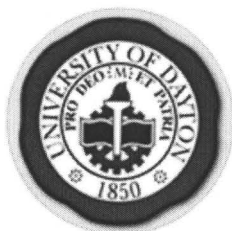
CEE 450 CIVIL ENGINEERING DESIGN 3  
Group design of complete projects, drawing on the knowledge acquired in a spectrum of civil engineering subjects.  
**Prerequisite(s):** CEE 312, 333, 403, 411, 412, 434.

CEE 463 HAZARDOUS WASTE ENGINEERING 3  
The fundamental principles of the design and operation of hazardous waste control and hazardous substances remediation processes. Hazardous waste regulations, risk assessment, and management. Department Elective.  
**Prerequisite(s):** CHM 124.

CEE 498 RESEARCH AND INNOVATION LABORATORY 1 - 6  
Students participate in (1) selection and design, (2) investigation and data collection, (3) analysis and (4) presentation of a research project. Research can include, but is not limited to, developing an experiment, collecting and analyzing data, surveying and evaluating literature, developing new tools and techniques including software, and surveying, brainstorming and evaluating engineering solutions and engineering designs. Proposals from teams of students will be considered.

CEE 499 SPECIAL PROBLEMS IN CIVIL ENGINEERING 1 - 6  
Particular assignments to be arranged and approved by chairperson of the department. Departmental elective.





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## College of Arts and Sciences

### (CMM) Communication (Collapse Description)

The course requirement for communication majors is thirty-nine semester hours. Teacher licensure through the E11A program is an option for communication majors. Consult department chairperson for details.

A minor in communication consists of fifteen semester hours.

A minor in political journalism is available for political science majors. The political journalism minor consists of eighteen semester hours.

The department also offers a Bachelor of Arts with a major in theatre. See THR.

### Faculty

Jonathan A. Hess, Chairperson  
 Professors Emeriti: Blatt, Gilvary, Harwood, Morlan, Rang, Wolff  
 Professors: Cusella, Hess, Lain, Robinson, Skill, Thompson  
 Associate Professors: Anderson, Griffin, Scantlin, Wallace, Watters, Yoder  
 Assistant Professors: Dunlevy, Han, Langhorne, Taylor,  
 Media Executive in Residence: Walters  
 Lecturers: Angel, Beaudard-Shinkle, Combs, Flynn, Oh, Parsons

### Majors/Minors (Collapse All)

#### Major/Minor Name

Bachelor of Arts with a major in Communication (Communication Management Concentration) (CMT)

	Sem. Hrs.
<b>Communication Management<sup>1</sup></b>	<b>39</b>
CMM 110, (111 or 112), 113, 201, 202, 320, 321, 330, 412, 421	24
Select two courses from:	6
CMM 322, 351, 352, 413, 420, 498	
Select courses in CMM or THR <sup>2</sup>	9
Select twelve additional semester hours in a single academic discipline selected from business, education or the social sciences <sup>3</sup>	12

#### Liberal Studies Curriculum

Humanities and Fine Arts	
Philosophy and Religious Studies	12
Any courses in CMM or THR <sup>2</sup>	9
Literature: English or Foreign Language	3
Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities (excludes CMM courses)	3-9
Social Sciences	12
Mathematics (excludes MTH 102, 204, 205)	3



Search Academic Information General Information

#### Explore by Department / Program:

Chemical and Materials Engineering  
 Chemistry  
 Civil and Environmental Engineering and ...  
 Communication

Explore

#### Explore by Major / Minor:

Sport Management (ESM)  
 Structures (STR)  
 Teacher Licensure (EDT)  
 Theatre (CTR)

Explore

#### Explore by Courses:

Civil and Environmental Engineering... (CEE)  
 Classics (CLA)  
 Communication (CMM)  
 Communication (CMS)

Explore

Natural Sciences	11
Communication Competencies (ENG 101-102 or 114 or 198)	0-6
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>124</b>

<sup>1</sup>At least twenty-four of the required thirty-nine semester hours in all communication concentrations must be 300-400 level. No more than six total semester hours of CMM 390, CMM 397 and CMM 498 may be applied toward the thirty-nine semester hours.

<sup>2</sup>Dance courses in the theatre program (THR 201, 251, 261, 271, 301, 351, 361, 371) do not count toward the thirty-nine semester hours requirement.

<sup>3</sup>Beyond the Liberal Studies requirements; six semester hours must be 300- or 400- level.

Bachelor of Arts with a major in Communication (Communication Studies Concentration) (CSS)

	Sem. Hrs.
<b>Communication Studies<sup>1</sup></b>	<b>39</b>
CMM 110, (111 or 112), 113, 201, 202, 330	
Select courses from CMM or THR <sup>2,3</sup>	27
Select twelve additional semester hours in a single academic discipline selected from business, education or the social sciences <sup>4</sup>	12

#### Liberal Studies Curriculum

##### Humanities and Fine Arts

Philosophy and Religious Studies	12
History	6
Literature: English or Foreign Language	3
Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities (excludes CMM courses)	3-9
Social Sciences	12
Mathematics (excludes MTH 102, 204, 205)	3
Natural Sciences	11

Communication Competencies (ENG 101-102 or 114 or 198)	0-6
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>124</b>

<sup>1</sup>At least twenty-four of the required thirty-nine semester hours in all communication concentrations must be 300-400 level. No more than six total semester hours of CMM 390, CMM 397 and CMM 498 may be applied toward the thirty-nine semester hours.

<sup>2</sup>Approved program of study by advisor and department chair must be submitted prior to completion of eighteen semester hours.

<sup>3</sup>Dance courses in the theatre program (THR 201, 251, 261, 271, 301, 351, 361, 371) do not count toward the thirty-nine semester hours requirement.

<sup>4</sup>Beyond the Liberal Studies requirements; six semester hours must be 300- or 400- level.

Bachelor of Arts with a major in Communication (Electronic Media Concentration) (RTV)

Sem. Hrs.

<b>Electronic Media<sup>1</sup></b>	<b>39</b>
CMM 110, (111 or 112), 113, 201, 202, 330, 340, 343, 397 <sup>2</sup>	19-21
Select one course from:	3
CMM 341, 342, 344	
Select two courses from:	6
CMM 345, 440, 442, 444, 446, 449, 498	
CMS 414	
Select courses in CMM or THR <sup>3</sup>	9
Select 12 semester hours in a single academic discipline selected from business, education or the social sciences <sup>4</sup>	12
<b>Liberal Studies Curriculum</b>	
<b>Humanities and Fine Arts</b>	
Philosophy and Religious Studies	12
History	6
Literature: English or Foreign Language	3
Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities (excludes CMM courses)	3-9
Social Sciences	12
Mathematics (excludes MTH 102, 204, 205)	3
Natural Sciences	11
Communication Competencies (ENG 101-102 or 114 or 198)	0-6
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>124</b>

<sup>1</sup>At least twenty-four of the required thirty-nine semester hours in all communication concentrations must be 300-400 level. No more than six total semester hours of CMM 390, CMM 397 and CMM 498 may be applied toward the thirty-nine semester hours.

<sup>2</sup>Flyer TV or WUDR.

<sup>3</sup>Dance courses in the theatre program (THR 201, 251, 261, 271, 301, 351, 361, 371) do not count toward the thirty-nine semester hours requirement.

<sup>4</sup>Beyond the Liberal Studies requirements; six semester hours must be 300- or 400- level.

Bachelor of Arts with a major in Communication (Journalism Concentration) (JRN)

	Sem. Hrs.
<b>Journalism<sup>1</sup></b>	<b>39</b>
CMM 110, (111 or 112), 113, 201, 202, 330, 331, 430, 431, 432	24
Select two courses from:	6
CMM 332, 333, 334, 412, 416, 439, 498	
CMS 414	
Select courses in CMM or THR <sup>2</sup>	9
Select twelve additional semester hours in a single academic discipline selected from business, education or the social sciences <sup>3</sup>	12
<b>Liberal Studies Curriculum</b>	
<b>Humanities and Fine Arts</b>	
Philosophy and Religious Studies	12
History	6
Literature: English or Foreign Language	3

Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities (excludes CMM courses)	3-9
Social Sciences	12
Mathematics (excludes MTH 102, 204, 205)	3
Natural Sciences	11
Communication Competencies (ENG 101-102 or 114 or 198)	0-6
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>124</b>

<sup>1</sup>At least twenty-four of the required thirty-nine semester hours in all communication concentrations must be 300-400 level. No more than six total semester hours of CMM 390, CMM 397 and CMM 498 may be applied toward the thirty-nine semester hours.

<sup>2</sup>Dance courses in the theatre program (THR 201, 251, 261, 271, 301, 351, 361, 371) do not count toward the thirty-nine semester hours requirement.

<sup>3</sup>Beyond the Liberal Studies requirements; six semester hours must be 300- or 400- level.

Bachelor of Arts with a major in Communication (Public Relations Concentration) (PUB)

	Sem. Hrs.
<b>Public Relations<sup>1,2</sup></b>	<b>39</b>
CMM 110, (111 or 112), 113, 201, 202, 330, 360, 412, 460, 461	24
Select two courses from:	6
CMM 331, 332, 421, 430, 469, 498	
Select courses in CMM or THR <sup>3</sup>	9
Select twelve additional semester hours in a single academic discipline selected from business, education or the social sciences <sup>2</sup>	12
<b>Liberal Studies Curriculum</b>	
<b>Humanities and Fine Arts</b>	
Philosophy and Religious Studies	12
History	6
Literature: English or Foreign Language	3
Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities (excludes CMM courses)	3-9
Social Sciences	12
Mathematics (excludes MTH 102, 204, 205)	3
Natural Sciences	11
Communication Competencies (ENG 101-102 or 114 or 198)	0-6
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>124</b>

<sup>1</sup>At least twenty-four of the required thirty-nine semester hours in all communication concentrations must be 300-400 level. No more than six total semester hours of CMM 390, CMM 397 and CMM 498 may be applied toward the thirty-nine semester hours.

<sup>2</sup>Beyond the Liberal Studies requirements; six semester hours must be 300- or 400- level.

<sup>3</sup>Dance courses in the theatre program (THR 201, 251, 261, 271, 301, 351, 361, 371) do not count toward the thirty-nine semester hours requirement.

## Bachelor of Arts with a major in Communication (Theatre Concentration) (CTR)

	Sem. Hrs.
<b>Theatre<sup>1</sup></b>	<b>39</b>
CMM 110, (111 or 112), 113, 201, 202, 330	12
THR 203, 310, 340, 415	12
Select two courses from:	6
THR 305, 307, 323, 325, 326, 330, 424	
Select courses in CMM or THR <sup>2</sup>	9
Select twelve additional semester hours in a single academic discipline selected from business, education or the social sciences <sup>3</sup>	12
<b>Liberal Studies Curriculum</b>	
Social Sciences	12
Humanities and Fine Arts	
Philosophy and Religious Studies	12
History	6
Literature: English or Foreign Language	3
Creative and Performing Arts	3
Foreign Language and/or Additional Arts and/or Humanities (excludes CMM courses)	3-9
Mathematics (excludes MTH 102, 204, 205)	3
Natural Sciences	11
Communication Competencies (ENG 101-102 or 114 or 198)	0-6
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>124</b>

<sup>1</sup>At least twenty-four of the required thirty-nine semester hours in all communication concentrations must be 300-400 level. No more than six total semester hours of CMM 390, CMM 397 and CMM 498 may be applied toward the thirty-nine semester hours.

<sup>2</sup>Dance courses in the theatre program (THR 201, 251, 261, 271, 301, 351, 361, 371) do not count toward the thirty-nine semester hours requirement.

<sup>3</sup>Beyond the Liberal Studies requirements; six semester hours must be 300- or 400- level.

## Minor in Communication (CMM)

	Sem. Hrs.
<b>Communication</b>	<b>15</b>
CMM 110, (111 or 112), 113	3
Select twelve additional semester hours (300- or 400-level) <sup>1</sup>	12

<sup>1</sup>In consultation with the chairperson.

## Minor in Political Journalism

	Sem. Hrs.
<b>Political Journalism<sup>1</sup></b>	<b>18</b>
CMM 201, 330	6
Select four courses from:	12
CMM 331, 354, 355, 431, 432	

<sup>1</sup>Available only to political science majors.



**Courses (Collapse All Courses)**

Code	Title	Sem. Hrs.
CMM 110	GROUP DECISION MAKING	1
Communication processes for small decision-making groups. Focus is on the development of general competencies in leadership, group roles, conflict management, agenda setting, problem analysis and research, decision making and critical thinking.		
CMM 111	INFORMATIVE PUBLIC SPEAKING	1
Communication processes for presenting information in a public speaking context. Focus is on the development of general competencies in development and organization of ideas, research, adaptation to an audience, use of PowerPoint, and delivery.		
CMM 112	PERSUASIVE PUBLIC SPEAKING	1
Communication processes for persuading listeners in a public speaking context. Focus is on the development of general competencies in the construction and organization of persuasive strategies, critical evaluation of arguments and evidence, research, adaptation to an audience, use of PowerPoint, and delivery.		
CMM 113	INTERVIEWING	1
Communication processes for information gathering and employment interviewing. Focus is on the development of general competencies in the conduct and organization of interviews, preparation of resumes, evaluation of questions and responses, research, listening, and nonverbal communication.		
CMM 201	FOUNDATIONS OF MASS COMMUNICATION	3
Historical development of mass media in America; survey of mass media theories, impact of mass media on people and society, the role and influence of the news media, new technologies, programming, and pressure groups.		
CMM 202	FOUNDATIONS OF COMMUNICATION THEORIES AND RESEARCH	3
Study of the nature and scope of communication theories and research. Examination of how the communication discipline developed from classical traditions to its modern perspective.		
CMM 310	VOICE AND DICTION	3
The four phases of speech production: proper breathing, phonation, resonance, and articulation. Emphasis on projection, quality and clarity of speech. Analysis of students' voices through tape recordings.		
CMM 311	STUDIES IN ORAL PERFORMANCE	3
Oral performance of poetry, prose, and drama; combining study of vocal modulations, pitch, inflection, and tone color with intellectual and emotional analysis of selections as a means of making the literature alive and immediately present.		
CMM 312	LISTENING THEORY AND APPLICATION	3
Study of theories and related application during comprehensive, discriminate, empathic, and appreciative listening; emphasis on listening competently and responsibly.		
CMM 313	NONVERBAL COMMUNICATION	3
Survey of theory and research in nonverbal behavior. Examination of the influence of environmental factors, physical behavior, and vocal cues on human communication.		
CMM 314	DIMENSIONS OF BRITISH COMMUNICATION	3
Exploration of mass media, public relations, interpersonal communication, political communication, theatre and other communication subfields in the British context. This course will be offered only through a UD study abroad program.		

CMM 315	INTERNATIONAL MASS MEDIA	3
Focus on the mass media of a particular foreign country or region of the world. Topics may include media content, use, societal effects and ownership.		
CMM 320	INTERPERSONAL COMMUNICATION	3
Study of communication behavior in a variety of dyadic relationships including acquaintance, friendship, work, romantic, and family. Focus on communicative behavior and communicative processes in relationship development including building trust, managing conflict, negotiating power, and listening empathetically.		
CMM 321	SMALL GROUP COMMUNICATION	3
Examination of theory and research related to communicative processes in small, task-oriented groups. Applications include a focus upon decision-making strategies, leadership, conflict management, and cohesion.		
<b>Prerequisite(s):</b> CMM 110.		
CMM 322	INTERVIEWING FOR COMMUNICATION AND BUSINESS	3
Analysis of communication in structured dyadic interaction. Emphasis on the following types of interviews: information-gathering, employment, appraisal, and persuasive. Application through role-playing and feedback systems.		
<b>Prerequisite(s):</b> CMM 113.		
CMM 330	MEDIA WRITING	3
Developing and practicing writing skills for journalism, public relations, and electronic media. Study and practice of ethics in determining news values, gathering information, and communicating clearly and accurately for mass audiences. AP style emphasized. Studio fee.		
CMM 331	FEATURE WRITING	3
Developing and writing nonfiction stories for newspapers and magazines. Story types include personality profile, color, background, consumer, and commentary. Study and practice in journalistic reporting skills and literary writing techniques. Emphasis on content, organization, style, and accuracy. Strong command of AP style necessary.		
<b>Prerequisite(s):</b> CMM 330.		
CMM 332	PUBLICATION DESIGN	3
Layout and design of print and electronic publications, including newsletters, brochures, and web-based publications. Instruction in desktop and web publishing software, use of type and illustration, cost appraisal, printing methods. Studio fee.		
CMM 333	FREE-LANCE WRITING	3
Steps of free-lance publication, from market analysis to query letters to writing and rewriting. Mostly nonfiction, magazine markets, some newspaper and nonfiction book markets.		
CMM 334	SPORTSWRITING	3
In addition to game stories, attention is also paid to writing about personalities, legal issues, and financial issues on the interscholastic, intercollegiate, amateur, and professional levels. Strong writing skills and knowledge of journalistic style expected.		
<b>Prerequisite(s):</b> CMM 330.		
CMM 340	FUNDAMENTALS OF BROADCASTING	3
Survey of broadcasting, with emphasis on television and radio networks, programming, regulation, audience measurement, audience effects, and technology. Although attention is given both to the origins and future of the field, contemporary broadcasting is emphasized.		
CMM 341	AUDIO PRODUCTION	3
Study of the theories, processes, and technologies of audio production practices that can be applied in radio, television, and multimedia production. Exercises in recording of voice, music, and special effects. Course includes the operation of basic studio and field equipment, including analog and basic		

digital recording and editing. Studio fee.

- |   |                                    |       |
|---|------------------------------------|-------|
| CMM 342   | FUNDAMENTALS OF VIDEO PRODUCTION   | 3     |
| <p>Explores the techniques of studio and remote video production. Includes the technical and creative aspects of planning and script preparation, producing, directing, technical directing, graphics, editing, camera, lighting, and sound for a variety of video programs. Studio fee.</p>  |                                    |       |
| CMM 343   | SCRIPTWRITING FOR ELECTRONIC MEDIA | 3     |
| <p>Study of concrete approaches to and practice with the kinds of writing being done professionally in all program types on television and radio including corporate media writing.</p> <p><b>Prerequisite(s):</b> CMM 330 or permission of instructor.</p>   |                                    |       |
| CMM 344   | MULTIMEDIA DESIGN AND PRODUCTION I | 3     |
| <p>Introduction to producing in the interactive media of CD-ROM and other digital formats. Reviews basic object linking and embedding in familiar computer programs such as Word, PowerPoint, and Freelance Graphics. Students build skills in multimedia authoring, using all the fundamental tools of graphics, text, audio, and video. Studio fee.</p> |                                    |       |
| CMM 345   | CLASSIC AMERICAN FILM              | 3     |
| <p>A survey of the artistic evolution of American film, including the analysis of styles of producing, scripting, acting, directing, lighting, sound, cinematography, set design and editing through viewing of classic American films and selected international films that have influenced the art of American filmmaking. Fee.</p>                     |                                    |       |
| CMM 350   | PROPAGANDA ANALYSIS                | 3     |
| <p>Examination of major propaganda campaigns in history beginning with Greek democracy. Emphasis on twentieth century propaganda as psychological warfare. Principles of Aristotelean rhetorical theory applied to propaganda analysis.</p>   |                                    |       |
| CMM 351   | PUBLIC SPEAKING                    | 3     |
| <p>Oral communication in professional situations. Adaptation of principles of effective speaking to specific audiences and occasions. Delivery of informational, problem-solving, and special-occasion speeches.</p> <p><b>Prerequisite(s):</b> CMM 111 or 112.</p>   |                                    |       |
| CMM 352   | PERSUASION                         | 3     |
| <p>Study of the use of communication to form attitudes. Examination of attitudes and social influence and their effects on human behavior. Topics include selected theories of persuasion, argument construction, and practical application.</p>  |                                    |       |
| CMM 353   | SPEECH WRITING                     | 3     |
| <p>Study of speech structure and composition. Critical analysis of model speech, in conjunction with the preparation and presentation of original speeches on current public questions.</p>   |                                    |       |
| CMM 354   | POLITICAL CAMPAIGN COMMUNICATION   | 3     |
| <p>Examination of theory and research on the role, processes and effects of communication in political campaigns with emphasis on mass media, public speaking, debates, advertising, and interpersonal communications.</p>  |                                    |       |
| CMM 355   | RHETORIC OF SOCIAL MOVEMENTS       | 3     |
| <p>Study of rhetorical communication in American social movements through examination of the strategies, themes and tactics used by agitators and the institutional responses to discourse aimed at social change.</p>  |                                    |       |
| CMM 360   | PRINCIPLES OF PUBLIC RELATIONS     | 3     |
| <p>Survey of the field of public relations emphasizing writing and public relations, theoretical implications of the field, the practitioner's role in organization and the community.</p>  |                                    |       |
| CMM 390   | INDEPENDENT STUDY                  | 1 - 3 |

Supervised study involving directed readings, individual research (library, field, or experimental), or projects in the specialized areas of communication. May be repeated for up to six semester hours.

**Prerequisite(s):** Permission of department chairperson.

CMM 397 COMMUNICATION PRACTICUM

1 - 3

Contracted participation in an approved on-campus communication organization. One semester hour per term to a maximum of three semester hours. Grading Option Two only.

CMM 410 FAMILY COMMUNICATION

3

Study of the family from a communication perspective, considering the communication processes within the family and the extent to which communication affects and is affected by the family.

CMM 411 HEALTH COMMUNICATION

3

Examination of communication theory and research as they relate to health care. Issues include reassurance, the role of the patient, interviews, health organizations, the media and health, compliance, providing explanations, and health care professions frequently neglected.

CMM 412 STATISTICAL METHODS IN COMMUNICATION

3

Study of data gathering methods in communication. Practice in sampling, survey methods, questionnaire development, and experimental design. Emphasis on the use of logic to interpret data and to support claims.

CMM 413 COMMUNICATION IN THE INFORMATION AGE

3

Examination of issues related to development, economics, programming, and the future of new mass communication technologies.

**Prerequisite(s):** CMM 201 or permission of instructor.

CMM 416 DEVELOPMENT OF MASS MEDIA

3

History and analysis of the development and interdependence of mass media, print and electronic. Emphasis on its role in political and economic progress of U.S. and attendant responsibility.

CMM 420 COMMUNICATION AND CONFLICT MANAGEMENT

3

Examination of the functions of communication in interpersonal conflict such as marital conflict, role conflict, and organizational conflict. Communicative strategies and tactics for managing conflict.

CMM 421 COMMUNICATION IN ORGANIZATIONS

3

Analysis of message initiation, diffusion, and reception in organizations; analysis of the role of communication in developing productive work relationships, management practices, and organizational cultures.

CMM 430 COPYEDITING

3

Editing, particularly news copy editing and headline writing. Emphasis on clear and concise wording; proper spelling, grammar, and punctuation; and accuracy. Strong command of AP style necessary.

**Prerequisite(s):** CMM 330.

CMM 431 PUBLIC AFFAIRS REPORTING

3

Investigative and specialized reporting on matters of public concern. Practice in gathering information from primary and secondary sources, and writing about complex subjects for mass audiences.

**Prerequisite(s):** CMM 330.

CMM 432 THE LAW AND NEWS MEDIA

3

Exploration of the free press clause of the First Amendment, as defined by the courts and media practice. Study of First Amendment core values and theories. Investigation into law on libel, privacy, censorship, access to information, and copyright, as well as regulation of broadcast, cable and new electronic media.

**Prerequisite(s):** Junior standing.

CMM 439 SPECIAL TOPICS IN JOURNALISM

3 - 6

Concentrated study in special areas of journalism. May be repeated with change of topic.

CMM 440 BROADCAST NEWS 3

Study of the process and practice of news gathering and writing for radio and television. Course includes research, analysis, writing and editing news and features, as well as legal and ethical concerns of broadcast news. Studio fee.

**Prerequisite(s):** CMM 330, 342.

CMM 442 ADVANCED TELEVISION PRODUCTION 3

Advanced techniques of both studio and electronic field production and post-production editing for television. Studio fee.

**Prerequisite(s):** CMM 342.

CMM 444 MULTIMEDIA DESIGN AND PRODUCTION II 3

Advanced level multimedia production emphasizing client-based project generation through a design/production team approach. Focus is on interface design; project planning, script writing, story boarding; digital image, sound and video editing; and the use of authoring software. Studio fee.

**Prerequisite(s):** CMM 344.

CMM 446 ELECTRONIC MEDIA MANAGEMENT 3

Survey of the leadership/management roles and responsibilities of broadcasting, cable television and corporate media enterprises.

**Prerequisite(s):** CMM 340.

CMM 449 TOPICS IN ELECTRONIC MEDIA 3

Concentrated study in special areas of electronic media production, criticism, and management. May be repeated once with change of topic. Depending on topic, prerequisites may be imposed.

CMM 452 PUBLIC DISCOURSE AND CRITICISM 3

Examination of the foundations of the field of communication. Major focus on the development of rhetorical theory with attention to rhetorical analysis and criticism.

CMM 460 PUBLIC RELATIONS WRITING 3

Study, development and application of public relations strategies. Emphasis on strategically effective, factually accurate and grammatically sound written communications for organizational and mass audiences.

**Prerequisite(s):** CMM 330, 360.

CMM 461 PUBLIC RELATIONS CAMPAIGNS 3

Students plan and carry out a public relations program for an established professional organization, work out solutions to communication and public relations problems, and prepare written campaign materials and handbooks.

**Prerequisite(s):** CMM 330, 360, 460; senior standing.

CMM 469 TOPICS IN PUBLIC RELATIONS 3

A concentrated study in specific areas of public relations. Development of specialized projects. May be repeated once with change of topics.

**Prerequisite(s):** CMM 360 or permission of instructor

CMM 477 HONORS THESIS PROJECT 3

First of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and department chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.

**Prerequisite(s):** Approval of University Honors Program.

CMM 478 HONORS THESIS PROJECT 3

Second of two courses leading to the selection, design, investigation and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.

**Prerequisite(s):** Approved 477 and approval of University Honors Program.

CMM 498 COMMUNICATION INTERNSHIP

1 - 6

Communication work experience in an approved organization. Student must be in good academic standing. Students are normally limited to a maximum of three semester hours. Under exceptional circumstances, students may petition the department chair for an additional three semester hours if the second internship is at a different organization and the student can demonstrate that the position offers a unique and significant educational opportunity not available through the first internship. Grading Option Two only.

**Prerequisite(s):** CMM 110, (111 or 112), 113, 201, 202, 330; permission of department chairperson.

CMM 499 SPECIAL TOPICS IN COMMUNICATION

3 - 6

Concentrated study in specific areas of speech communication. May be repeated once with change of topic.

CMS 316 INTERCULTURAL COMMUNICATION

3

Study of interpersonal communication with emphasis on people from different countries and with different cultural backgrounds. Focus on the influence of culture on communication and language, verbal and non-verbal communication similarities and differences from culture to culture, and challenges of successful intercultural communication.

CMS 414 GLOBAL COMMUNICATION

3

Introduction to the main topics in the field of global communication. Emphasis on comparative mass media and current issues in global communication. Will not satisfy humanities requirement.

CMS 415 WOMEN AND COMMUNICATION

3

Seminar focusing on gender differences in communication, unique aspects to women's communication, and women's rhetoric. Current theory and research examined. Will not satisfy humanities requirement.





# the Bulletin

AUGUST 2008 - UNDERGRADUATE ISSUE

→ Explore a Different Issue

## College of Arts and Sciences

### (CPS) Computer Science (Collapse Description)

The Department of Computer Science offers two programs leading to the Bachelor of Science in computer science, and in computer information systems. Both programs have the same introductory core sequence of computer science courses. The main differences in the programs are in the mathematics and science requirements and in the application emphases.

**Computer information systems:** This program emphasizes computer science concepts with particular attention to systems analysis and design, computer communications, and applications in one of the concentration areas listed in the description of the program requirements.

**Computer science:** Computer science is the study of algorithms and their implementation in the environment of computer hardware. It includes the study of data structures, software design, programming languages, and computer elements and architecture. A student entering this program is expected to be able to take calculus and non-remedial English. A transfer student must ordinarily be in good standing and have a cumulative average of at least 2.5 based on a scale of 4. Each student must take appropriate upper-level electives to ensure depth in at least three of the core subject areas of data structures, software design, programming language concepts and architecture as arranged with the advisor and department chair.

Computer science and computer information systems majors are required to attain grades of C- or better in CPS 150, 151 and 350.

A minor in computer science consists of twenty-four semester hours. A minor in computer information systems consists of twenty-three semester hours.

### Faculty

James P. Buckley, Chairperson  
 Professors Emeriti: Kester, Lang, Winslow  
 Associate Professors: Buckley, Courte, Gowda, Schoen, Seitzer, Smith, Sriharan  
 Assistant Professor: Perugini  
 Adjunct Associate Professor: Lokai

### Majors/Minors (Collapse All)

Major/Minor Name

Bachelor of Science with a major in Computer Information Systems (CIS)

	Sem. Hrs.
<b>Computer Science</b>	<b>41</b>
CPS 150, 151, 242, 250, 310, 312, 341, 346, 350	29
Select four additional courses (CPS 343 and above)	12
 Concentration: An approved minor, or the following courses:	 15-27
ACC 207, 208	
ECO 203, 204	
MGT 301	
MKT (300 or 301)	
 Breadth Requirement	 41-50
Natural Sciences <sup>1</sup>	8


[Search](#) [Academic Information](#) [General Information](#)

#### Explore by Department / Program:

Chemistry  
 Civil and Environmental Engineering and ...  
 Communication  
 Computer Science

[Explore](#)

#### Explore by Major / Minor:

Computer Engineering (CPE)  
 Computer Engineering Technology (CET)  
 Computer Information Systems (CIS)  
 Computer Science (CPS)

[Explore](#)

#### Explore by Courses:

Classics (CLA)  
 Communication (CMM)  
 Communication (CMS)  
 Computer Science (CPS)

[Explore](#)

Mathematics <sup>1</sup>	9
MTH 148, 149, 367	
Social and Behavioral Sciences <sup>1</sup>	6
Humanities <sup>1</sup>	9
Philosophy and Religious Studies (includes PHL 319) <sup>1</sup>	12
Communication Competencies	0-9
Introduction to the University: ASI 150	0-1
<b>General Education courses/academic electives to total at least</b>	<b>120</b>

<sup>1</sup>This requirement will be satisfied in some cases by the minor that is chosen.

Bachelor of Science with a major in Computer Science (CPS)

	Sem. Hrs.
<b>Computer Science</b>	<b>44-47</b>
CPS 150, 151, 242, 250, 341, 346, 350, 387	26
Select three of the following four groups:	12-15
Select one course from the following:	
CPS 460	
Select two courses from the following:	
CPS 310, 312, 415, 446	
Select two courses from the following:	
CPS 343, 444, 445	
Select one course from the following:	
CPS 388, 470, 472	
Select two additional courses at 300-level or above.	6
Natural Sciences	8
Breadth Requirement	
Natural Sciences (select one grouping of courses from the following):	14
BIO 151-151L, 152-152L	
CHM 123-123L, 124-124L	
GEO 115-115L, 116-116L	
PHY 206, 207, 210L, 211L	
Select two additional courses acceptable for Science or Engineering majors	
Mathematics	18
MTH 168, 169, 218, 310, 367	
Social and Behavioral Sciences	6
Humanities	9
Philosophy and Religious Studies (including PHL 319)	12
Communication Competencies	0-9
Humanities	9
<b>General Education courses/academic electives to total at least</b>	<b>120</b>

Minor in Computer Information Systems (CIS)

	Sem. Hrs.
<b>Computer Information Systems</b>	<b>23</b>
CPS 150, 151, 242, 310, 312	17
Select two additional courses (320-level or above, excludes CPS 435 & 437)	6

Minor in Computer Science (CPS)



	Sem. Hrs.
<b>Computer Science</b>	<b>20</b>
CPS 150, 151, 350	11
Select three additional courses (320-level or above, excludes CPS 437)	9

**Courses (Collapse All Courses)**

Code	Title	Sem. Hrs.
CPS 107	INTRODUCTION TO COMPUTER SCIENCE	3
An introduction to the field of Computer Science, covering computers and society, the internals and externals of computer hardware and software, as well as some exposure to advanced topics of artificial intelligence, computer forensics, and databases. Intended for science and engineering students.		
CPS 111	INTRODUCTION TO PERSONAL COMPUTERS	3
Emphasis on use of operating system, particularly file organization, and applications: word processor, spreadsheet, database and presentation software.		
CPS 130	INTRODUCTION TO ENGINEERING PROGRAMMING	1
Introduction to fundamentals of programming using the language C, including algorithms and control structures, with applications drawn from engineering. Intended for students in electrical engineering. <b>Prerequisite(s):</b> EGR 102.		
CPS 132	COMPUTER PROGRAMMING FOR ENGINEERING AND SCIENCE	3
Fundamentals of computer programming including algorithms, program structure, library routines, debugging, and program verification. Calculus-based computer solutions of problems from science and engineering using C++. <b>Corequisite(s):</b> MTH 168.		
CPS 144	INTRODUCTION TO COMPUTER PROGRAMMING	3
Fundamentals of computer programming including algorithms, program structure, library routines, debugging, and program verification. Computer solutions of problems from social sciences using a suitable compiler language such as Visual Basic.		
CPS 150	ALGORITHMS AND PROGRAMMING I	4
Algorithms, programs, and computers. Algorithm development, basic programming and programming structure. Debugging and program verification. Data representation. Computer solutions to numeric and non-numeric problems using a compiler language.		
CPS 151	ALGORITHMS AND PROGRAMMING II	4
Continuation of CPS 150. Emphasis on program design, development and style, string processing, data structures, program modularity, and abstract data type, using a compiler language. <b>Prerequisite(s):</b> CPS 150.		
CPS 225	PROGRAMMING FOR BUSINESS SYSTEMS	4
Process of software development for business system implementation. Fundamental programming concepts including program design, documentation, development and testing of computer solutions of business problems using C++. Intended for students majoring in MIS. <b>Prerequisite(s):</b> MIS 175.		
CPS 242	INTRODUCTION TO FILE PROCESSING	3
The file processing environment, blocking and buffering, secondary storage devices, sequential file organization, relative file organization, and various indexed file organizations using a suitable compiler language such as COBOL. <b>Prerequisite(s):</b> CPS 151.		

CPS 250	INTRODUCTION TO COMPUTER ORGANIZATION	3
<p>Computer organization and architecture are studied from a software perspective. Data representation, program translation and execution are examined in the context of the classic von Neumann architecture. Programming projects involving both a higher-level language and an assembly language reinforce the architecture concepts.</p> <p><b>Prerequisite(s):</b> CPS 151.</p>		
CPS 309	TOPICS IN COMPUTER SCIENCE	1 - 4
<p>Lectures or laboratory work in areas of current interest. May be taken more than once. Does not count as upper level credit for majors/minors.</p>		
CPS 310	SYSTEMS ANALYSIS	3
<p>Methodologies for producing software, software development life cycles, top-down approach, data flow diagram, data dictionary, mini-specifications, in/output design, E-R diagrams, normalization, introduction to object oriented analysis.</p> <p><b>Prerequisite(s):</b> CPS 151 or 225.</p>		
CPS 312	SYSTEMS DESIGN	3
<p>Structured design, tools of structured design, coupling and cohesion of modules, transform and transaction analyses, packaging, optimization, data-oriented and object oriented design methodologies, automated design tools.</p> <p><b>Prerequisite(s):</b> CPS 310.</p>		
CPS 341	DISCRETE STRUCTURES	3
<p>Logic and proofs, sets and counting, Boolean algebra, graph theory, directed graphs, mathematical machines, formal languages and grammars.</p> <p><b>Prerequisite(s):</b> CPS 150.</p>		
CPS 343	COMPARATIVE LANGUAGES	3
<p>Language design issues, formal syntax specification, data types and storage methods, activation records and procedural object oriented, functional, and logic programming paradigms.</p> <p><b>Prerequisite(s):</b> CPS 350.</p>		
CPS 346	OPERATING SYSTEMS I	3
<p>Semaphores, conditions, monitors, and kernels. Concurrent programming, interrupts, memory, and process management. Design and implementation of multithreaded and distributed system components using concurrent languages.</p> <p><b>Prerequisite(s):</b> CPS 250, 350.</p>		
CPS 350	DATA STRUCTURES AND ALGORITHMS	3
<p>Advanced concepts of linear data structures, stacks, queues, and abstract data types. Basic and advanced concepts of trees, graphs, hash tables, heaps, algorithm design and analysis techniques.</p> <p><b>Prerequisite(s):</b> CPS 151.</p>		
CPS 353	NUMERICAL METHODS I	3
<p>Study of the algorithms of numerical mathematics with emphasis on interpolation, the solution of nonlinear equations, and linear systems of equations including matrix methods; analysis of errors associated with the algorithms.</p> <p><b>Prerequisite(s):</b> (CPS 132 or 150); MTH 169.</p>		
CPS 354	NUMERICAL METHODS II	3
<p>Study of the algorithms of numerical mathematics with emphasis on functional approximation, numerical differentiation and integration, numerical solution of ordinary differential equations and boundary value problems; analysis of errors associated with the algorithms.</p> <p><b>Prerequisite(s):</b> CPS 353.</p>		
CPS 387	COMPUTER SYSTEM DESIGN I	3

Study of the elements of computer design. Design of combinatorial and sequential logic circuits using current integrated circuit devices. Discussion of encoders, decoders, registers, counters, etc. as applied to design and use of control, arithmetic, logic, and storage units. Instruction set, addressing modes and CPU design. Laboratory experiments with these devices.

**Prerequisite(s):** CPS 250, 341.

CPS 388      COMPUTER SYSTEM DESIGN II

3

Detailed analysis of a specific microcomputer programmed in machine, assembler, and a higher-level language. Discussion of interfacing with devices such as displays, terminals, and other computers. Experiments with such interfacing in the laboratory.

**Prerequisite(s):** CPS 387.

CPS 411      MANAGEMENT INFORMATION SYSTEMS

3

The management information systems environment. The theory, technology, development of information systems. Emphasis on integration of information systems for decision support and other management information requirements.

**Prerequisite(s):** CPS 310.

CPS 415      SOFTWARE TESTING

3

A detailed examination of the software testing process and its role in the software lifecycle. Topics include functional testing, structural testing, methods for designing, generating and evaluating test data, coverage hierarchies, theoretical and practical limitations of testing, testability measures, regression testing, and specialized testing such as methods for testing object oriented software, graphical user interfaces.

**Prerequisite(s):** (CPS 310 or 418); CPS 341, 350.

CPS 418      SOFTWARE ENGINEERING

3

A thorough examination of modern software methodologies, of the managerial and technological skills essential to the design and construction of high-quality software, and of the productivity and human factors in software development.

**Prerequisite(s):** CPS 350.

CPS 420      OBJECT ORIENTED SYSTEMS DEVELOPMENT

3

An overview of object-oriented analysis and design methodologies and Unified Modeling Language (UML), Use Case Model, Logical Model, Component Model, Deployment Model and Design Patterns. The course will involve a team project using a state-of-the-art Computer Aided Software Engineering (CASE) tool.

**Prerequisite(s):** CPS 310, 350.

CPS 422      SOFTWARE PROJECT MANAGEMENT

3

An overview of software project management tasks, software development methodologies, project planning techniques, algorithmic cost estimation models, Function Point Estimation, risk management, prototyping, management of software reuse, software maintenance, quality assurance, configuration management, Capability Maturity Model (CMM), and evaluation of CASE tools.

**Prerequisite(s):** CPS 310 or 418.

CPS 424      DISCRETE EVENT SIMULATION TECHNIQUES

3

Design and use of simulation models; study and use of special-purpose simulation languages such as GPSS and GASP IV, SIMSCRIPT II.5. Applications.

**Prerequisite(s):** CPS 151.

CPS 430      DATABASE MANAGEMENT SYSTEMS

3

Physical and logical organization of databases: the entity-relationship model; relational database model; the data definition and data manipulation language of a commercial database management system; integrity constraints; conceptual database design.

**Prerequisite(s):** CPS 350.

CPS 432      DATABASE MANAGEMENT SYSTEMS II

3

Study of query execution and optimization, transaction management, concurrency control, recovery and security techniques. Advanced data models and emerging trends in database systems, like object oriented database systems, distributed database systems, the client-server architecture, multidatabase and heterogeneous systems. Other current database topics and emerging technologies will be discussed.

**Prerequisite(s):** CPS 430.

CPS 437      SYSTEM ARCHITECTURES AND NETWORKING      3

Issues and techniques used in the physical design of computer-based information systems. Basic operating systems, hardware architecture and networking principles. Intended for students majoring in MIS; not open to students majoring in CPS, CIS, or PCS.

**Prerequisite(s):** MIS 380, 385.

CPS 444      SYSTEMS PROGRAMMING I      3

Analysis of compilers and their construction; programming techniques discussed in the current literature; advanced computer applications in mathematical and nonnumeric areas.

**Prerequisite(s):** CPS 346, 350.

CPS 445      SYSTEMS PROGRAMMING II      3

A continuation of CPS 444, with emphasis on the application of the topics discussed.

**Prerequisite(s):** CPS 444.

CPS 446      OPERATING SYSTEMS II      3

Design and implementation of a multi-user operating system, including concurrent processes, usage of monitors and kernels, process and device scheduling, virtual memory with paging, process synchronization and communication, input and output spooler, file systems, reliability and protection, interrupts, distributed system concepts.

**Prerequisite(s):** CPS 346.

CPS 455      NUMERICAL ANALYSIS I      3

Error analysis, mathematical development of functional approximation including interpolation, quadrature, numerical differentiation, solution of ordinary differential equations.

**Prerequisite(s):** CPS 353.

CPS 456      NUMERICAL ANALYSIS II      3

Mathematical development of the method of least squares, minimax approximation, solution of partial differential equations, applications.

**Prerequisite(s):** CPS 455.

CPS 460      COMPUTER GRAPHICS      3

Introduction to graphics devices and software graphic primitives (points, lines, characters), two-dimensional transformations, clipping, survey of display devices and methods. Graphic input devices, representation of curves and surface in space.

**Prerequisite(s):** CPS 350.

CPS 470      DATA COMMUNICATION      3

Principles of telecommunications hardware and software. Analysis of communication protocol layers with respect to performance, error handling, and control functions. Review of troubleshooting techniques currently in use.

**Prerequisite(s):** CPS 350.

CPS 472      COMPUTER NETWORKING      3

Concepts and goals of computer networks (local area and long-haul). Network protocols, analysis, design management. OSI layers, gateways. Network topologies and case studies.

**Prerequisite(s):** CPS 470.

CPS 477      HONORS THESIS PROJECT      3

First of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.

**Prerequisite(s):** Approval of University Honors Program.

CPS 478 HONORS THESIS PROJECT 3

Second of two courses leading to the selection, design, investigation, and completion of an independent, original Honors Thesis project under the guidance of a faculty research advisor. Restricted to students in the University Honors Program with permission of the program director and departmental chairperson. Students pursuing an interdisciplinary thesis topic may register for three semester hours each in two separate disciplines in consultation with the department chairpersons.

**Prerequisite(s):** Approved 477 and approval of University Honors Program.

CPS 480 ARTIFICIAL INTELLIGENCE 3

Basic concepts and techniques of intelligent systems. Emphasis on representations, problem solving, search strategies, expert systems, mVgic systems, and AI programming. Design and implementation of AI applications.

**Prerequisite(s):** CPS 350.

CPS 481 ADVANCED ARTIFICIAL INTELLIGENCE 3

An examination of several advanced sub-disciplines of Artificial Intelligence including areas such as speech recognition, planning, machine learning, advanced multiple agent systems and related topics. An exploration of underlying theoretical issues as well as the status of current problems and applications.

**Prerequisite(s):** CPS 480.

CPS 482 AUTOMATA THEORY 3

Finite automata, sequential machines, survey of formal languages, introduction to computability, recursive functions, and Turing machines.

**Prerequisite(s):** CPS 341.

CPS 496 COOPERATIVE EDUCATION 1 - 3

Computer science cooperative education work experience in an approved organization. Not open to students with credit in CPS 497. Credit does not apply to major requirements. Repeat to a maximum of three semester hours.

**Prerequisite(s):** Twelve hours of upper-level CPS courses with a GPA of 3.0; total ninety semester hours with a GPA of 2.75; permission of the department in advance of the work.

CPS 497 INTERNSHIP 1 - 3

Computer science work experience in an approved organization. Not open to students with CPS 496 credit. Credit does not apply to major requirements. Repeat to a maximum of three semester hours.

**Prerequisite(s):** Twelve semester hours of upper-level CPS courses with GPA of 3.0; total ninety semester hours and 2.75 GPA; permission of department in advance of the work.

CPS 498 PROBLEMS IN (NAMED AREA) 1 - 4

Individual readings and research in a specialized area. (See CPS 499.) By arrangement. May be taken more than once for additional credit.

**Prerequisite(s):** Permission of department chairperson.

CPS 499 (SPECIAL TOPICS) 1 - 4

Lectures or laboratory work in such areas as advanced artificial intelligence, computer architecture, information retrieval, microprogramming, multiprogramming techniques, numerical analysis, graphics, data communications, parallel processing, software development, distributed computing, multimedia computing. By arrangement. May be taken more than once.

**Prerequisite(s):** Permission of department chairperson.

©2003-2006 University of Dayton - 300 College Park, Dayton, Ohio 45469  
A Web Application by the Internet Development Division | [Privacy Policy](#)

