

HONORS PROGRAM

Honors Program

Director:

Maureen Connelly, Professor,
Departments of Sociology and
Social Work

- Students who have demonstrated a high degree of academic skill, creative talent, and motivation have the opportunity to participate in the University's Honors Program.
- Interested students who think they may qualify for the Honors Program should contact the Director at 301/687-4998.

Hours Required in English:	3
Hours Required in variants of the GEP program:	15-17
Hours Required in Seminars/Thesis	6
Total Hours Required:	24-26

The Honors Program offers a variety of courses specially designed for Honors students. These courses feature content and instructional methods that are challenging, provide a more active role for the student in the learning process, and emphasize understanding more than factual information, and quality of work rather than quantity. These courses seek to magnify problem-solving abilities, effective communications, an awareness of multiple perspectives, and a capacity for independent learning.

Many of the Honors courses are variants of courses included in the University's General Education Program. These variant courses are primarily intended to be taken during a student's first and second years. For juniors and seniors participating in the program, the Honors Seminars and Thesis provide unique environments and opportunities for learning.

In addition to the academic courses, the Honors Program offers a host of co-curricular activities, including the opportunity to reside in Honors/International Housing in Cambridge and Westminster Halls.

Ultimately the program seeks to foster within students dignity, self-esteem, and a knowledge of their own potential as human beings.

Admission Requirements

Incoming first semester students are invited to join the Honors Program at FSU if they have a high school GPA of 3.5 **and** a combined SAT score of at least 1750 (or an ACT score of at least 26).

Students who do not meet both of these requirements may apply for admission to the Honors Program based on the strength of one of these requirements, either an excellent GPA or an excellent SAT/ACT score. Normally, students will not be admitted without at least a 3.25 GPA or a minimum of 1500 on the combined SAT (23 on the ACT). Exceptions can be made on a case by case basis by the Honors Program.

Students who have completed at least one semester of course work at Frostburg State University or at another institution may apply to the Honors Program if they have a GPA of 3.5 or above.

Students demonstrating considerable creative ability, as evidenced by papers, projects, creative writing, musical composition, art work, or musical performance may also be admitted on an individual basis.

Summary of Requirements for the Honors Program

Most students participating in the Honors Program are pursuing the distinction of graduating with "Honors in General Education." This distinction is awarded to students who complete the following Honors Program requirements:

- ENGL 111 or ENGL 312
- 15-17 credit hours of Honors variants of General Education Program courses from an approved list
- 6 credit hours from the following:
 - IDIS 351 Honors Advanced Colloquium
 - IDIS 491 Honors Seminar
 - IDIS 493 Honors Thesis

Experiential Learning Option: Approved Study Abroad course, Undergraduate Research Project, Internship, Departmental Recital or other experiential learning experience. Three credits will count for the Honors Program requirement on approval of the Honors Program Advisory Group. Pre-approval necessary.

- Honors students must earn a 3.0 average in all courses applied to meet Honors requirements and have at least a 3.0 cumulative grade point average upon graduation.
- ENGL 111 is required of all students entering the Honors Program as first semester students. Students electing to join this program after their first semester are required to take ENGL 312.
- Honors Experiential Learning course work, IDIS 493 Honors thesis and IDIS 491 Honors seminars may, with departmental approval, count towards requirements in the major. IDIS 491 credit hours may, with approval of the Honors Program Advisory Group, substitute for portions of the Modes of Inquiry section of the General Education Program.

Grade Repeat Option

Students earning a grade of D,F,FX, or WF in a designated Honors variant course may enroll in the non-honors equivalent and file the grade repeat authorization form requesting that the credit hours attempted and the grade earned in the first, Honors variant course not be used in calculating the cumulative grade point average and cumulative credits. All other regulations concerning the grade repeat option apply (see Course Repetition and Grading in the Academic Standards section of this catalog).

Use of the grade repeat option in this manner constitutes withdrawal from the University's Honors Program.

International Area Studies

Certificate

Coordinator:

Sally Boniece, Professor,
Department of History

- Students participating in a study abroad program may apply courses to this certificate if the courses transfer for upper division credit and are appropriate for the areas of the world identified. Students must conform to FSU rules in using transfer credits for this certificate. These rules include obtaining prior approval before taking courses and a limit on the number of transferred credits that may be applied to the certificate.

Summary of Requirements for Certificate in International Area Studies

Choose Option 1, 2, 3, or 4: (12 hours)

1. Europe:

(choose from at least three disciplines)

ART	360	Western Art History
GEOG	401	Geography of Europe
GEOG	402	Geography of Northern Eurasia
HIST	376	Modern Europe
HIST	404	Revolutionary and Soviet Russia
POSC	333	Politics of Europe
POSC	431	Russian Politics
FREN	250	or above (250 - GEP Group B)
SPAN	250	or above (250 - GEP Group B)

2. Latin America:

(choose from at least three disciplines)

ART	302	Artistic Traditions: Africa and the Americas (GEP Group F)
GEOG	320	Geography of Latin America
HIST	304	History of Latin America
HIST	418	Native Peoples of the Americas (GEP Group F)
HIST	450	The History of Mexico
HIST	455	Latin American Revolutions
POSC	331	Politics of Latin America
POSC	435	Model Organization of American States
SPAN	250	or above (250 - GEP Group B)

3. Africa and the Middle East:

(choose from at least 3 disciplines)

ART	302	Artistic Traditions: Africa and the Americas (GEP Group F)
GEOG	403	The Geography of Sub-Saharan Africa
HIST	341	Modern and Contemporary Middle East
HIST	353	Contemporary Africa
PHIL	311	Asian and African Philosophy (GEP Group F)
POSC	330	Politics of Africa
POSC	332	Politics of the Middle East
FREN	250	or above (250 - GEP Group B)

4. Asia:

(choose from at least two disciplines)

ART	301	Artistic Traditions: Asia (GEP Group F)
PHIL	311	Asian and African Philosophy (GEP Group F)
HIST	357	India
HIST	360	Modern and Contemporary Asia
HIST	458	History of China
HIST	459	History of Japan

INTERNATIONAL STUDIES

International Studies

Major

Minor

	MAJOR	INT'L. POLITICS CONC.	INT'L. BUSINESS CONC.	INT'L. ECON CONC.	INT'L. DEVELOPMENT CONC.	MINOR
Total Hours Required:	57-63	63-69	63-69	63-70	63-69	21

Concentration in

- INTERNATIONAL BUSINESS
- INTERNATIONAL POLITICS
- INTERNATIONAL ECONOMICS
- INTERNATIONAL DEVELOPMENT

Coordinator:

Sally Boniece, Professor,
Department of History

Departmental Contacts:

Professors:

Boniece (History), Hartlaub
(Political Science), Neral
(Economics), Twing (Political
Science)

Associate Professor:

Sanchez (Foreign Languages and
Literature)

Assistant Professors:

Lennon (Marketing & Finance),
Russo (Geography)

- The International Studies major is interdisciplinary in nature and allows you to choose among four concentrations: International Business, International Politics, International Development and International Economics. The required core courses emphasize the interconnections among these four specializations and provide the solid foundation in history, politics, economics, and geography necessary both for the concentration and future employment.
- You are strongly encouraged to combine this major with a second major or minor, particularly in foreign languages.
- An internship is optional but INST 492 may be used for elective credits.
- Only courses in which a grade of C or better is earned will count toward satisfaction of major requirements.
- The International Studies program also offers the International Area Studies certificate, which is open to majors and non-majors

Summary of Requirements for Major/Minor in International Studies

Major

1. Required Core Courses: (24 hours)

INST 200 Intro. to International Studies (GEP Group F)
 INST 491 Seminar in International Studies (Capstone)
 ECON 201/211 Principles of Economics (Macro) (GEP Group D)
 ECON 202/212 Principles of Economics (Micro)
 GEOG 104/114 Human Geography (GEP Group D or F)
 or GEOG 110 World Regional Geography: Cultural Diversity
 (GEP Group D or F)
 HIST 100/111 The Contemporary World in Historical
 Perspective (GEP Group B or F)
 or HIST 114 World History
 INTR 330 International Business
 POSC 113/114 Introduction to World Politics (GEP Group D)
 or POSC 131 Intro. to Comparative Politics (GEP Group D or F)

2. Foreign Language: (12-18 hours)

Students must complete the 200-level sequence 211-212-250 (or receive credit through advanced placement) and a 300-level course in a modern foreign language. Students are advised that an additional 6 credits in the language result in a minor (250 – GEP Group B). A second option is to take 18 credit hours in any foreign language course offered or approved for credit by the Foreign Languages department.

3. Additional Courses: (21 hours)

[For those completing a concentration, go to the concentration requirements]

A. Required Courses: (15 hours)

ECON 309 Comparative Economic Systems
 GEOG 407 Political Geography
 POSC 341 International Organization
 and two of the following:
 INST 150 Intro to World Religions (GEP Group F)
 MDFL 111 Intercultural Understanding (GEP Group F)
 SOCI 224 Cultural Anthropology (GEP Group F)

B. Elective Courses: (6 hours)

Two from among the following:
 MGMT 450 International Management
 MKTG 460 International Marketing
 FINA 470 International Financial Mgmt.
 ECON 400 International Trade
 ECON 401 International Finance
 ECON 405 Economics of Developing Countries
 GEOG 300 Economic Geography
 GEOG 406 Mgmt. & Conserv. of Natural Res.
 GEOG 427 Geog. of Languages & Religions (GEP Group F)
 HIST 409 World Environmental History
 HIST 419 A History of Terrorism
 HIST 436 Women's Issues in World History (GEP Group F)
 HIST 475 Genocide and Mass Violence
 INST 492 Internship Seminar (up to 6 hours)
 LING 301 Introduction to Language

Minor

1. Required Core Courses: (3 hours)

INST 200 Intro. to International Studies (GEP Group F)

2. Foreign Language: (0 hours)

3. Elective Courses: (18 hours)

A minimum of 9 hours must be taken from Group I and 9 hours from Group II. You must select courses from at least three different disciplines in fulfilling the 18 hours for this requirement. Many courses in Group II require specific courses in Group I as prerequisites.

Group I (9 hours)

ECON 201/211 Principles of Economics – Macro (GEP Group D)
 ECON 202/212 Principles of Economics – Micro
 GEOG 104/114 Human Geography (GEP Group D or F)
 or GEOG 110 World Regional Geography: Cultural Diversity
 (GEP Group D or F)
 HIST 100/111 The Contemporary World in Historical
 Perspective (GEP Group B or F)
 or HIST 114 World History
 INST 150 Introduction to World Religions (GEP Group F)
 INTR 330 International Business
 MDFL 111 Intercultural Understanding (GEP Group F)
 POSC 113/114 Introduction to World Politics (GEP Group D)
 or POSC 131 Introduction to Comparative Politics
 (GEP Group D or Group F)
 SOCI 224 Cultural Anthropology (GEP Group F)

Group II (9 hours)

ECON 309 Comparative Economic Systems
 ECON 400 International Trade
 or ECON 401 International Finance
 ECON 405 Economics of Developing Countries
 FINA 470 International Financial Management
 GEOG 300 Economic Geography
 GEOG 406 Mgmt. & Conservation of Natural Res.
 GEOG 407 Political Geography
 GEOG 427 Geography of Languages & Religions (GEP Group F)
 HIST 409 World Environmental History
 HIST 419 A History of Terrorism
 HIST 436 Women's Issues in World History (GEP Group F)
 HIST 475 Genocide and Mass Violence
 INST 491 Seminar in International Studies
 LING 301 Introduction to Language
 MGMT 450 International Management
 MKTG 460 International Marketing
 PHIL 308 Political Philosophy (GEP Group F)
 POSC 341 International Organization
 POSC 342 Foreign Policy of the United States
 POSC 370 Introduction to Political Thought
 POSC 441 International Relations: Theory & Practice
 POSC 443 Transnational Terrorism & Counter-Terrorism
 POSC 488 Comparative Legal Systems

Major *continued*

PHIL 308	Political Philosophy (<i>GEP Group F</i>)
POSC 342	Foreign Policy of the United States
POSC 370	Introduction to Political Thought
POSC 434	Comparative Legal Systems
POSC 441	International Relations: Theory & Practice
POSC 443	Transnational Terrorism & Counter-Terrorism
POSC 488	Comparative Legal Systems

Requirements for International Politics Concentration**1. Required Core Courses:***(24 hours – listed above)***2. Foreign Language:***(12-18 hours – listed above)***3. Additional Courses: (27 hours)****A. Required Courses: (18 hours):**

ECON 309	Comparative Economic Systems
GEOG 407	Political Geography
POSC 250	Research Methods
	<i>or</i> GEOG 380 Research Methods in Geography
POSC 341	International Organization
POSC 342	Foreign Policy of the United States
POSC 441	International Relations: Theory and Practice

B. Elective Courses: (9 hours)*Three from among the following:*

ECON 400	International Trade
HIST 409	World Environmental History
HIST 419	A History of Terrorism
INST 492	Internship Seminar (<i>if internship is relevant to International Politics</i>)
POSC 330	Politics of Africa
POSC 331	Politics of Latin America
POSC 332	Politics of Middle East
POSC 333	Politics of Europe
POSC 370	Introduction to Political Thought
POSC 431	Russian Politics
POSC 435	Model Organization of American States
POSC 442	National Security Policy
POSC 443	Transnational Terrorism & Counter-Terrorism
POSC 488	Comparative Legal Systems

Requirements for International Business Concentration**1. Required Core Courses:***(24 hours – listed above)***2. Foreign Language:***(12-18 hours – listed above)***3. Additional Courses: (27 hours)****A. Required Courses: (15 hours)**

ACCT 211	Financial Accounting
BLAW 291	Legal Environment of Business
<i>and one of the following pairs of courses:</i>	
FINA 370	Corporate Finance*
FINA 470	International Financial Management
<i>or</i>	
MGMT 351	Management of Organizations
MGMT 450	International Management
<i>or</i>	
MKTG 361	Principles of Marketing
MKTG 460	International Marketing

and one of the following courses:

ECON 309	Comparative Economic Systems
ECON 400	International Trade
ECON 401	International Finance

B. Elective Courses: (12 hours)

ECON 405	Economics of Developing Countries
FINA 303	Principles of Finance
GEOG 300	Economic Geography
GEOG 407	Political Geography
GEOG 427	Geography of Languages and Religions (<i>GEP Group F</i>)
HIST 409	World Environmental History
INST 492	Internship Seminar (<i>if internship is relevant to International Business</i>)
PHIL 308	Political Philosophy (<i>GEP Group F</i>)
POSC 341	International Organization
POSC 370	Introduction to Political Thought
POSC 441	International Relations: Theory and Practice
POSC 488	Comparative Legal Systems

*Students should be aware that there are additional MATH and ACCT prerequisites for FINA 370; also, students are advised to complete FINA 303 before enrolling in FINA 370.

INTERNATIONAL STUDIES

Requirements for International Economics Concentration**1. Required Core Courses:** (24 hours – listed above)**2. Foreign Language:** (12-18 hours – listed above)**3. Additional Courses:** (27-28 hours)**A. Required Courses:** (21-22 hours)

ECON 400 International Trade
 ECON 401 International Finance
 ECON 405 Economics of Developing Countries
 ECON 407 Business Cycles and Forecasting
 or ECON 450 Quantitative Economics
 or ECON 460 Introduction to Econometrics
 GEOG 300 Economic Geography
 MATH 209/219 Elements of Applied Probability &
 Statistics (Core Skill 3)
 MATH 106 Algebra with Calculus for Business
 or MATH 220 Calculus for Applications I
 or MATH 236 Calculus I (Core Skill 3)

B. Elective Courses: (6 hours)*Two from among the following:*

ECON 309 Comparative Economic Systems
 ECON 410 Resource and Energy Economics
 GEOG 407 Political Geography
 INST 492 Internship Seminar (if internship is relevant to
 International Economics)
 POSC 341 International Organization

Requirements for International Development Concentration**1. Required Core Courses:**
(24 hours – listed above)**2. Foreign Language:**
(12-18 hours – listed above)**3. Additional Courses:** (27 hours)**A. Required Courses:** (15 hours)

ECON 309 Comparative Economic Systems
 ECON 405 Economics of Developing Countries
 GEOG 300 Economic Geography
 INST 150 Introduction to World Religions (GEP Group F)
 POSC 341 International Organization

B. Elective Courses: (12 hours)*Four courses (chosen from at least three different disciplines)
from among the following:*

ECON 400 International Trade
 ECON 401 International Finance
 GEOG 320 Geography of Latin America
 GEOG 403 The Geography of Sub-Saharan Africa
 GEOG 407 Political Geography
 HIST 301 Traditional Africa
 HIST 304 History of Latin America
 HIST 353 Contemporary Africa
 HIST 455 Latin American Revolutions
 HIST 457 India
 INST 492 Internship Seminar (if internship is relevant to
 International Development)
 PHIL 311 Asian and African Philosophy (GEP Group F)
 POSC 330 Politics of Africa
 POSC 331 Politics of Latin America
 POSC 332 Politics of the Middle East

Leadership Studies

Minor

MINOR

Total Hours Required:

19

Coordinator:

Elesha Ruminski, Department of
Communication Studies

Participating Faculty:

Associate Professor:

Powell (Social Work)

Assistant Professors:

McClellan (Management)
Ruminski (Communication Studies)

Lecturers:

Bowling, Mandicott (Student and
Educational Services)

- The Leadership Studies Minor is open to any student seeking theoretical and experiential leadership development. It is not necessary to be in a leadership role on or off campus to minor in Leadership Studies.
- The minor entails a substantial number of experiential learning activities.
- Only courses in which a grade of C or better is earned will count towards satisfaction of the minor requirements.
- You cannot major in Leadership Studies.

Summary of Requirements for Minor in Leadership Studies

Minor

1. Required Core Courses: (13 credits)

CMST 102	Introduction to Human Communication
LEAD 101	Introduction to Leadership Studies
LEAD 201	Leadership Theories and Practices
LEAD 401	Citizen Leader

2. Leadership Values and Skills (3 credits)

Select one of the following courses:

CMST 215	Small Group Communication
CMST 300	Interpersonal Communication
CMST 322	Presentational Communication
CMST 335	Organizational Communication
CMST 345	Conflict Management
MGMT 356	Leadership and Human Behavior
MGMT 405	Business Ethics and Social Responsibility
PHIL 201	Ethics
PHIL 304	Social Philosophy
PHIL 314	Business Ethics
POSC 462	Personality and Politics
PSYC 385	Group Processes
PSYC 414	Theories of Personality
PSYC 418	Social Psychology
SOWK 375	Human Behavior and the Social Environment I
SOWK 473	Generalist Practice with Groups

3. Leadership Environments (3 credits)

Select one of the following courses:

LEAD 499	Independent Study (3 cr.)
MGMT 351	Management of Organizations
MGMT 357	Human Resources Management
MGMT 359	Quality Management
POSC 321	State and Local Politics
POSC 323	Public Administration
POSC 352	Interest Groups
POSC 358	American Public Policy
POSC 427	The American Presidency
RECR 380	Recreation Leadership
RECR 382	Program Planning
SOCI 325	Community Analysis
SOWK 370	Introduction to Social Welfare and Social Work

LIBERAL STUDIES

Liberal Studies

Major

MAJOR

Total Hours Required:

48

Coordinator:

Katherine Almquist, Associate Professor, Department of Foreign Languages and Literature

Participating Faculty:

John McMullen, Associate Professor, Department of Sociology (Social Sciences),
Thomas Sigerstad, Associate Professor, Department of Management (Business),
Gary Austin, Lecturer and Coordinator of Advising, FSU College of Liberal Arts and Sciences Programs, USM at Hagerstown

- Early Childhood/Elementary Education and Elementary Education majors should consult with their advisors about the advantages of a double major in Liberal Studies.
- Only courses in which a C or better is earned will count toward satisfaction of major requirements.
- You must submit a 300-500 word rationale describing goals and objectives of focus area for entry. To complete the major, you must evaluate the extent to which these goals and objectives were met (see program exit requirements).
- The Liberal Studies major may be completed on the Frostburg campus and at the University System of Maryland in Hagerstown.
- You cannot earn a minor in Liberal Studies.

The Liberal Studies major is an integrative program providing breadth in the arts, humanities, natural and social sciences, and depth in an area of specialization.

The major is adaptable to student interest in technical and/or professional studies and constitutes a desirable preparation for graduate training or for entry and advancement opportunities in a wide array of employment fields requiring a baccalaureate degree.

Summary of Requirements for Major in Liberal Studies

Major

I. Liberal Core: (21 hours)

A minimum of 21 hours of course work in the arts and sciences in addition to courses satisfying General Education Program requirements, and distributed as follows:

- 3 hours in communication arts course that focuses on writing or speaking.
- 18 hours in arts and sciences courses, including a minimum of 3 hours each in arts, humanities, natural sciences and social sciences.

NOTE: Students seeking Maryland State teaching certification in Early Childhood and/or Elementary Education must complete specific courses within these categories; they should consult an advisor in the Department of Educational Professions.

II. Focus Area Requirements (approval of LBST Coordinator required): (27 hours)

- A minimum of 24 hours in a discipline or disciplines (including current minors) related to the student's area of technical or professional training or other specialized interest, including a minimum of 15 hours at the 300/400 level.
- A minimum of 3 hours in a capstone course (seminar, individual research, practicum, field work or internship).

III. Program Exit Requirements (0 hours)

Completion of the LBST 450 Senior Self- Assessment. The SSA includes:

- 300-500 word word-processed statement that explains the choice of senior capstone course, justifies the inherent integrity of the focus area, and articulates post-baccalaureate goals.
- Breakdown of the learning goals and outcomes of each course included in the focus area following program guidelines and evaluation of extent to which goals were accomplished.

Physical Therapy Preparation

Pre-professional program

Coordinator:

Art Siemann, Associate Professor,
Department of Health and
Physical Education

- Professional schools *differ substantially* in their requirements for admission and it is the responsibility of the student to ensure the completion of the necessary pre-physical therapy courses for the professional schools of interest.
- You are expected to earn and maintain at least a 3.20 cumulative grade point average.
- Physical Therapy experience as volunteer or aide is required (100-200 hours) as is a current CPR certificate.
- You cannot major or minor in pre-physical therapy.
- Application requirements for the University of Maryland, Baltimore include:
 - Bachelor's degree (any major)
 - Successful completion (C or better) of the 50 specified credit hours or prerequisite course work
 - Submission of GRE scores.

The following pre-professional courses are required of students interested in the University of Maryland, Baltimore's Doctorate in Physical Therapy Program. Students interested in attending other professional schools should work closely with the coordinator of the Physical Therapy Preparation program to plan an appropriate program.

Summary of Requirements for Pre-professional Program in Physical Therapy

1. Biology (16 hours)

BIOL 149 General Biology I (GEP Group C)

BIOL 321 Anatomy and Physiology I

BIOL 322 Anatomy and Physiology II

Any 300- or 400-level biology course with lab (excluding botany courses) in addition to the courses listed above

2. Chemistry (8 hours)

CHEM 201 General Chemistry I (GEP Group C)

CHEM 202 General Chemistry II

3. Mathematics (6 hours)

MATH 102 College Algebra (*co-requisite for CHEM 201*)

MATH 209 Elements of Applied Probability & Statistics (*Core Skill 3*)
or SOCI 310 Statistics for Social Science

4. Physics (8 hours)

PHYS 215 General Physics I (GEP Group C)

PHYS 216 General Physics II

5. Psychology (6 hours)

PSYC 150 General Psychology (GEP Group D)

PSYC 317 Abnormal Psychology

6. Electives (6 hours)

Choose two of the following:

HEED 200 Nutrition

HEED 320 Pharmacology and General Medical Conditions

PHEC 303 Biomechanics for Exercise and Sport Science

PHEC 341 Psychology of Physical Activity

PSYC 210 Child Development

PSYC 212 Adolescence and Adulthood

PSYC 320 Health Psychology

PSYC 420 Physiological Psychology

(Consult with Physical Therapy Preparation Coordinator concerning other appropriate electives.)

SOCIAL SCIENCE

Social Science

Major

Teaching Certification Option

	MAJOR	TEACHING CERT. OPTION
Hours required in Social Sciences:	60-61	63-64
Hours required in other fields:	6	45.5
Total Hours Required:	66-67	108.5-109.5

Summary of Requirements for Major in Social Science

Major

Coordinator:

Todd A. Rosa, Assistant Professor,
Department of Educational
Professions

Department Contacts:

David Kiriazis,
Chair, Department of Economics;
Craig Caupp,
Chair, Department of Geography;
Paul Charney,
Chair, Department of History;
Stephen Twing,
Chair, Department of Political
Science;
Kevin Peterson,
Chair, Department of Psychology;
Robert Moore,
Chair, Department of Sociology

- A major in Social Science requires a minimum of 66 hours; you cannot minor in Social Science.
- Completion of the Social Science major (Teaching Certification Option) is required for approved program teacher certification in secondary social studies.
- Only courses in which you earn a grade of C or better will count towards satisfaction of major requirements in the Social Science Teaching Certification Option.
- **+ indicates a variation in requirements for the Teaching Certification Option.**

1. Introductory Level Courses: (36 hours)

Economics (6 hours)

ECON 201 Principles of Economics (Macro) (GEP Group D)
or ECON 211 Honors: Principles of Macroeconomics
(GEP Group D)
ECON 202 Principles of Economics (Micro)
or ECON 212 Honors: Principles of Microeconomics

Geography (6 hours)

GEOG 104 Human Geography (GEP Group D or F)
or GEOG 114 Honors Human Geography (GEP Group D or F)
or GEOG 110 World Regional Geography: Cultural Diversity
(GEP Group D or F)
GEOG 301 Geography of North America
or GEOG 302 Geography of Maryland

History (6 hours)+

Select one of the following sequences:
HIST 103, 104 History of the United States
or HIST 113, 114 World History

Political Science (6 hours)

POSC 110 Introduction to American Politics (GEP Group D)
or POSC 112 Honors Introduction to American Politics
(GEP Group D)
POSC 113 Introduction to World Politics (GEP Group D)
or POSC 114 Honors Introduction to World Politics
(GEP Group D)
or POSC 131 Introduction to Comparative Politics
(GEP Group D or F)

Psychology (6 hours)

PSYC 150 General Psychology (GEP Group D)
or PSYC 151 Honors General Psychology (GEP Group D)
and one from among:
PSYC 210 Child Development
PSYC 212 Adolescence and Adulthood
PSYC 220 Psychology of Women (GEP Group F)

Sociology (6 hours)

SOCI 100 Introduction to Sociology (GEP Group D)
or SOCI 111 Honors Introduction to Sociology (GEP Group D)
and 1 from among:
SOCI 200 Social Problems
SOCI 224 Cultural Anthropology (GEP Group F)
SOCI 305 Racial and Cultural Minorities (GEP Group F)
SOCI 306 Sociology of African Americans
(NOTE: Students interested in pursuing secondary social studies certification at either the undergraduate or master's level should choose SOCI 224, SOCI 305, or SOCI 306.)

2. Tracks: (18 hours)

Select 2 of the following departmental patterns.

Economics (9 hours)

Select from:
ECON 300 History of Economic Thought
ECON 303 American Economic History

ECON 306 Money and Banking
ECON 307 Government, Business and Public Policy
ECON 309 Comparative Economic Systems
ECON 351 Intermediate Macroeconomics
ECON 352 Intermediate Microeconomics
ECON 400 International Trade
ECON 401 International Finance
ECON 405 Economics of Developing Countries
ECON 407 Business Cycles and Forecasting
ECON 408 Urban and Regional Economics
ECON 490 Special Topics in Economics

Geography (9 hours)

Select one course from each group:

- GEOG 300 Economic Geography
or GEOG 407 Political Geography
or GEOG 410 Locational Analysis
or GEOG 425 Geography of Transportation
or GEOG 427 Geography of Languages and Religion
(GEP Group F)
- GEOG 320 Geography of Latin America
or GEOG 401 Geography of Europe
or GEOG 402 Geography of Northern Eurasia
or GEOG 403 Geography of Sub-Saharan Africa
- GEOG 324 Urban Geography: Internal City Patterns
or GEOG 325 Urban Geography: Metropolitan Systems

History (9 hours)+

Select from 300- or 400-level history courses.

Political Science (9 hours)

Select one course from each of the three groups:

- POSC 352 Interest Groups
POSC 361 Public Opinion and Political Behavior
POSC 362 Political Parties and Elections
POSC 363 Media and Politics
POSC 365 Women and Politics
POSC 462 Personality and Politics
- POSC 330 Politics of Africa
POSC 331 Politics of Latin America
POSC 332 Politics of Middle East
POSC 333 Politics of Europe
POSC 341 International Organization
POSC 342 Foreign Policy of the United States
POSC 431 Russian Politics
- POSC 321 American State and Local Politics
POSC 323 Public Administration
POSC 324 Criminal Justice Systems
POSC 421 American Legislative Politics
POSC 422 American Constitutional Law I
POSC 423 American Constitutional Law II
POSC 427 The American Presidency

Psychology (9-10 hours)

Select one course each from three of the four groups:

- PSYC 210 Child Development
or PSYC 212 Adolescence and Adulthood
- Selection may not duplicate introductory courses.

- b. PSYC 213 Psychology of Adjustment
or PSYC 301 Research Methods and Analysis II
or PSYC 303 Psychology of Couples
- c. PSYC 318 Social Psychology
- d. PSYC 314 Theories of Personality
or PSYC 317 Abnormal Psychology

Sociology (9 hours)

Select one course from each of the three groups if either SOCI 305 or SOCI 224 is taken to satisfy Part I of requirements. If neither SOCI 305 nor SOCI 224 was taken to satisfy Part I of major requirements, choose either SOCI 305 Racial and Cultural Minorities (GEP Group F) or SOCI 224 Cultural Anthropology (GEP Group F) and select two additional courses, one each from two of the following groups. In either case, selections may not duplicate choices made to meet other major requirements.

a. Social Institutions and Structures

- SOCI 305 Racial and Cultural Minorities (GEP Group F)
- SOCI 362 Sociology of Religion
- SOCI 364 Marriage and Family Relationships
- SOCI 366 Social Inequality
- SOCI 367 Sociology of Medicine
- SOCI 436 Social Aspects of Mass Communication

b. Social Behavior

- SOCI 203 Sociology of Deviant Behavior
- SOCI 306 Sociology of African Americans
- SOCI 332 Collective Behavior
- SOCI 334 Gender and Social Life
- SOCI 340 Criminology

- SOCI 442 Juvenile Delinquency
- SOCI 468 Sociology of Later Life

c. Community and Society

- SOCI 224 Cultural Anthropology (GEP Group F)
- SOCI 322 Social Demography
- SOCI 325 Community Analysis
- SOCI 326 Sociology of Rural Life
- SOCI 328 Sociology of Urban Life

3. Research Methods+ (3-4 hours)

Choose one of the following from a department selected as a track above:

- ECON 450 Quantitative Economics
- GEOG 380 Geographic Research Methods and Field Techniques
- HIST 299 Writing and Research in History
- POSC 250 Research Methods
- PSYC 201 Research Methods and Analysis I
- SOCI 311 Basic Research Methods

4. Social Science Seminar (3 hours)

- SOSC 490 Topics in Social Science (Capstone)

5. Other required courses (6 hours)

- CMST 102 Introduction to Human Communication*
- COSC 100 Introduction to Computer Science*+
(Tech. Fluency)

*Note: you must receive a grade of C or better for this course to count toward major.

Summary of Requirements for Major in Social Science – Teaching Certification Option+

If you want to earn teaching certification in social studies, you must complete the Social Science major described above with the following variations in requirements (footnoted with a + in the major description):

1. Introductory Level Courses: (42 hours)

As above, except:

History (12 hours)

Both of the following sequences:

- HIST 103, 104 History of the United States
- HIST 113, 114 World History

2. Tracks and 3. Research Methods: (18-19 hours)

Select 2 of the departmental patterns. Include a research methods course as a substitute for any one course in one selected track. See the list of research methods courses in 3. Research Methods in the description of the major above.

History (9 hours)

Three 300- or 400-level history courses. At least one of the courses must be non-western (e.g., Asian, African, Middle Eastern).

3. Other required courses:

- COSC 100 Introduction to Computer Science (Tech. Fluency)
or EDUC 346, 447, 448 Education Technology Labs I-III (Tech. Fluency)

Summary of Requirements for Teaching Certification Option in Social Studies

If you wish to complete a Maryland State approved program in teaching Social Studies, you must:

- Complete the BA/BS in Social Science - Teaching Certification Option.
- Meet the phase admissions requirements summarized in the Educational Professions section.
- Complete the professional education sequence described in Education: Secondary School Programs or
- Complete the M.A.T. - Secondary Education program described in the Graduate Catalog, following the completion of the bachelor's degree.

Students who plan to apply for the M.A.T. Secondary Program must complete both the United States (103-4) and World History (113-114) sequences and all other requirements in the Summary of requirements for major in social science.

NOTES



Course Descriptions

Listed alphabetically by academic department or program

Accounting

ACCT 211 Financial Accounting 3 cr.

An introduction to the principles and concepts of financial accounting, including the basic accounting process, required to make informed decisions based on financial statement information. Credit cannot be earned for both ACCT 201 and ACCT 211. Every semester.

ACCT 212 Managerial Accounting 3 cr.

Accounting as a tool for decision making, planning, control and evaluation. Cost-volume-profit analysis, cost behaviour, profit planning and product costing. Every semester. *Prerequisite: C grade or better in ACCT 211.*

ACCT 305 Accounting Systems 3 cr.

Modern accounting systems, computer applications in accounting problems and systems design. Lab/Lecture. Fall. *Prerequisite: C grade or better in ACCT 311 and COSC 100/110.*

ACCT 311 Intermediate Accounting I 3 cr.

Accounting standards, conceptual framework, comprehensive development of the accounting process, financial statement preparation, revenue recognition and time value of money. Every semester. *Prerequisite: C grade or better in ACCT 211. Prerequisite or corequisite: MATH 106.*

ACCT 312 Intermediate Accounting II 3 cr.

Application of accounting theory and techniques, sequel to ACCT 311. Current assets, investments, plant assets, intangible assets, liabilities. Every semester. *Prerequisite: C grade or better in ACCT 311.*

ACCT 313 Intermediate Accounting III 3 cr.

Application of accounting theory and techniques, sequel to ACCT 311 and ACCT 312. Earnings per share, stockholders' equity, income taxes, pensions and post retirement benefits, leases, accounting changes and error analysis, statement of cash flows and full disclosure. Fall. *Prerequisite: C grade or better in ACCT 312.*

ACCT 315 Cost Accounting 3 cr.

In-depth coverage of cost-volume-profit analysis, cost behavior and cost analysis. Cost management, cost control, determination, evaluation and analysis. Pricing decisions and decision making with relevant costs. Fall. *Prerequisite: C grade or better in ACCT 212 and ACCT 311.*

ACCT 316 Advanced Cost Accounting 3 cr.

In depth coverage of job costing, activity based costing and process costing. Flexible budgets, variance analysis, inventory costing and capacity analysis. Spring. *Prerequisite: C grade or better in ACCT 315.*

ACCT 325 Auditing 3 cr.

Fundamentals of auditing theory and practice. Ethics, legal liability, generally accepted auditing standards, the conceptual framework underlying auditing and reporting. General approaches to auditing financial statements, other services provided by public accountants. Spring. *Prerequisites: C grade or better in ACCT 301 or ACCT 311, and C grade or better in ACCT 305.*

ACCT 330 Governmental and Nonprofit Accounting 3 cr.

Accounting and financial reporting for state and local governments, and nonprofit organizations such as hospitals and colleges. Fall. *Prerequisite: C grade or better in ACCT 301 or ACCT 311.*

ACCT 340 Financial Reporting Issues 3 cr.

Investors' use of financial statements, management motives in issuing statements, internal financial versus reporting decisions, economic significance of accounting reports, and the evolution and variety of accounting principles. Dissection of corporate accounting reports required by the financial markets, creditors, and regulatory authorities. Spring. *Prerequisites: 42 credits and C grade or better in ACCT 212 or permission of instructor.*

ACCT 401 Advanced Financial Accounting 3 cr.

Partnerships, business combinations, consolidated financial statements, international accounting issues, foreign currency transactions, foreign currency financial statement translation and other current topics. Spring. *Prerequisite: C grade or better in ACCT 302 or ACCT 312.*

ACCT 420 Tax 3 cr.

Federal income taxation of individuals and corporations. Introductory tax research, tax planning, and professional responsibilities. Other topics, such as tax preparation software, at the discretion of the instructor. Fall. *Prerequisites: 75 credits and C grade or better in ACCT 212 or permission of instructor.*

ACCT 421 ADVANCED TAX 3 cr.

Partnerships, S corporations, and other advanced topics in individual taxation. Other topics, such as basic tax research, tax preparation software, and Maryland income taxes at the discretion of the instructor. Spring. *Prerequisite: C grade or better in ACCT 420.*

ACCT 425 Tax Practicum 3 cr.

Guided work experience in tax preparation of federal and state returns provided as a community service with National Volunteer Income Tax Assistance Program. Requires a minimum of 50 hours of work after completion of IRS and campus training programs. Does not fulfill ACCT major electives requirement. Repeatable no more than 2 times for credit. Spring. *Prerequisites: ACCT 420 or permission of instructor.*

ACCT 494 Internship in Accounting 3 or 6 cr.

Guided work experience in public accounting, industry, government or not-for-profit accounting. Minimum of 135 clock hours of experience for 3 credits. Minimum of 270 clock hours of experience for 6 credits. Academic component consists of two research papers on experience-related topics and a detailed report on the internship experience. Previous experience not acceptable for credit. Repeatable for maximum of 6 credits. Every semester and summer. *Prerequisites: ACCT 212, ACCT 312 and departmental approval.*

African American Studies

AAST 200 Introduction to African American Studies 3 cr.

Overview of critical aspects of the history and culture of African Americans. Employs various interdisciplinary perspectives to explore the experience of Africans uprooted from their land, ways in which these African Americans have adjusted to their new society, and contributed to its growth and development. Spring. *GEP Group F.*

AAST 300 Traditional Africa 3 cr.

The African pre-colonial states: their governments, economic systems, cultural patterns, achievements, and relations with other African and non-African peoples. Also offered as HIST 301. Variable.

AAST 400 Africans of the Diaspora 3 cr.

Exploration of the main historical trends, cultural tenets, social movements, and intellectual constructions of the African Diaspora with focus on the international connections created by voluntary and forced migrations of people of African descent in antiquity and modern times. Examination of the historical challenges to Africans of the Diaspora and initiatives taken in the face of various Euro-American systems and institutions. Variable. *GEP Group F.*

AAST 425 History of African American Theatre 3 cr.

Study of the development of African American theatre from nineteenth century through present. Examination of representative forms, dramatists, theatre artists from across the United States with an awareness of the ways African American theatre interacts with various social, cultural and political concerns. Variable.

AAST 490 Topics in African American Studies 3 cr.

Variable topics related to African American Studies from disciplines across the University. Variable. Repeatable for maximum of 6 credits if topics are substantially different. *Prerequisite: AAST 200 or permission of the instructor.*

ART

AAST 494 AAST Practicum 3 cr.

Study of African American history and culture through field trips to cities in Maryland and neighboring states, articulated with a theoretical analysis of major themes under study. Readings, some classroom sessions, private consultations with the instructor, and personal writings constitute the theoretical component of the practicum. Lecture, travel, and independent study. Additional fees required. Every semester. *Prerequisite: permission of the instructor.*

Art**ART 100 Art Appreciation 3 cr.**

Introduction to the appreciation and understanding of the visual arts. Every semester. *GEP Group A.*

ART 104 Two-Dimensional Design 3 cr.

Introduction to the visual organization and formal analysis of two-dimensional design. Critical study, vocabulary, design applications, and media explorations as applied to two-dimensional design. Required of all art majors and minors. Two hr. lecture, 2 hr. lab. Fall.

ART 105 Three-Dimensional Design 3 cr.

Introduction to the visual organization and formal analysis of three-dimensional design. Critical study, vocabulary, design applications, and media explorations as applied to three-dimensional design. Required of all art majors and minors. Two hr. lecture, 2 hr. lab. Spring.

ART 110 Visual Imagery 3 cr.

An introduction to the visual arts through theory and practice; exploring basic aesthetic concepts, modes of visual communication, expressive meaning of various materials, theoretical components and symbol systems. Admission priority for Early Childhood and Elementary Education majors. Every semester. *GEP Group A.*

ART 111 Honors: Art Appreciation 3 cr.

Introduction to the appreciation and understanding of the representational and visual arts. Focus includes the visual arts' relationship to civilizations' ideas, cultural developments in the humanities, and iconography. Fall. Credit cannot be earned for both ART 100 and ART 111. *Prerequisite: acceptance into the Honors Program or permission of instructor. GEP Group A.*

ART 202 Ceramics 3 cr.

Introduction to ceramic processes, history, and aesthetics of ceramic form; an exploration of functional and sculptural ceramics. Studio performance stressed. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisite: ART 105 or permission of instructor.*

ART 207 Graphic Design 3 cr.

Basic level graphic processes and techniques: Photoshop and Quark softwares, Macintosh platform. Information and technology fluency. Visual art and graphic design orientation. Two hr. lecture, 2 hr. lab. Every semester. *Tech. Fluency*

ART 209 Crafts Workshop 3 cr.

A variety of crafts such as textiles, weaving, mosaics, leather, and metalwork. Two hr. lecture, 2 hr. lab. Variable.

ART 212 Drawing 3 cr.

Fundamental aspects of drawing with emphasis on composition, techniques, and concept. Variety of media techniques and subjects, exploring conceptual and expressive possibilities; drawing as a description of structures within a spatial environment. Two hr. lecture, 2 hr. lab. Every semester.

ART 216 Illustration 3 cr.

Drawing and painting techniques to develop technical proficiency with emphasis on observation, composition and imagination. Emphasis on processes pertaining to illustrated visual imagery in editorial, digital, institutional and scientific/environmental themes. Two hr. lecture, 2 hr. lab. Spring. *Prerequisites: ART 212 and ART 104.*

ART 221 Painting 3 cr.

Introduction to painting — color, form, shape, and texture; problems in formal and expressive relationships. Studio performance stressed. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisites: ART 104 and ART 212, or permission of instructor.*

ART 232 Printmaking 3 cr.

Introduction to relief, intaglio, planographic, and serigraphic processes. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisites: ART 104 and ART 212, or permission of instructor.*

ART 235 Photography 3 cr.

Introduction to still photography: basic camera use, exposure control, and darkroom procedure. Final portfolio of work required. Two hr. lecture, 2 hr. discussion, and one 3-hr. darkroom period per week. Every semester.

ART 236 Digital Imaging 3 cr.

Introduction to photography and image manipulation using digital processes. Students will study the basics of traditional still photography, but enhance the learning experience through digital production on the Macintosh computer. An introduction to the computer as a tool in fine arts: camera use, scanning, digital manipulation and output. Two hr. lecture, 2 hr. lab. Variable. *Prerequisites: ART 104 or permission of instructor.*

ART 240 Sculpture 3 cr.

Introduction to classical and contemporary concepts of form and media of sculpting. Physical properties of structure and the nature of materials. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisites: ART 105 or permission of instructor.*

ART 291 Studio Focus Review 0 cr.

Registration concurrent with second advanced studio in focus area. May be taken no more than three times. Graded P/N. Every semester.

ART 301 Artistic Traditions: Asia 3 cr.

Survey of cultures outside the European tradition. An iconographic and aesthetic analysis of Asian traditions: Buddhist, Hindu, and Islamic. Fall, even-numbered years. *GEP Group F.*

ART 302 Artistic Traditions: Africa and the Americas 3 cr.

Survey of cultures outside the European tradition. An iconographic and aesthetic analysis of the arts of Africa, Pre-Columbian America and the indigenous populations of North America. Fall, odd-numbered years. *GEP Group F.*

ART 307 Computer Graphics 3 cr.

Introduction to terminology, methods, processes, craft, and technology of the computer graphic designer; emphasis on theory and application of the Macintosh computer system. May be taken only one time for credit. Two hr. lecture, 2 hrs. lab. Every semester. *Prerequisite: ART 207.*

ART 360 Western Art History 3 cr.

Survey from the prehistoric to the modern. The theoretical evolution of classicism and anti-classicism as evidenced in painting, sculpture and architecture. Fall.

ART 370 Women/Gender and the Visual Arts 3 cr.

A survey and analysis of the roles of women and gender in artistic production, spectatorship, and critical discourse. Painting, sculpture, and photography. Spring, even-numbered years.

ART 380 19th-Century Art History 3 cr.

Survey of major artistic developments in Europe and America from the time of the French Revolution until World War I. This course presents the broad context of 19th century art. Fall, even-numbered years.

ART 402 Advanced Ceramics 3 cr.

Continued study of clays and glazes, potter's wheel and handbuilding techniques; critical analysis and research into historical and contemporary trends. At advanced levels, departmental majors will be involved in research and development of concepts culminating in a final senior exhibition or an internship. Repeatable no more than 4 times for credit. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisites: ART 202 and ART 412, or permission of instructor; concurrent enrollment in ART 291 and second advanced course.*

ART 407 Advanced Graphic Design: Print 3 cr.

Variety of design problems using Macintosh computers combined with traditional layout and illustration techniques. Emphasis on the historical and functional use of a professional quality portfolio. Repeatable no more than 4 times for credit. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisites: ART 207, ART 307 and ART 412, or permission of instructor; concurrent enrollment in ART 291 and second advanced course.*

- ART 408 20th-Century Art History** 3 cr.
Survey of major developments from post-impressionism to post-modernism and the contemporary: Europe and the United States. Spring.
- ART 411 Senior Portfolio** 3 cr.
Continued investigation and development of studio work and concepts, culminating in a professional portfolio. Co-registration in ART 491 required. Every semester. *Prerequisite: Passage of studio focus review and senior status. Capstone.*
- ART 412 Advanced Drawing** 3 cr.
Continuation of observational figurative and non-figurative drawing. Emphasis on the development of composition, expression, color, use of media and conceptual content. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisite: ART 212.*
- ART 414 Adv. Graphic Design: Interactive Multimedia Design** 3 cr.
Processes include digital imaging, digital video and audio production, animation, and interface design and scripting. Emphasis on the formal, historical, and sociological aspects of interactive design. Repeatable no more than 4 times for credit. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisites: ART 407 (twice).*
- ART 415 Art Criticism** 3 cr.
Problems in describing, analyzing, interpreting, and evaluating art. History, purposes, conceptual bases, and methods of art criticism; critical performance. Spring. *Prerequisites: ART 360 or ART 408, 60 credit minimum.*
- ART 416 Advanced Illustration** 3 cr.
Professional applications in drawing and illustration related to traditional and digital technology. Assignments present industry-specific problems, which encourage students to examine the transition from conceptualization to execution. Professional portfolio development. Repeatable no more than 4 times for credit. Two hr. lecture, 2 hr. lab. Every semester. *Prerequisites: ART 212 and ART 216, or permission of instructor.*
- ART 421 Advanced Painting** 3 cr.
Continued study of painting and painting materials through individual problem-solving in objective and non-objective painting; critical analysis and research into historical and contemporary trends. At advanced levels, departmental majors will be involved in research and development of concepts culminating in a final senior exhibition or internship. Repeatable no more than 4 times for credit. Two hr. lecture, 2 hrs. lab. Every semester. *Prerequisites: ART 221 and ART 412, or permission of instructor; concurrent enrollment in ART 291 and second advanced course.*
- ART 430 Greek and Roman Art** 3 cr.
A social and art historical analysis of Greco-Roman visual representation. Sculpture and painting. Spring, odd-numbered years.
- ART 432 Advanced Printmaking** 3 cr.
Continued study of printmaking processes, refinement of media, and individual expression; critical analysis and research into historical and contemporary trends. At advanced levels, departmental majors will be involved in research and development of concepts culminating in a final senior exhibition or internship. Repeatable no more than 4 times for credit. Two hr. lecture, 2 hrs. lab. Every semester. *Prerequisites: ART 232 and ART 412, or permission of instructor; concurrent enrollment in ART 291 and second advanced course.*
- ART 435 Advanced Photography** 3 cr.
In-depth photographic exploration of selected subject matter. Unified photographic thesis required; critical analysis and research into historical and contemporary trends. At advanced levels, departmental majors will be involved in research and development of concepts culminating in a final senior exhibition or internship. Repeatable no more than 4 times for credit. Two hr. lecture, 2 hrs. lab. Every semester. *Prerequisite: ART 235; concurrent enrollment in ART 291 and second advanced course.*
- ART 440 Advanced Sculpture** 3 cr.
Continued study of functional and non-functional sculpture, and individual expression; critical analysis and research into historical and contemporary trends. At advanced levels, departmental majors will be involved in research and development of concepts culminating in a final senior exhibition or internship. Repeatable no more than 4 times for credit. Two hrs. lecture, 2 hrs. lab. Every semester. *Prerequisites: ART 240 and ART 412, or permission of instructor; concurrent enrollment in ART 291 and second advanced course.*
- ART 452 Ceramic Glaze Research** 3 cr.
Exploration of ceramic glaze components, glaze calculation, glaze surfaces and firing temperatures. Two hrs. lecture, 2 hrs. lab. Variable. *Prerequisites: ART 202, ART 402 or permission of instructor.*
- ART 460 Renaissance and Baroque Art History** 3 cr.
The evolution of humanism and realism in the *quattrocento*, mannerism in the *cinquecento*, and caravaggism and classicism in the *seicento*. Fall, odd-numbered years.
- ART 490 Special Topics in Art** 1-6 cr.
Concepts or media not regularly presented, using special resources. Lecture and studio or lecture only. Repeatable for maximum of 9 credits if topics are substantially different. Variable. *Prerequisite: permission of instructor.*
- ART 491 Senior Review** 0 cr.
Graded P/N. Co-registration in ART 411 required. Every semester.
- ART 492 Internship Research** 3 cr.
Academic component of internship. Requires co-registration in 495. Graded A-F. Every semester.
- ART 495 Internship in Art** 6 or 12 cr.
Experiential component of internship: guided work experience in conjunction with 492; must directly relate to academic program. Full-time interns register for 3 credits in 492 and 12 credits in 495 and may not enroll in other courses. Part-time interns register for 3 credits in 492 and 6 credits in 495. Graded P/F. Every semester. *Prerequisites: senior status, in good academic standing; submission of Internship Agreement form prior to registering; enrollment for a full year as FSU student; permission of focus supervisor and Department Chair; 3 advanced courses in the focus.*
- ART 499 Independent Study** 1-6 cr.
Intensive individual study, staff-directed, in an area of special interest. Repeatable for maximum of 12 credits if topics are substantially different. *Prerequisite: permission of instructor in the focus area. Available only to Art & Design majors, Art History minors, Fine Arts minors, and Graphic Design minors who have completed their respective focus sequences.*
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- Biology**
- BIOL 109 Human Biology and the Environment** 4 cr.
Study of the human species with emphasis on the interdependence of humans, other forms of life and the physical environment. Three hrs. lecture, 2 hrs. lab. Not for majors or minors. Every semester. *GEP Group C.*
- BIOL 128 Introduction to Ethnobotany** 4 cr.
Introduction into the discipline of ethnobotany focusing on the role of plants in Appalachian and other cultures. Field trips to local parks and visits with people active in the use of plants will provide opportunities for hands-on experience with techniques and methods used by field ethnobotanists. Three hrs. lecture, one 2-hr. lab. Fall.
- BIOL 149 General Biology I** 4 cr.
Biological principles and concepts. The life processes, development and relationship among organisms. Three hrs. lecture, 2 hrs. lab. Every semester. *GEP Group C.*
- BIOL 150 General Biology II** 4 cr.
Plant and animal groups and the ecosystem. Emphasis on physiology and morphology. Three hrs. lecture, 2 hrs. lab. Required for majors. Every semester. *Prerequisite: BIOL 149.*
- BIOL 200 Scientific Investigation and Communication** 3 cr.
Problem solving and communication in the natural sciences. Emphasis on analytical reasoning, application of concepts and principles, and values of language, order and measurement to scientific thought. Three hrs. lecture/discussion. Every semester. *Prerequisite: BIOL 149, MATH 209, and sophomore standing or permission of instructor.*
- BIOL 211 Essentials of Anatomy and Physiology** 4 cr.
An introduction to the structure, function, and movement of the human body. Three lectures and one two-hour laboratory period per week. Not for majors. Fall. *Prerequisite: BIOL 149.*

BIOLOGY

- BIOL 230 Wildlife Techniques** 3 cr.
Study and management of wildlife species. Capture, marking, physiological indices, food habits and nutrition, sex and age, population and habitat analysis. Current management practices. Two hrs. lecture, 3-hrs. lab. Fall. Not open to students who have credit for former BIOL 330. *Prerequisite:* BIOL 150.
- BIOL 302 Animal Physiology** 4 cr.
Mammalian physiology, with emphasis on basic physiology. Two hrs. lecture, two 2-hr. labs. Every semester. *Prerequisite:* BIOL 149, CHEM 202.
- BIOL 303 Plant Physiology** 4 cr.
Higher-plant growth and differentiation. Case-study method. Topics include general differentiation, photometabolism, translocation and water relations. Three hrs. lecture, 3 hrs. lab. Spring. *Prerequisites:* BIOL 150 and CHEM 202. CHEM 301 recommended.
- BIOL 304 Microbiology** 4 cr.
Microorganisms, especially their form, structure, reproduction, physiology, metabolism, and identification, will be studied with emphasis on their distribution in nature, their beneficial and detrimental effects on humans, and the physical and chemical changes they make in the environment. Two hrs. lecture and two 2-hr. labs. Every semester. *Prerequisites:* BIOL 149, CHEM 202.
- BIOL 305 Dendrology** 3 cr.
Collection, identification, and study of native and introduced woody plants in summer and winter conditions. One hr. lecture, two 2-hr. labs. Fall. *Prerequisite:* BIOL 149.
- BIOL 309 General Entomology** 4 cr.
Identification, morphology, physiology, development, geological history, ecology and control of insects. Two hrs. lecture, two 2-hr. labs. Fall, odd-numbered years. *Prerequisite:* BIOL 150.
- BIOL 310 Cell Biology** 4 cr.
Dynamics of cells and their life processes. Ultrastructure, organization, thermodynamic and metabolic processes. Recommended for biology majors immediately following BIOL 150. Three hrs. lecture, one 2-hr. lab. Fall. *Prerequisites:* BIOL 150, CHEM 202. *Corequisite:* CHEM 301 or permission of instructor.
- BIOL 311 Morphology of Fungi and Non-Vascular Plants** 4 cr.
Morphology, taxonomy, evolution, and life histories of photosynthetic bacteria, algae, fungi, mycorrhizae, lichens and bryophytes. Emphasis on organisms important to the human species; plant and animal pathogens, and organisms of economic and ecological importance. Two hrs. lecture, two 2-hr. labs. Fall. *Prerequisite:* BIOL 150.
- BIOL 312 Morphology of Vascular Plants** 4 cr.
Morphology, taxonomy, evolution and life histories of spore dispersing vascular plants, gymnosperms, and angiosperms. Comparative study of the major organs of each group. Two hrs. lecture, two 2-hr. labs. Spring. *Prerequisite:* BIOL 150.
- BIOL 314 Plant Taxonomy** 3 cr.
Classification of flowering plants, gymnosperms, and ferns. Emphasis on collection, identification and preparation of herbarium specimens. One hr. lecture, two 2-hr. labs. Spring. *Prerequisite:* BIOL 149.
- BIOL 321 Anatomy and Physiology I** 4 cr.
Structure and function of the human body. Includes its organization, the musculoskeletal system and the nervous system. Two hrs. lecture and two 2-hr. labs. Fall. Not open to students who have credit for former BIOL 201. *Prerequisite:* BIOL 149.
- BIOL 322 Anatomy and Physiology II** 4 cr.
Structure and function of the human body. Includes the endocrine, circulatory, respiratory, digestive, excretory and reproductive systems, and human development. Two hrs. lecture and two 2-hr. labs. Spring. Not open to students who have credit for former BIOL 202. *Prerequisite:* BIOL 321 or permission of instructor.
- BIOL 328 Economic Botany** 3 cr.
Study of plants and the link between plant structure and human's use of plants. Students will gain an understanding of the form and function of the plant body; plant nomenclature; history of plant use; origins of economically important plants; use of flowers and fruits for food and other purposes; use of roots, stems and leaves for food and other purposes. One hr. lecture, one 4-hr. lab. Spring, odd-numbered years. *Recommended:* BIOL 128, 149 and 150.
- BIOL 334 General Animal Behavior** 3 cr.
Behavior of animals from an evolutionary approach. Research project required. Three hrs. lecture. Spring, odd-numbered years. *Prerequisite:* BIOL 150 or permission of instructor.
- BIOL 340 General Ecology** 4 cr.
Environmental relationships of plants and animals. Field laboratory experience. Measuring environmental variables in terrestrial and aquatic ecosystems. Two hrs. lecture, one 4-hr. lab. Every semester. *Prerequisites:* BIOL 150, CHEM 202 (or CHEM 201 and permission of the instructor), MATH 209.
- BIOL 350 Genetics** 3 cr.
Laws and molecular basis of inheritance. Genetic patterns and changes at the molecular, organismal and population levels. Three hrs. lecture. Spring. *Prerequisites:* BIOL 150, CHEM 202 (or CHEM 201 and permission of the instructor), MATH 209. *Recommended:* BIOL 304 and 310, CHEM 301.
- BIOL 401 Genetics Laboratory** 1 cr.
Techniques of collection and analysis of genetic data, including molecular, chromosomal, Mendelian and population genetics. One 2-hr. lab. Spring. *Prerequisite or corequisite:* BIOL 350.
- BIOL 402 Evolution** 3 cr.
Theories, evidences, and mechanisms of evolution. Three hrs. lecture. Fall, odd-numbered years. *Prerequisite:* BIOL 150 or permission of instructor.
- BIOL 404 Histology** 4 cr.
Microscopic structure and function of the tissues and selected organs of vertebrates. Basic laboratory preparative techniques and tissue recognition. Two hrs. lecture, two 2-hr. labs. Spring, even-numbered years. *Prerequisites:* BIOL 150; CHEM 201.
- BIOL 406 Ornithology** 4 cr.
Anatomy, physiology, behavior, ecology and evolution of birds. Laboratory emphasis on identification of regional birds at the species and family level. Two hrs. lecture, one 4-hr. lab. Binoculars required. Spring. *Prerequisite:* BIOL 149.
- BIOL 407 Biological Systematics** 3 cr.
Principles, concepts, and methodologies used in systematic biology. Methods for reconstructing the evolutionary relationships of plant and animal taxa (including phenetic and cladistic analyses). Procedures for description, classification and analysis of the earth's biodiversity. Three hrs. lecture. Spring, odd-numbered years.
- BIOL 410 Plant Diseases** 3 cr.
Nature, cause and control of disease in plants. Plant pathogens: nematodes, viruses, bacteria and fungi in greenhouse, field and forest plants. Laboratory emphasis on identification and preparation of specimens according to phytopathological principles. Two hrs. lecture, one 2-hr. lab. Spring, odd-numbered years. *Prerequisite:* BIOL 150.
- BIOL 411 Invertebrate Zoology** 4 cr.
Structure, physiology, life history, and natural history of invertebrate groups. Emphasis on local fauna. Two hrs. lecture, two 2-hr. labs. Spring. *Prerequisite:* BIOL 150.
- BIOL 412 General Parasitology** 4 cr.
Principles of parasite structure, function, life cycles and host-parasite relationships. Two hrs. lecture, two 2-hr. labs. Fall, even-numbered years. *Prerequisites:* BIOL 150; CHEM 202.
- BIOL 414 Quantitative Analysis of Vertebrate Populations** 3 cr.
A survey of quantitative techniques used to describe, analyze and model wildlife population phenomena and interactions between populations. Three hrs. lecture. Spring. *Prerequisites:* MATH 120 or a course in calculus, MATH 209, BIOL 150.
- BIOL 417 Ichthyology** 3 cr.
The study of fishes, with emphasis on structure and function, development, behavior, ecology and systematics. Two hrs. lecture, one 2-hr. lab. Fall. *Prerequisite:* upperclass standing in biology or wildlife/fisheries management.

- BIOL 420 Fish Management and Culture** 3 cr.
Contemporary problems in fisheries management. The study of fish culture; alternatives of commercial harvest and culture. Field trips. Three hrs. lecture. Spring. *Prerequisite: senior or graduate standing; MATH 209 or permission of instructor.*
- BIOL 421 Sample Design and Analysis of Plant Communities** 3 cr.
Ecology of plant communities in the mid-Atlantic; plant community concepts and attributes; environmental factors influencing the distribution and abundance of plants: light, temperature, fire, soil, water; methods of sampling vegetation; quantitative analysis of vegetation data; multivariate methods of data interpretation including classification and ordination; collection and interpretation of field data; emphasis on modern computer methods. Two hrs. lecture, one 3-hr. lab. Fall. *Prerequisites: BIOL 314, BIOL 340.*
- BIOL 422 Herpetology** 3 cr.
The structure, behavior, ecology, evolution and taxonomy of amphibians and reptiles. Laboratory emphasis on identification, anatomy and ecology of local species; techniques of collecting, estimating population sizes, home ranges. Two hrs. lecture, one 3-hr. lab. Spring. *Prerequisite: BIOL 150 or permission of instructor.*
- BIOL 423 Mammalogy** 4 cr.
The structure, taxonomy, behavior, ecology, evolution and public health significance of mammals, and history of the science of mammalogy. Laboratory emphasizes anatomy, identification, capture techniques, habitat analysis, and home-range and population characterization. Three hrs. lecture, one 3-hr. lab. Fall. *Prerequisite: BIOL 150 or permission of instructor.*
- BIOL 425 Forest Ecology and Conservation** 3 cr.
Investigation of forest ecology, management, conservation, policy, research and history; silviculture, stand dynamics and improvement, reforestation, soils, disturbances and natural pests and pathogens. Patterns and processes of forest communities. Forest products and measurements. Two hrs. lecture, one 2-hr. lab. Fall. *Prerequisite: upperclass or graduate standing.*
- BIOL 426 Vertebrate Zoology** 4 cr.
The biology of vertebrates: origin, evolution, classification, structure, ecology, reproduction. Identification of regional examples. Three hrs. lecture, one 2-hr. lab. Spring. *Prerequisite: BIOL 150.*
- BIOL 427 Comparative Anatomy** 4 cr.
Emphasis on structural relationships among fish, amphibians, reptiles, birds and mammals based on the evolution and development of organ systems. Dissection of representative chordates. Two hrs. lecture, two 2-hr labs. Not open to students who have credit for former BIOL 327. Every semester. *Prerequisite: BIOL 150.*
- BIOL 428 Ethnographic Field Techniques** 3 cr.
Practical training and experience using ethnographic field methods. Introduction to methods ethnographers use including mapping, unobtrusive observation, participant observation, ethnographic and life history interviewing, design and implementation of surveys and questionnaires, and an introduction to participatory research methodologies. A project component is included in the course. Three hrs. lecture. Spring, even-numbered years. *Prerequisites: BIOL 128 or permission of the instructor. Ethnobotany Capstone.*
- BIOL 430 Introductory Limnology** 4 cr.
Inland waters; physical, chemical, and biological aspects. An overview of hydrobiology. Laboratory emphasis on basic analysis of data from aquatic environments. Two hrs. lecture, two 2-hr. labs. Fall. *Prerequisite: BIOL 340.*
- BIOL 435 Molecular Biology** 4 cr.
Modern molecular concepts and techniques such as molecular cell function, DNA replication, PCR, protein synthesis, restriction enzyme analysis, DNA sequencing and DNA fingerprinting. Two hrs. lecture, two 2-hr. labs a week. Spring. *Prerequisite: BIOL 304.*
- BIOL 436 Electron Microscopy for Biologists** 4 cr.
Principles and techniques of electron microscopy; thin and thick sectioning, positive staining. Use of the transmission and the scanning electron microscopes for animal and plant tissues, micro-organisms and particulates. One hr. lecture, two 3-hr. labs. Spring, odd-numbered years. Enrollment limited to 6, preference to students with an active research project. *Prerequisites: BIOL 310, PHYS 216, CHEM 302; cumulative G.P.A. 3.0; permission of instructor.*
- BIOL 437 Molecular Biology Seminar** 1 cr.
Current topics in molecular biology presented by students, faculty and invited speakers coupled with analysis and discussion. Repeatable for maximum of 4 credits if topics are substantially different. Fall. *Prerequisites: senior standing; BIOL 435 or permission of instructor. Biotechnology Capstone.*
- BIOL 438 Biotechnology Lab** 3 cr.
Advanced techniques in molecular biology. Topics vary depending on instructors. Topics may include cell culture methods, PCR and DNA sequencing, immunocytochemistry, electrophoretic separation and analysis. Required for biotechnology concentration. One hr. lecture, two 2-hr. labs. Spring. *Prerequisites: junior or senior standing; BIOL 435.*
- BIOL 439 Environmental Toxicology** 3 cr.
Interdisciplinary study of the major classes and properties of pollutants, ecotoxicology testing methods and their effects on living organisms and the ecosystem. Two hrs. lecture, two hrs. lab. Variable. *Prerequisites: BIOL 149 and BIOL 150.*
- BIOL 440 Developmental Biology** 4 cr.
Classical and modern study of processes producing structural and functional changes during the development of plants and animals. Three hrs. lecture, two hrs. lab. Fall, even-numbered years. *Prerequisites: BIOL 149 and BIOL 150.*
- BIOL 445 Immunology** 4 cr.
Introduction to the complex network of cells and soluble mediators that recognize and react to substances foreign to the individual. Principles of immunity, techniques resulting from the study of this system, and pathologies resulting from its malfunction. Two hrs. lecture, two 2-hr. labs. Fall. *Prerequisite: BIOL 304 and BIOL 435.*
- BIOL 450 Ecology and Management of Wildlife Populations** 3 cr.
Study of the factors that determine the distribution and abundance of wildlife populations and current management practices used to manipulate wildlife populations. Two-three field trips will be used to gain knowledge of regional management practices. Three hrs. lecture. Fall. *Prerequisites: BIOL 340, and one from 406, 423 or 426.*
- BIOL 460 Forestry Field Practice** 3 cr.
A field-oriented overview of basic forestry. Includes field dendrology, silvics, elements of surveying and mapping, orienteering, log scaling, silviculture, timber cruising and wildlife techniques. Numerous field trips to regional forests. Summer Session, odd-numbered years. 1 cr. lecture, 2 cr. lab. *Prerequisites: BIOL 305, BIOL 425 (or permission of the instructor).*
- BIOL 465 Environmental Health** 3 cr.
Investigation of the relationship between human exposure to environmental pollutants and resultant adverse health effects. Consideration of epidemiology, exposure assessment, risk assessment and risk management. Variable. Also offered as GEOG 465. *Prerequisite: completion of two laboratory science courses.*
- BIOL 484 Field Experiences in Ethnobotany and Ecology** 3 cr.
Unique field course where students gain practical training and experience using ecological and ethnographic field methods. Exploration of environmental impact issues is also part of the course. A research or service learning project is required. Additional travel fees may apply. Even-numbered January Intersessions. *Prerequisite: permission of instructor.*
- BIOL 490 Special Topics in Biology** 2 to 4 cr.
A "one time only" course on a special topic selected by the instructor. Variable. Repeatable for maximum of 4 credits if topics are substantially different. *Prerequisite: permission of instructor.*
- BIOL 492 Wildlife-Fisheries Seminar** 1 cr.
Current topics in Wildlife and Fisheries presented by students, faculty and invited speakers, coupled with analysis and discussion. For majors in wildlife & fisheries. Variable. Repeatable for maximum of 4 credits if topics are substantially different. *Prerequisite: junior, senior or graduate standing in biology or wildlife/fisheries. Wildlife & Fisheries Capstone.*

BIOL 494 Field Experiences in Biological Sciences 2 to 6 cr.

Work experience with a federal, state or private agency or industry related to the student's major. Faculty sponsor, project approval and final report by the student required. Variable. Repeatable for maximum of 12 credits if placement sites are different. *Prerequisites:* biology, wildlife & fisheries, or interpretive biology and natural history majors only; junior or senior standing. *Interpretive Biology & Natural History and Biology (Environmental Science concentration) Capstone.*

BIOL 496 Seminar in Biology 1 cr.

Current topics in biology presented by students, faculty and invited speakers, coupled with analysis and discussion. Variable. Repeatable for maximum of 4 credits if topics are substantially different. *Prerequisite:* senior standing. *Capstone for Biology and Biology Pre-Health Professions option.*

BIOL 497 Readings in Biology 1 cr.

Discussion of readings on selected topics. One period per week. Repeatable to 2 credits. Variable. Repeatable for maximum of 2 credits if topics are substantially different. *Prerequisites:* junior or senior standing, biology major or minor, permission of the instructor, completion of request form before registering. (The department allows only a total of 2 credits in the readings courses 497 and/or 498.)

BIOL 498 Honors Program — Readings in Biology 1 cr.

Discussion of readings on selected topics. One period per week. Repeatable to 2 credits. Variable. Repeatable for maximum of 2 credits if topics are substantially different. *Prerequisites:* senior standing, biology major, 3.0 average in major and completion of request form before registering. (The department allows only a total of 2 credits in the reading courses 497 and/or 498.)

BIOL 499 Special Problems in Biology 2 or 3 cr.

Experimental research directed by a staff member. Variable. Repeatable for maximum of 12 credits if topics are substantially different. *Prerequisites:* 20 credits in biology, junior or senior standing, permission of instructor, approval of the Department Chair, completion of request form before registering.

Business Administration**BUAD 100 Introduction to Business** 3 cr.

Introduction to the internal and external environment of contemporary business and a survey of basic concepts, principles, and practices of business organizations. Basic business terminology and concepts for beginning students seeking an introduction to the business world or assistance in making career decisions. Does not count towards business or accounting majors. Every semester.

BUAD 105 Professional Development I 2 cr.

Introduction to the professional aspects of a career in one of the majors or concentrations offered by the College of Business. Graded Pass/Fail. Strict attendance policy. Every semester.

BUAD 400 Professional Development II 1 cr.

Provides professional advice for students ending their academic careers and getting ready to embark on professional careers. BUAD 400 is a requirement for graduation with a degree from the College of Business. Graded Pass/Fail. Strict attendance policy. Every semester. *Prerequisite:* 100 credits.

Business Law**BLAW 291 Legal Environment of Business** 3 cr.

The workings and importance of legal institutions; the law as a system of social thought and social action. The analysis and study of the law of contracts, agency, employment, negotiable instruments, real property, personal property, sales and insurance. Credit cannot be earned for both BUAD 291 and BLAW 291. Every semester. *Prerequisite:* 30 credits.

Business Management Information Systems

You cannot receive credit for both a BMIS course and the same course formerly labeled BUAD.

BMIS 320 Advanced Computer Applications in Business 3 cr.

Managerial applications of the microcomputer most often encountered in business. Word processing for report writing, spreadsheets for financial modeling, graphics for presentations, desktop publishing for business use and managerial data base applications using commercial programs. Every semester. *Prerequisites:* MATH 106 and COSC 100/110 or COSC major.

BMIS 455 Management Information Systems 3 cr.

Relation of MIS to the management functions of planning, control, and decision making. Concepts that underlie MIS: systems management, databases, computers, telecommunications, and general systems design and implementation. Fall. *Prerequisite:* MGMT 351.

Chemistry**CHEM 100 Chemistry and Society** 4 cr.

Examines the modes of research, the development of modern chemical principles, and the application and subsequent impact of these developments on society. Not intended for natural science majors. Three hrs. lecture, one 2-hr. lab. Every semester. *GEP Group C.*

CHEM 103 Foundations of Chemistry 3 cr.

Introduction to fundamental concepts, methodology and nomenclature of chemistry, including data analysis, atomic structure, inorganic compounds, chemical equations and reactions, stoichiometry, states of matter, solutions. No laboratory. Every semester. *Prerequisite:* Math Level I. *Corequisite:* DVMT 100.

CHEM 110 Modern Chemistry and Society 3 cr.

Non-mathematical approach to chemical principles, modes of chemical research, current applications, effects on the environment, and impact on society. For non-science majors. Three hrs. lecture. Variable.

CHEM 111 Modern Chemistry and Society Laboratory 1 cr.

Non-mathematical laboratory experiments applicable to modern chemistry. For non-science majors. One 2-hr. lab. Variable. *Prerequisite or corequisite:* CHEM 110.

CHEM 113 Honors: Chemistry and Society 4 cr.

Examines the models of research, the development of modern chemical principles, and the application and subsequent impact of these developments on society. Both reading and writing components will be more challenging than those in CHEM 100. Credit cannot be earned for both CHEM 100 and CHEM 113. Three hrs. lecture, 2 hrs. lab and 1 hr. recitation. Spring. *Prerequisite:* Admission to Honors Program or permission of instructor. *GEP Group C.*

CHEM 133 General Chemistry for Engineers 3 cr.

A math-intensive lecture-only general chemistry course designed for engineering students. Topics include intermolecular forces, thermodynamics, chemical kinetics, catalysis, chemical equilibria, acid-base equilibria, electro chemistry and nuclear chemistry. Fall. *Prerequisites:* CHEM 201 or permission of instructor.

CHEM 201 General Chemistry I 4 cr.

Atomic and molecular structure, theories of covalent and ionic bonding, chemical reactions, states of matter, gas laws, solutions, reaction rates, stoichiometry, and thermochemistry. Three hrs. lecture, one 3-hr. lab. Every semester. You cannot earn credit for both CHEM 101 and 201. *Prerequisites:* C or better in CHEM 103 or placement at Chemistry Level 2 or higher and Math Level II or higher. *Corequisite:* MATH 102 or permission of instructor. *GEP Group C. Note: for information on Chemistry Level placement see Department Chair.*

- CHEM 202 General Chemistry II** 4 cr.
Acid-base concepts, equilibria, thermodynamics, electrochemistry, reaction rates, coordination compounds, and organic, nuclear, and descriptive chemistry. Three hrs. lecture, one 3-hr. lab. Every semester. You cannot earn credit for both CHEM 102 and 202. *Prerequisite: CHEM 201.*
- CHEM 301 Organic Chemistry I** 4 cr.
Chemistry of the compounds of carbon. Classes and nomenclature of compounds, structure, reactions, mechanisms, spectroscopy, and stereochemistry. Three hrs. lecture, one 3-hr. lab. Fall. *Prerequisites: CHEM 201 and 202 or equivalent.*
- CHEM 302 Organic Chemistry II** 4 cr.
Continued study of compounds of carbon. Three hrs. lecture, one 3-hr. lab. Spring. *Prerequisite: CHEM 301 or equivalent.*
- CHEM 304 Computational Techniques in Chemistry** 2 cr.
Introduction to and application of the fundamental methods, tools and techniques essential to solve chemical problems. Regular topics include statistical, mathematical and computational tools; data analysis, and use of chemical sources. Additional topics explored will augment student needs and supplement area of current interest in chemistry. One hour lecture, one 2-hr. lab. Fall. Credit cannot be earned for both CHEM 300 and 304. *Prerequisites: CHEM 201 and 202 or equivalent, or permission of the instructor. Tech. fluency.*
- CHEM 305 Research Methods in Chemistry** 3 cr.
Problem solving in organic synthesis. Advanced synthesis, purification and product analysis techniques using modern methods and instrumentation. Searching and critically reading scientific literature. Analysis of safety issues and environmental impact. Spring. Two 3-hr. integrated lecture and lab. *Prerequisite: CHEM 301. Corequisite: CHEM 302.*
- CHEM 320 Quantitative Analytical Chemistry** 4 cr.
Theory, methods, and treatment of data pertaining to chemical analysis. Gravimetric, volumetric, potentiometric, electroanalytical, and spectrophotometric applications in the laboratory. Three hrs. lecture, one 3-hr. lab. Fall. *Prerequisites: CHEM 201 and 202; MATH 120 or equivalent. Corequisite: PHYS 215 or equivalent, or permission of instructor.*
- CHEM 411 Advanced Inorganic Chemistry** 4 cr.
Covers the application of symmetry operations and group theory in order to elucidate the bonding and spectroscopy of transition metal complexes. Selected topics in inorganic reaction mechanisms, photochemistry, catalysis and bio-inorganic chemistry will then be examined using these theoretical approaches. Three hrs. lecture, one 3-hr. lab weekly. Spring, even-numbered years. *Prerequisite or corequisite: CHEM 441 or permission of instructor.*
- CHEM 420 Environmental Chemical Analysis** 4 cr.
Explores applications of wet chemical, electroanalytical (potentiometric and amperometric), spectroscopic (UV-Vis, spectrofluorometry and AA) and chromatographic (HPLC, GC, GCMS, TLC) techniques for standard and trace analyses of water, soil, and tissue materials. Emphasis on application of standard protocols, development of experimental technique and sample preparation. Two 3 hr. lectures/lab. Spring, even-numbered years. *Prerequisites: CHEM 201 and 202.*
- CHEM 421 Instrumental Analysis** 4 cr.
Theory and applications of modern instruments for chemical analysis. Electronics, spectroscopic, electrochemical, and chromatographic techniques. Laboratory use of NMR, IR, UV, AA, and GC instruments. Three hrs. lecture, one 3-hr. lab. Spring. *Prerequisite: 16 cr. in chemistry including CHEM 320, 441, and 445, or permission of instructor.*
- CHEM 425 Pharmacological Ethnobotany** 3 cr.
Study of the basic principles of pharmacology with particular emphasis on drugs of botanical origin. Three hours lecture. Spring, even numbered years. *Prerequisite: CHEM 302.*
- CHEM 438 Advanced Organic Chemistry** 3 cr.
Structure and bonding in organic compounds, reactivity, mechanisms of reactions, and application to reaction types. Three hrs. lecture. Spring, odd-numbered years. *Prerequisites: CHEM 301 and 302.*
- CHEM 441 Physical Chemistry Lecture I** 3 cr.
Theory and applications of the principles of physical chemistry. Equilibria, gas laws, thermodynamics, electrochemistry, structures, and properties. Three hrs. lecture. Fall. *Prerequisites: 16 cr. in Chemistry from the following: CHEM 201, 202, 301, 302, 320; MATH 238; and PHYS 215 and 216 or equivalent or permission of instructor.*
- CHEM 442 Physical Chemistry Lecture II** 3 cr.
Quantum theory, statistical thermodynamics, chemical dynamics, spectroscopy, and structures. Three hrs. lecture. Spring. *Prerequisite: CHEM 441.*
- CHEM 445 Physical Chemistry Laboratory I** 1 cr.
Experimental physical chemistry. One 3-hr. lab. Fall. *Prerequisite or corequisite: CHEM 441.*
- CHEM 446 Physical Chemistry Laboratory II** 1 cr.
Continuation of CHEM 445. One 3-hr. lab. Spring. *Prerequisite or corequisite: CHEM 442.*
- CHEM 455 Biochemistry I** 3 cr.
The chemistry and metabolism of biological compounds, biochemical thermodynamics, enzyme mechanisms, and kinetics. Three hrs. lecture. Fall. *Prerequisites: CHEM 301 and 302; BIOL 149 or permission of the instructor.*
- CHEM 456 Biochemistry Laboratory** 3 cr.
Qualitative and quantitative laboratory experiments on the nature and properties of biological materials. Two three-hr. labs. Spring. *Prerequisite or corequisite: CHEM 455.*
- CHEM 457 Biochemistry II** 3 cr.
A continuation of Biochemistry I. Metabolic processes and their conservation among widely divergent organisms. Cell processes, their interrelation and regulation. Biochemical techniques and their applications to a variety of current biological problems. Three hrs. lecture. Spring. *Prerequisite: CHEM 455 or equivalent.*
- CHEM 460 Environmental Chemistry** 3 cr.
An investigation into the chemical nature of the environment. Development of the chemical interactions found in the atmosphere, hydrosphere, lithosphere, and biosphere. Energy and energy usage also discussed. Three hrs. lecture. Spring, odd-numbered years. *Prerequisites: CHEM 201, 202 and any of the following: BIOL 430, GEOG 432, CHEM 320 or 420.*
- CHEM 490 Selected Topics in Chemistry** 1 to 3 cr.
Specialized topics such as theoretical organic chemistry, spectroscopy, photochemistry, quantum chemistry, or stereochemistry. Repeatable for a maximum of 6 credits. Variable. *Prerequisite: 24 credits in chemistry or permission of instructor.*
- CHEM 491 Seminar in Chemistry** 1 cr.
Current topics in chemistry presented by students, faculty, and invited guests. One period weekly. Required for majors. Fall. *Prerequisite: junior or senior standing.*
- CHEM 492 Capstone Experience** 1 cr.
An integrated senior-year experience that requires students to use their accumulated skills, knowledge and experiences to present their own research and a portfolio demonstrating important laboratory skills. Required for all Chemistry Majors. Every semester. *Prerequisites: senior status, CHEM 491 and CHEM 493 or permission of instructor.*
- CHEM 493 Advanced Chemical Research** 1 to 8 cr.
Original student investigations in analytical, inorganic, physical, organic, and biochemistry involving both library and laboratory work, planned and executed under faculty guidance. A formal, publication-quality report and a seminar presentation are required. Research projects must be approved by the department and the instructor prior to registration in the course. Repeatable for a maximum of 8 credits. *Prerequisite: CHEM 441, junior standing in chemistry, and permission of department chair.*
- CHEM 495 Internship in Chemistry** 1 to 6 cr.
Guided work experience. Work must be directly related to academic program. Grade P/F. Variable. *Prerequisites: C or better in Organic Chemistry I (CHEM 301); in good academic standing; submission of Agreement Form to Department Chair prior to registering, departmental approval. May not be used to satisfy the requirements for a minor in chemistry.*

COMMUNICATION STUDIES • COMPUTER SCIENCE

CHEM 499 Special Problems in Chemistry 1 to 6 cr.

Methods and techniques of basic research. Repeatable for a maximum of 6 credits. Every semester. *Prerequisite: permission of department chair.*

Communication Studies**CMST 100 Communication Practicum** ½ to 1 cr.

Entry level work experience in applying communication theory. Opportunities announced in undergraduate course schedule every semester. Repeatable for maximum of 4 credits; may not be applied to fulfillment of major requirements. Variable. *Prerequisite: permission of instructor.*

CMST 102 Introduction to Human Communication 3 cr.

Fundamental theory and practice of human communication in dyadic, small-group, and public situations. Every semester.

CMST 112 Honors: Introduction to Human Communication 3 cr.

Fundamental theory and practice of human communication in dyadic, small-group, and public situations. Student-led discussions, activities. Variable. *Prerequisite: admission to Honors Program or written permission of instructor.*

CMST 122 Introduction to Public Speaking 3 cr.

Introduction to, and guided application of, basic principles which underlie effective public speaking and listening in informative, persuasive, and ceremonial speeches. Spring.

CMST 132 Introduction to Interpersonal & Small Group Communication 3 cr.

Development of critical thinking, problem-solving, and relational skills in one-on-one and small group settings. Fall, even-numbered years.

CMST 215 Small Group Communication 3 cr.

Principles and practice of communication in small, task-oriented groups. Interaction of task and social dimensions. Problem-solving groups and decision-making principles and methods. Spring.

CMST 225 Interviewing 3 cr.

Communication in informational, appraisal, employment, persuasive and research interviews. Focuses on selecting and structuring questions to achieve specific objectives and on strategies of collecting, analyzing and reporting qualitative data for research. Fall. *Prerequisite: CMST 102/112.*

CMST 300 Interpersonal Communication 3 cr.

Study of the face-to-face dyad as the fundamental human communication relationship. Implications for other communication modes and settings. Fall. *Prerequisite: CMST 102/112 or CMST 132 or permission of instructor.*

CMST 302 Argumentation and Advocacy 3 cr.

Analysis, construction, and communication of logical arguments in a variety of decision-making contexts. Spring. *Prerequisite: CMST 102/112 or CMST 122 or permission of instructor.*

CMST 312 Language Behavior and Communication 3 cr.

Processes of human language that enhance or limit thought and expression; development of language and symbolizing; relationship of thought to language; effects of language behavior. Spring. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 322 Presentational Communication 3 cr.

Theory and practice of orally presenting ideas to reach audience-centered goals. Use of technology in activities common to communication-related careers. Spring. *Prerequisites: CMST 102/112 or CMST 122, or permission of instructor.*

CMST 335 Organizational Communication 3 cr.

Theory, practices and analysis of communication in the context of complex organizations. Agendas, briefings, meetings, conferences, presentations. Assessment and intervention techniques. Fall. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 345 Conflict Management 3 cr.

Examines the normal, inevitable nature of conflicts with strategies for managing and resolving conflicts in interpersonal, community, organizational, and global contexts. Spring. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 350 Intercultural Communication 3 cr.

Explores concepts, theories, and communication skills relevant to understanding and managing cross-cultural conflicts in interpersonal, organizational, regional, and global contexts. Analyzes and develops skills needed to open channels of communication between and among people of diverse backgrounds as students gain an experiential understanding of the interconnections between communication and culture. Fall. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 355 Political Communication 3 cr.

Overview of the role of communication in contemporary political life. Political communication theories, political campaign communication, media and political communication, propaganda and the role of political communication in promoting a deliberative democracy. Variable. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 422 Seminar in Rhetorical Criticism 3 cr.

Criteria and methods of rhetorical analysis of significant public discourse and cultural artifacts. Application to traditional and contemporary modes of public communication. Fall, even-numbered years. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 451 Seminar in Communication Theory 3 cr.

Examination of classical and contemporary concepts and methods by which the human communication process is explained. Application to realistic settings. Fall. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 485 Issues and Responsibilities of Communication 3 cr.

Study of how free speech functions in relation to communication in the United States and the ethical responsibilities of communicators in interpersonal, public, artistic and professional situations. Fall. *Prerequisite: CMST 102/112 or permission of instructor.*

CMST 490 Special Topics in Communication Studies 3 cr.

Study, research or applied experience related to an announced selected topic. Repeatable for maximum of 9 credits if topics are substantially different. Variable. *Prerequisite: permission of instructor.*

CMST 492 Internship Project 3 cr.

Academic component of internship experience, in conjunction with CMST 495. Graded A through F. Summer. *Corequisite: CMST 495. Prerequisites: CMST 102/112, CMST 335, CMST 451 and one additional 3-credit CMST course, plus permission of instructor. Capstone.*

CMST 494 Communication Studies Practicum 1 to 3 cr.

Supervised field experience for Communication Studies majors. Participation in the communication operations of a commercial, governmental, or educational organization. Repeatable for maximum of 3 credits. Every semester. *Prerequisites: CMST 102, CMST 335, CMST 451 and one additional 3-credit CMST course, plus permission of instructor. Capstone.*

CMST 495 Internship in Communication 6 or 12 cr.

Experiential component of internship: guided work experience directly related to student's academic program. Full-time interns register for 12 credits in 495, 3 credits in 492, and may not enroll in any other courses. Part-time interns must register for 6 credits in 495 and 3 credits in 492. Graded P/F. Summer. *Prerequisites: Junior/Senior status, not on probation; declared major in communication studies, minimum 12 cr. in communication studies, and 2.5 GPA in major; Internship Agreement Form approved by department internship director before registering.*

CMST 499 Directed Study 1 to 6 cr.

Intensive study through faculty-directed projects or papers. Hours arranged. Variable. *Prerequisite: permission of Department Chair.*

Computer Science

COSC 100 Introduction to Computer Science 3 cr.

A survey of the historical, technological, and societal aspects of computing with a practical component involving contemporary software applications. Topics include past and future computing, hardware, software, computer systems, data representation and processing, and social and ethical concerns of computing. Practical applications include word processors, spreadsheets, graphics packages, Email, Internet, and web page development basics. Every semester. *Tech. Fluency.*

COSC 101 The Discipline of Computer Science 3 cr.

Survey of the discipline of computer science covering history, hardware development, number systems, Boolean logic, algorithm development, programming languages, computability, artificial intelligence, introduction to programming, social implications, and ethics. Every semester. *Tech. Fluency.*

COSC 102 Foundations of Computer Science 4 cr.

Introduction to the foundations of computer science. Topics include memory addressing, computer functions, architectures found in computer science, digital logic circuits, correctness of computer algorithms, finite-state automata, computability, recursion, and O-notation and efficiency of algorithms. Three hrs. lecture, 2 hrs. lab. Every semester. Prerequisite: Level III or above on the mathematics placement test, or a Level II mathematics course.

COSC 110 Honors: Introduction to Computer Science 3 cr.

A survey of the historical, technological, and societal aspects of computing with a practical component involving contemporary software applications and a programming component using a modern, high-level language. Topics include past and future computing, hardware, software, algorithms, computer systems, data representation and processing, and social and ethical concerns of computing. Practical applications include word processors, spreadsheets, programming languages, graphics packages, Email, Internet and Web page development basics. Credit cannot be earned for both COSC 100 and COSC 110. Fall. Prerequisite: acceptance into the Honors Program or permission of instructor. *Tech. Fluency.*

COSC 120 Introduction to Cyberspace 3 cr.

Survey of Cyberspace including all Internet services, communications and networking, Internet protocols, file types, multimedia and a summary of Web programming techniques. The practical component covers e-mail, chat, teleconferencing, file transfer, newsgroups, mailing lists, and the World Wide Web. For a semester project, you will search for and develop a basic Web site presenting Internet resources in your major discipline; this site should be a valuable personal reference that can be updated throughout your education and career. Every semester.

COSC 130 Introduction to Programming 3 cr.

Introduction to visual object-oriented computer programming; development of software stages, using Universal Modeling Language (UML); object-oriented concepts including object representation, and modularization. Every semester.

COSC 220 Introduction to Software Applications 3 cr.

Survey of hardware, introduction to software used in business applications, microcomputer operating system, graphics, word processing, spreadsheet, database management systems, and network communication software for microcomputers. Every semester. Prerequisite: Grade of C or better in COSC 100 or COSC 110.

COSC 240 Computer Science I 4 cr.

Introduces the fundamental concepts of programming: Simple data types, control structures, array and string data structures, algorithms, debugging techniques and the social implications of computing. Emphasizes good software engineering principles and developing fundamental programming skills in the context of a language that supports the object-oriented paradigm. Three hours lecture; two hour lab. Every semester. Credit may not be earned for both COSC 200 and COSC 240. Prerequisites: Grade of C or better in COSC 101 and test at level 3 or above on mathematics placement test or grade of C or better in MATH 102 or corequisite enrollment in MATH 102.

COSC 241 Computer Science II 4 cr.

Continues introduction to the methodology of programming from an object-oriented perspective. Design and implementation of data structures used in programming such as linked lists, stacks and queues. Internal sorting and searching. Recursion. Performance analysis of algorithms. Three hours lecture; two hour lab. Every semester. Credit may not be earned for both COSC 201 and COSC 241. Prerequisite: Grade of C or better in COSC 240 and corequisite of COSC 102.

COSC 300 Structured Systems Analysis and Design 3 cr.

Analysis and design of information processing systems. Topics include system development life cycle: study phase, design phase, development phase, operation phase. Student will design and analyze a simple system. Spring. Prerequisite: Grade of C or better in COSC 240 or grade of C or better in ITEC 315.

COSC 305 Computer Ethics 3 cr.

Ethical issues related to computing. Includes topics such as responsibility of the computer professional, computerized crime, technology and employment, equitable access to computing, national databases and privacy, software ownership, and responsibilities of the computing profession. Every semester. Prerequisite: Grade of C or better in COSC 240; or grade of C or better in COSC 100/110 or COSC 101 and a grade of C or better in COSC 130.

COSC 310 Data Structures and Algorithm Analysis 3 cr.

Design and implementation of intermediate and advanced data structures and a rigorous introduction to the asymptotic analysis of algorithms. Topics include Huffman coding trees; binary search trees; splay trees; height-balanced binary search trees; general trees; graphs; hash tables; skip lists; multilists; omega, theta, and omicron notation; and limits to computation. Research paper and presentation required. Fall. Prerequisites: MATH 236 and a grade of C or better in COSC 241.

COSC 320 Business Programming 3 cr.

Design and implementation of business programming using COBOL. Writing programs to generate reports from sequential data files. Report formatting and paging techniques; edited PIC clauses; control breaks, sorting table and table processing, sequential, indexed, and relative files. Every semester. Prerequisite: Grade of C or better in COSC 241.

COSC 325 Software Engineering 3 cr.

Techniques and methodologies of software engineering. Topics include quality assurance, software protection and security. Every semester. Prerequisite: Grade of C or better in COSC 241.

COSC 330 Web Design and Development 3 cr.

A practical study of the design and development of Web sites, covering design principles, authoring applications, authoring languages, hypermedia, techniques for user interactivity, and Web programming. The practical component gives hands-on experience with each of these topics and introduces scripting with JavaScript; these lab exercises provide the expertise to complete, as a course project, a Web site presenting an advanced aspect of Web technology that the student researches. Every semester. Prerequisite: Grade of C or better in COSC 120 or permission of the instructor.

COSC 331 Fundamentals of Computer Networks 3 cr.

Introduction to computer networking using TCP/IP protocol suite. Topics include application layer, transport layer, network layer, data link layer, physical layer, and socket programming. Every semester. Prerequisite: COSC 241.

COSC 335 Advanced Topics in Computer Networks 3 cr.

Introduction to advanced concepts in computer networks. Topics include wireless and mobile networks, multimedia communication, network security, network management, and quality of service. Fall. Prerequisite: Grade of C or better in COSC 331.

COSC 345 The Internet and Multimedia Communications 3 cr.

Introduction to protocols and applications of multimedia communications. Topics include multimedia networks, compression methods, network protocols, end to end multicast, and multimedia application. Variable. Prerequisite: Grade of C or better in COSC 331.

COMPUTER SCIENCE

COSC 350 Low-Level Programming Concepts**3 cr.**

Introduction to assembly language programming and to the architecture of the computer as seen from the programmer's point of view. Topics include the virtual machine concept, data representation, Boolean operations, the instruction execution cycle, memory management, integer and floating-point arithmetic, low-level procedures, interrupt handling, instruction encoding, and the high-level language interface. Every semester. *Prerequisite: Grade of C or better in COSC 240.*

COSC 365 Digital Logic**4 cr.**

Basic switching theory. Design and analysis of combinational logic circuits and synchronous sequential systems. Minimization techniques, Boolean algebra, Karnaugh maps, and number systems. Programmable logic and basic computer architecture. Register transfer language. Memory decoding, microprogramming, and bus structure and operation. Detailed study of an actual simple minicomputer or microcomputer system. Every semester. *Prerequisite: Grade of C or better in COSC 241. COSC 350 recommended.*

COSC 380 Computer-Based Information Systems**3 cr.**

Computer information systems from a system planning perspective. Topics include digital communication evaluation, distributed resources, distributed processing and decision-making models. Several case studies are analyzed. Fall. *Prerequisite: Grade of C or better in COSC 240.*

COSC 390 Topics in Modern Programming Languages**1 to 3 cr.**

A modern programming language will be covered. Topics include the syntax and semantics of the language as well as the language programming environment. Example programs will deal with applications particularly suited to the chosen language. Students will be required to design and implement a major programming project. Variable. *Prerequisite: Grade of C or better in COSC 241.*

COSC 394 Field Experience for Non-Majors**3 cr.**

Work experience in industry, government, or small business providing opportunity for practical application of academic training in computer/information science. Course requirements: (1) minimum of 90 hours of field experience; (2) written report and oral presentation. Previous work experience may not be substituted. May not be applied toward major in Computer Science or Information Systems. Every semester. *Prerequisites: junior or senior standing and completion of COSC 240 with a grade of C or better. DEPARTMENT APPROVAL REQUIRED PRIOR TO REGISTERING.*

COSC 415 Computer Interfacing**3 cr.**

Basic digital computer interfacing, combining digital electronics, programming, and computer architecture. Topics include transducers, electronic amplification, D/A and A/D conversion, data sampling, data storage and retrieval, laboratory exercises in discrete and integrated software, survey of commercially available interface devices. Two hrs. lecture and 3 hrs. lab per week. Variable. *Prerequisites: PHYS 216 or PHYS 262 and PHSC 315 or PHYS 332, grade of C or better in COSC 240, or permission of the instructor. Also offered as PHYS 415.*

COSC 420 Robotics and Computer Control**3 cr.**

Introduction to the field of robotics: applications, safety, sensors, Robotics Languages Model for Computer Aided Design (CAD), speech recognition and generation. Integration of robots with artificial intelligence. Variable. *Prerequisite: PHYS 215 or PHYS 261, Grade of C or better in COSC core classes and permission of the instructor.*

COSC 431 Secure Computing**3 cr.**

Topics include elementary cryptography, program security, security in general-purpose and trusted operating systems, database security, network security, security administration, and legal/privacy/ethical issues in computer security. Variable. *Corequisite: COSC 460.*

COSC 435 Network Implementation and Testing**3 cr.**

Introduction to implementation and testing of networks. Topics include OSI layers, network topologies, LAN technologies, internetworking, network operating systems, and network file system. Variable. *Prerequisites: Grade of C or better in COSC 331 and COSC 365.*

COSC 440 Database Management Systems**3 cr.**

Introduction to database management systems. Topics include database design, database models such as entity-relationship and normalization. Practical use of data definition languages and data manipulation language of a commercial database management system such as Oracle. Variable. *Prerequisite: Grade of C or better in COSC 241.*

COSC 444 Introduction to Distributed Programming**3 cr.**

Introduction to distributed systems implementation using a distributed language. Topics include distributed architecture comparison, overview of distributed languages, creation of several distributed applications. Variable. *Prerequisite: Grade of C or better in COSC 331.*

COSC 445 Network Programming**3 cr.**

Introduction to network programming. Topics include computer networks and communication protocols, socket programming, interprocess communication, and network application development. Variable. *Prerequisite: Grade of C or better in COSC 331.*

COSC 450 Programming Language Principles & Paradigms**3 cr.**

Features of existing programming languages and underlying concepts. Syntax and semantics, simple statements, grouping of statements, scopes and storage allocations, subroutines. List processing and string manipulation languages. Fall. *Prerequisite: Grade of C or better in COSC 310.*

COSC 455 Artificial Intelligence**3 cr.**

An introduction to knowledge representation and inference, logic, semantic networks, frames and rule-based. Natural language processing; pattern recognition, pattern association and computer vision. Variable. *Prerequisite: Grade of C or better in COSC 241.*

COSC 460 Operating Systems Concepts**3 cr.**

Process management, scheduling, time slicing, concurrency, mutual exclusion, semaphores, resource management, memory mapping, virtual systems, mass storage, file systems. Case studies of operating systems. Research paper and presentation required. Every semester. *Prerequisite: Grade of C or better in COSC 241 and COSC 365.*

COSC 465 Computer Systems Architecture**3 cr.**

Architecture of large computing systems. Instruction set architecture and RISC. Design of high-speed arithmetic units, I/O subsystems, DMA, and channels. Interrupt structures. Horizontal vs. vertical microprogramming. Memory system hierarchy with emphasis on cache, virtual memory, and interleaving. Introduction to parallel processing and advanced architectural trends. Variable. *Prerequisite: Grade of C or better in COSC 365.*

COSC 470 Compiler Design and Implementation**3 cr.**

A detailed study of the concepts and techniques used in design and construction of a compiler. Topics include: lexical analysis, syntactic and semantic analysis, intermediate code generation, final code generation, and optimization techniques. Each student will be required to design and implement a functional compiler or interpreter for a given language. Spring. *Prerequisites: Grade of C or better in COSC 310 and COSC 365.*

COSC 475 Interactive Computer Graphics**3 cr.**

Concepts of computer graphics. Terminology and programming primitives, raster vs. vector hardware, interaction devices, software packages, geometrical transformations, two- and three-dimensional viewing, hidden line and surface removal, object hierarchy. Variable. *Prerequisite: Grade of C or better in COSC 241.*

COSC 480 Knowledge-Based Systems**3 cr.**

Concepts of knowledge-based systems with an emphasis on expert systems. Topics include production systems, building of knowledge-based systems and future trends with expert systems. Variable. *Prerequisite: Grade of C or better in COSC 241.*

COSC 485 Introduction to the Theory of Computation**3 cr.**

Basic theoretical principles embodied in formal languages, automata, computability, and computational complexity. Emphasis is placed on developing formal descriptions of computers and computational processes, and practical implications of theoretical results. Variable. *Prerequisites: Grade of C or better in COSC 310 and COSC 365.*

COSC 488 Information Technology Mgmt. Portfolio Capstone**0 cr.**

Creation of an information technology management portfolio consisting of best examples of projects, programs, and research papers that demonstrate achievement of the established learning goals for this major. Every semester. *Prerequisites: 90 credits and completion of required FSU major courses.*

COSC 489 Capstone Course**1 cr.**

Creation of professional vita, formation of portfolio consisting of student's best examples of programs and research papers. Amalgamation of curricular concepts into a unified entity. Every semester. *Prerequisites: Senior standing and completion of all core courses and grade of C or better in at least two required advanced courses.*

COSC 491 Seminar in Computer Science 1 to 6 cr.

Group study of advanced topics under faculty supervision; up to 3 credits may apply to major or minor in Computer Science. Repeatable for maximum of 6 credits if topics are substantially different; up to 3 credits count toward major or minor. Variable. *Prerequisites: Grade of C or better in core courses and written permission of faculty supervisor.*

DEPARTMENTAL APPROVAL REQUIRED PRIOR TO REGISTERING.

COSC 494 Field Experience in Computer/Information Science 3 cr.

Work experience in industry, government, or small business providing an opportunity for practical application of academic training in computer/information science. The course requirements are: (1) A minimum of 90 hours of field experience; (2) A written report describing in detail the work performed in the field in conjunction with an oral presentation to interested faculty and students; (3) A project paper on a topic related to the work experience. Previous work experience may not be substituted for this course. Repeatable for maximum of 6 credits if placement sites are different; up to 3 credits count in major. Every semester. *Prerequisite: junior or senior standing and completion of the core courses in Computer Science with grade of C or better. DEPARTMENTAL APPROVAL REQUIRED PRIOR TO REGISTERING.*

COSC 499 Individual Problems in Computer Science 1 to 6 cr.

Individual advanced projects under faculty supervision; up to 3 credits may apply to major or minor in Computer Science. Students must submit a written, clear proposal to faculty supervisor and department. This proposal must be detailed enough to describe topics, time allocation and limitation, objectives, assignments and projects. Repeatable for maximum of 6 credits; up to 3 credits count toward major or minor. Every semester. *Prerequisites: Grade of C or better in core courses and written permission of faculty and supervisor. DEPARTMENTAL APPROVAL REQUIRED PRIOR TO REGISTERING.*

Criminal Justice

CRJU 490 Advanced Topics in Criminal Justice 1-3 cr.

Selected topics in criminal justice relating to law enforcement or corrections. Does not duplicate any other FSU course. May be repeated for credit if topics are substantially different. Variable. *Prerequisite: POSC 324 or permission of instructor.*

CRJU 494 Field Experience 6-9 cr.

Guided work experience in a criminal justice agency. Minimum 225 work hours of experience for 6 credits; 339 work hours for 9 credits. Academic component of course consists of at least one writing project and an oral presentation. Variable. *Prerequisite: POSC 324 or course equivalent.*

Dance

You may not receive credit for both a DANC course and the same course formerly labelled PHEC.

DANC 105 Improvisation 2 cr.

Exploration of spontaneous movement in response to various stimuli in solo and group settings. Two labs/week. Alternate years.

DANC 110 Dance Appreciation 3 cr.

Dance forms, dance personalities, contemporary trends in dance. Not open to students who have credit for former PHEC 135. Every semester. *GEP Group A.*

DANC 131 Ballet I 1 cr.

Basic ballet techniques and style. Not open to students who have credit for former PHEC 111. Fall.

DANC 142 Modern I 1 cr.

Fundamental skills in modern dance. Not open to students who have credit for former PHEC 211. Fall.

DANC 154 Jazz I 1 cr.

Movement techniques in jazz dance; dance composition and improvisation. Not open to students who have credit for former PHEC 112. Spring.

DANC 209 Dance Composition I 2 cr.

Exploration of movement materials through short problems dealing with rhythm, space, and dynamics. Two labs/week. *Prerequisite: DANC 105.* Alternate years.

DANC 231 Ballet II 2 cr.

Intermediate ballet techniques and terminology. Not open to students who have credit for former PHEC 113. Alternate years. *Prerequisite: DANC 131 or permission of instructor.*

DANC 242 Modern II 2 cr.

Skills in intermediate modern dance. Not open to students who have credit for former PHEC 213. Alternate years. *Prerequisite: DANC 142.*

DANC 254 Jazz II 2 cr.

Movement techniques, composition and improvisation in the jazz dance style. Not open to students who have credit for former PHEC 114. Alternate years. *Prerequisite: DANC 154 or permission of instructor.*

DANC 255 Dance Company I 3 cr.

Application of procedures in auditioning, learning choreography, rehearsals, and production of both individual and company dance pieces as a member of FSU Dance Company culminating in public performances. Participation in all rehearsals and performances required. Lecture/Lab. Repeatable for a maximum of 12 credits. Every semester. *Prerequisite: permission of instructor after formal audition.*

DANC 309 Dance Composition II 2 cr.

The second of two courses in dance composition focusing on developing skill in the creative process. Exploration of more formal elements of composition with an emphasis on form and structure. Two labs/week. Alternate years. *Prerequisite: DANC 209.*

DANC 332 Ballet III 2 cr.

Study of advanced ballet technique, vocabulary, and style. Two labs/week. Repeatable no more than 4 times for credit. Alternate years. *Prerequisite: DANC 231.*

DANC 342 Modern III 3 cr.

Advanced modern dance techniques; modern dance styles and personalities. Three labs/week. Not open to students who have credit for former PHEC 236. Alternate years. *Prerequisite: DANC 242.*

DANC 355 Dance Company II 3 cr.

Application of procedures in auditioning, learning choreography, creating and teaching choreography, rehearsals, and production of both individual and company dance pieces as a member of FSU Dance Company culminating in public performances. All students are required to compose, cast, teach, and rehearse their dance composition for public performance as part of the Dance Company Concert. Student choreographers are required to meet all deadlines established at the start of the course. Participation in all rehearsals and performances required. Lecture/Lab. Repeatable for a maximum of 12 credits. **Every semester.** *Prerequisite: Three credits of DANC 255 and permission of instructor after formal audition.*

DANC 360 Dance Repertory 2 cr.

A dance repertory workshop for the intermediate/advanced. Lecture/lab. Alternate years. Repeatable no more than 3 times for credit. *Prerequisite: DANC 242 or DANC 231.*

DANC 382 Dance History 3 cr.

History of theatrical dance in Western Culture and the role of dance in humankind, a thematic approach. Alternate years. *Prerequisite: DANC 110.*

DANC 408 Choreography and Production 3 cr.

Procedures for choreographing, producing, and directing dance productions. Not open to students who have credit for former PHEC 431. Alternate years. *Prerequisite: Two credits in dance or permission of instructor.*

DANC 429 Special Topics in Dance 1 to 3 cr.

Advanced analysis and practice in dance movement; varying topics. A maximum of six credits combined can be earned in DANC 429 and the former PHEC 429. Repeatable for credit each semester of enrollment. Yearly. *Prerequisite: 2 credits in dance technique or permission of instructor.*

ECONOMICS

DANC 442 Modern IV 3 cr.

An advanced/professional dance technique level in modern dance based on an eclectic fusion of movement vocabulary which has evolved from the early modern dance heritage with the inclusion of the instructor's own personal aesthetic. Three labs/week. Yearly. Repeatable no more than 2 times for credit. *Prerequisite: DANC 342 or permission of instructor.*

DANC 471 Principles of Teaching Dance 3 cr.

Theory and practice of dance instruction including methods and materials. Two lectures and one lab/week. Alternate years. *Prerequisite: DANC 231 or DANC 242.*

DANC 479 Teaching Practicum 1 cr.

Application of theory and skills acquired in DANC 471. The student, under supervision, will teach dance in an authentic setting. Alternate years. *Prerequisite: DANC 471.*

DANC 498 Senior Project 1 cr.

Individual project performed under the supervision of a faculty member; the culminating experience for the dance major. Offered as needed.

Economics**ECON 200 Basic Economics** 3 cr.

Introductory survey course covering both Macro and Microeconomics designed to provide minimum competence for majors other than business, accounting and economics. Every semester. *GEP Group D.*

ECON 201 Principles of Economics (Macro) 3 cr.

An introduction to Principles of Economics focusing primarily on the forces determining the economy-wide levels of production, employment, and prices. Examines monetary and fiscal policy and alternative views of how the economy should be managed. Every semester. *GEP Group D.*

ECON 202 Principles of Economics (Micro) 3 cr.

An introduction to Principles of Economics focusing primarily upon individual consumer and producer decision making behavior in various organized market structures; the price system, market performance, efficiency and government policy. Every semester. *Prerequisite: ECON 201/211.*

ECON 211 Honors: Principles of Macroeconomics 3 cr.

An introduction into the forces at work in the national economy including income, employment, and the monetary system. A variety of written research assignments on current topics in macroeconomics required. Credit cannot be earned for both ECON 201 and 211. Fall. *Prerequisite: acceptance into the Honors program or permission of the instructor. GEP Group D.*

ECON 212 Honors: Principles of Microeconomics 3 cr.

Examines markets, consumer behavior, market structures, resource pricing, income distribution, and general equilibrium. Spring. *Prerequisites: ECON 201 or 211.*

ECON 300 History of Economic Thought 3 cr.

The historical evolution of economic doctrines from early times to the present; the relation of economics to social issues. Views and significance of major schools of thought. Spring. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 301 Labor Economics 3 cr.

The theory of labor supply and demand, labor force participation, investment in human capital, compensating wage differentials, government regulation, employment, unemployment, unionism, discrimination, wage-related income transfers and pensions. Spring. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 303 American Economic History 3 cr.

Development from colonial times to the present. The industrial revolution and the impact of technological change upon such areas as transportation, agriculture, business organization, unions, the banking system, and public policy. Fall, odd-numbered years. *Prerequisites: ECON 200; or ECON 201/211 and ECON 202/212.*

ECON 305 Managerial Economics 3 cr.

Applications of micro-economic theory to management practices. Topics may include demand estimation and forecasting; production and cost; pricing in various market structures; and special topics in firm decision making. Spring. *Prerequisites: ECON 201/211 and ECON 202/212; and MATH 106 or MATH 220 or MATH 236.*

ECON 306 Money and Banking 3 cr.

The nature and functions of money, credit, banking, and the Federal Reserve System. Institutions generating the money supply; the influence of monetary and fiscal policies on economic stability and growth. Every fall. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 307 Government, Business, and Public Policy 3 cr.

Economic aspects of the relation of government and business in the United States; antitrust, economic, and social regulation of business. Spring, even-numbered years. *Prerequisites: ECON 200; or ECON 201/211 and ECON 202/212.*

ECON 309 Comparative Economic Systems 3 cr.

Analysis of ideology and problems in different economic systems: capitalism, Marxism, and socialism. Comparisons of centrally planned and unplanned economics; free market pricing and direct controls; private enterprise and nationalized industry. Fall, even-numbered years. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 351 Intermediate Macro-Economics 3 cr.

General theory, both Keynesian and post-Keynesian, of the growth of the economy as a whole. Monetary theory, fiscal policy, and review of macroeconomic issues. Fall. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 352 Intermediate Micro-Economics 3 cr.

Theory of consumer behavior and demand. Production and cost theory and firm behavior under varying circumstances. Distribution theory. Spring. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 400 International Trade 3 cr.

An explanation of the pure theory of international trade and its application to trade policy; comparative advantage; gains from trade; tariffs, quotas, and other barriers to trade. Fall. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 401 International Finance 3 cr.

The theory of international finance and its application to international monetary policy; international monetary and capital movements; the balance of payments and adjustment mechanisms; alternative exchange rate systems. Spring. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 404 Public Sector Economics 3 cr.

Government taxes and expenditures for economic stability and growth; tax equity, efficiency, and incidence; government services; relationship of monetary and fiscal policies. Spring, odd-numbered years. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 405 Economics of Developing Countries 3 cr.

Survey of underdeveloped economies. Theories of economic development and their application; appraisal of programs in selected developing countries. Fall, odd-numbered years. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 407 Business Cycles and Forecasting 3 cr.

Analysis of business conditions and measurement including theories of cycles; problems of data selection, modeling, and estimation; and forecasting. Fall, even-numbered years. *Prerequisites: ECON 351 or permission of the instructor.*

ECON 408 Urban and Regional Economics 3 cr.

Focuses on applied economic analysis of the regional economy and areas within the regional economy. Techniques introduced include economic base analysis, shift share analysis and input-output modelling. Fall, even-numbered years. *Prerequisites: ECON 201/211 and ECON 202/212.*

ECON 410 Resource and Energy Economics 3 cr.

Economic analysis of problems and policies affecting natural resource and energy industries and the related impacts on the environment. Analytical economic framework used to study energy, mineral, forest, and fisheries industries. Fall, even-numbered years. *Prerequisite: ECON 202/212 or permission of the instructor.*

ECON 450 Quantitative Economics 3 cr.

Introduction to the use of calculus, matrix algebra, LaGrangian constrained optimization and linear programming in economics. Spring. *Prerequisites:* ECON 201/211 and ECON 202/212.

ECON 460 Introduction to Econometrics 3 cr.

Applies economic theory, mathematics, and statistical techniques for the purpose of testing hypotheses about economic phenomena, estimating coefficients of economic relationships, and forecasting economic events. Fall, odd-numbered years. *Prerequisites:* ECON 201/211, ECON 202/212, and MATH 209/219/380.

ECON 490 Special Topics in Economics 1-3 cr.

Applications of economic principles to a variety of specialized topics. Repeatable for maximum of 6 credits if topics are substantially different. Variable. *Prerequisites:* ECON 201/211 and 202/212 or permission of instructor.

ECON 491 Seminar in Economics 3 cr.

Research papers on a selected theme for critical analysis by members of the seminar. Leadership in discussion expected. Designed primarily for economics majors. Spring. *Prerequisites:* ECON 351, ECON 352 and ECON 407 or ECON 460; or senior standing. Capstone.

ECON 492 Internship Research Paper 3 cr.

Separately graded academic portion of the internship, required in conjunction with ECON 495. Graded A through F. The entire internship (492 and 495) is for a total of 15 credits for full-time interns and 9 credits for part-time interns. May be counted in the major/minor as an elective. Variable. *Corequisite:* ECON 495.

ECON 494 Field Experience in Economics 3 cr.

Supervised field experience for Economics majors and minors relating to operations in economic research, business economics, or governmental agencies. A detailed written and oral report on the experience is required. No more than one field experience may be applied towards graduation. Graded A-F. May be counted toward major/minor as an elective. Every semester. *Prerequisites:* junior or senior standing; minimum of 12 hours in Economics; approval of the department internship committee.

ECON 495 Internship in Economics 6 or 12 crs.

Guided work experience with an academic component. Work must be directly related to academic program. Full-time interns register for 12 credits and may not enroll in any other courses (except 492). Part-time interns register for 6 credits. This experiential component is graded P/F. May not be counted toward major or minor requirements. Variable. *Prerequisites:* junior or senior status, in good academic standing; minimum of 12 hours in economics; submission of a completed Internship Agreement Form to the departmental internship director prior to registration. *Corequisite:* ECON 492.

ECON 499 Individual Problems in Economics 1-6 cr.

Individual research and formal report on a major topic not covered in regular course. Proposal must be submitted prior to registration. Variable. *Prerequisites:* senior standing, at least 15 hours of economics and consent of department chair.

Educational Professions

EDUC 100 Career Analysis in Education 1 cr.

Analysis of education in America and the potential roles to be played both in schools and in the wider community. A preliminary self assessment of how the students' interests and abilities match the demands of the educational profession. Portfolio development. Observations with reflections. Every semester. *Required:* Taken prior to admission to Phase I. *Recommended:* Taken within first 2 semesters at Frostburg State University.

EDUC 200 Phase I Teaching & Professional Assessment Laboratory 1 cr.

Through a series of short video-taped teaching sessions, students acquire skill in assessing their own strengths and weaknesses as teachers. Students will write instructional objectives, prepare lesson plans, and teach a series of ten minute lessons to their peers. Includes screening for selected teaching proficiencies. This course is required in all teacher education programs. Graded P/F. Every semester. *Prerequisite:* Admission to Phase I. *Corequisite:* Enrollment in EDUC 202.

EDUC 201 Students, Teachers, and Learning Environments 3 cr.

A study of students, teachers, and learning environments including the philosophical and historical foundations of the American educational system. Basis for further study in education including topics on legal and ethical issues and diversity. Controlled observations in educational settings. Every semester. May be taken concurrently with EDUC 200/202. *Prerequisite:* completion of 30 hours.

EDUC 202 Foundations of Learning and Instruction 3 cr.

The learning and teaching process in the American educational system. Human growth and development of students birth-21; learning theories and styles; instructional strategies and adaptations. Controlled observations in educational settings. Every semester. Concurrent enrollment required in EDUC 200. May be taken concurrently with EDUC 201. *Prerequisite:* Admission to Phase I.

EDUC 210 Educational Psychology 3 cr.

General principles of the psychology of learning and teaching; emphasis on laws of learning, conditions of learning, efficient learning, improving study habits, diagnosis and evaluation of the learner. Variable.

EDUC 290 Field Experiences in Education 1 to 3 cr.

Supervised field experiences for teacher education students in school and non-school settings focusing on specific problems identified by students. Repeatable for maximum of 6 credits. Graded P/F. Every semester. *Prerequisite:* permission of department chair, with written proposal for a field problem approved prior to registering.

EDUC 300 Phase II Teaching & Professional Assessment Laboratory .5 cr.

Video-taped teaching segments with students in school settings. Skills practice and analysis using various teaching models, classroom management techniques, and assessment practices. Participation in seminars on current topics in education. Screening for selected academic and instructional proficiencies. Graded P/F. Every semester. *Prerequisite:* admission to Phase II and concurrent enrollment in Phase II methods and appropriate field work experiences.

EDUC 346 Educational Technology Lab I 1 cr.

Experiences and practice in using technology to support any curriculum. Experiences are assimilated into professional practice. Emphasis on use of technology within the context of accomplishing authentic tasks. Every semester. May be satisfied by portfolio and performance assessment examination. *Prerequisite:* Phase I admission or permission of department.

EDUC 354 General Music Methods in the Elementary School 3 cr.

Music teaching, emphasizing the elementary school level: materials and techniques of instruction for general music classes; general educational theories and their relevance to music education; computer-assisted instruction and integrated technology; facility with accompanying folk instruments; and exposure to the Orff, Kodaly, and Dalcroze approaches to music education. Required in junior year of all students desiring certification in music. *Prerequisite:* admission to Phase II of the Teacher Education Program and junior standing in the Music program.

EDUC 355 General Music Methods in the Secondary School 3 cr.

Music teaching emphasizing the secondary school level: materials and techniques for general music classes; computer-assisted instruction and integrated technology; facility with accompanying folk instruments; historical and philosophic foundations of music education; and program development and instructional design. Required in junior year of all students desiring certification in music. *Prerequisites:* EDUC 354 and admission to Phase II of the Teacher Education Program.

EDUC 376 Special and Multicultural Education 3 cr.

Characteristics of exceptional children. Understanding how exceptionalities, American culture, race, ethnicity, gender, socio-economic class, religion, age, language, and intellectual ability influence learning. Historical and legal influences on American schools and community agencies. Applicable teaching methods. Controlled observations included. Every semester. *Prerequisite:* Phase I admission.

EDUCATIONAL PROFESSIONS

EDUC 390 Field Experience in Early Childhood Education 3 cr.

Supervised field experiences for Early Childhood candidates in Head Starts and/or other pre-school settings. Develops knowledge, skills and dispositions of age-appropriate environments. Includes analysis of children's needs and examines and assesses human and curricular environments. Enables candidates to plan physically and psychologically safe, supportive and healthy learning environments in early childhood settings. Includes some class work. Taken for 3 credit hours during Phase I of the ECE/ELEM major's professional sequence. ECE specialization. Graded P/F. Every semester. *Prerequisite: Phase I admission or permission of department.*

EDUC 391 Teaching Internship I: Secondary Education 2 cr.

Initial internship practicum at secondary school level. Joint supervision by school system and university personnel. Some assignments and responsibilities coordinated with concurrent secondary block courses. Minimum length of practicum equal to 30 half-days (120 clock hours). Graded P/F. Fall. *Prerequisites: Successful completion of first semester of Phase II courses and concurrent enrollment in remaining Phase II course requirements.*

EDUC 392 K-12 Field Experience 1 to 2 cr.

Teacher assistantship in elementary and secondary settings. Requires 60 hours of in-school aide experience at each level. Assignments coordinated with other Phase II courses. Graded P/F. *Prerequisite: Phase II admission.*

EDUC 401 Nursery-Eighth Grade Field Experiences I 1½ cr.

Teacher assistantship in N-8 school setting. Requires 90 hours of in-school experience. Assignments coordinated with Block I methods courses. Graded P/F. Every semester. *Prerequisites: Phase II admission and concurrent enrollment in Block I.*

EDUC 402 Nursery-Eighth Grade Field Experiences II 1½ cr.

Teacher assistantship in N-8 school setting. Requires 90 hours of in-school experience. Assignments coordinated with Block II methods courses. Graded P/F. Every semester. *Prerequisites: Phase II admission and concurrent enrollment in Block II.*

EDUC 403 Assessment and Management of Learning 4 cr.

Design, implementation, and use of various assessment instruments. Qualitative analysis of student performance. Assessment of students, instructional activities, and environments. Communication of assessment data. Elements of developmentally appropriate classroom management. Management strategies for student behavior, curriculum, materials, and resources. Every semester. *Prerequisite: successful completion of Block I.*

EDUC 405 Leadership 2 cr.

Educational leadership in schools, communities, and professional organizations. Professionalism emphasized. Last offered Spring 2006. *Prerequisite: Phase III admission.*

EDUC 406 Leadership Seminar 2 cr.

Reflective self and peer evaluation of teaching performance in the classroom as a foundation for exploration of the leadership roles professional teachers are expected to play in the classroom, school, community, and profession. *Prerequisite: Phase III admission, concurrent enrollment in internship.*

EDUC 410 Teacher Intern Seminar: N-8 3 cr.

A study of the research and materials for various models of teaching with the intent of securing objective feedback for making a sophisticated analysis of curriculum impact, teaching methods, and teacher/student interaction. Graded P/F. Every semester. *Prerequisite: Phase III admission.*

EDUC 422 Leadership Seminar: N-8 3 cr.

Educational leadership in schools, communities, and professional organizations. Elements of developmentally appropriate classroom management. Management strategies for student behavior, curriculum, material, and resources. Professionalism emphasized. Every semester, starting Fall 2006. *Prerequisite: Phase III admission. Capstone.*

EDUC 429 The School and Community 3 cr.

Role and participation of the community in public education today. Cooperation between public school and non-school educative agencies in the community. Participation in a field research project required. Variable.

EDUC 430 Desktop Publishing for Educators 3 cr.

Use a computer for publishing materials. Learn fundamental principles of publishing design. Learn how to produce published materials that can be used in the classroom. Design desktop publishing projects that will involve K-12 students. Plan for integration of desktop publishing into the curricula. Variable.

EDUC 432 Hypermedia & Multimedia: Educational Applications 3 cr.

Learn about hypermedia and multimedia. Become familiar with using a computer for hypermedia applications. Work with text, graphics, video, and sound to create presentations and information exploration materials which incorporate various approaches to teaching and learning. Design hypermedia projects that will involve K-12 students. Plan for integration of hypermedia into the curriculum. Variable.

EDUC 434 LOGO: Ed. Programming & Instructional Techniques 3 cr.

Learn about Logo as a language for learning about computers, computer programming, and thinking. Emphasis will be on learner-controlled and learner-directed explorations of intellectual problems of interest. Variable.

EDUC 441 Classroom Discipline Strategies 3 cr.

For undergraduates who have had aiding or teaching internship and for practicing teachers. Emphasis on understanding child behavior in school. Democratic classroom setting. Variable. *Prerequisite: Phase II completion.*

EDUC 444 Cooperative Learning Workshop: Level I 3 cr.

A study of cooperative learning through an analysis of the underlying theory and observation; planning, and implementation of cooperative learning activities. Summer.

EDUC 445 Middle School Curriculum and Methods 3 cr.

The middle school movement; the middle school student and curriculum; teaching in the middle school; middle school organization. Every semester. *Prerequisite: Phase II admission or permission of Department Chair.*

EDUC 446 Using Databases for Critical Thinking 1 cr.

Use databases in learning to organize, access, manipulate, and evaluate information. Learn to find and interpret information, find patterns, and make inferences based on established patterns. Develop techniques for using databases in elementary and secondary curricula. Variable.

EDUC 447 Educational Technology Lab II 1 cr.

Experiences and practice in using technology to support any curriculum. Experiences are assimilated into professional practice. Emphasis on use of technology within the context of accomplishing authentic tasks. Extension and refinement of Lab I experiences. Every semester. *Prerequisite: Phase II admission.*

EDUC 448 Educational Technology Lab III 1 cr.

Experiences and practice in using technology to support any curriculum. Experiences are assimilated into professional practice. Emphasis on use of technology within the context of accomplishing authentic tasks. Extension and refinement of Lab II experiences. Every semester. *Prerequisite: appropriate phase admission and successful completion of Educational Technology Lab II.*

EDUC 450 Art Education Methods for the Secondary Teacher 3 cr.

Curriculum, goals, content and organization of secondary art education. Theories of visual development and artistic behavior in age-appropriate students; materials, resources and processes for teaching art; classroom management, and technology applications. Two hrs. lecture, 2 hr. lab. Credit cannot be earned for both EDUC 450 and EDUC 308. Fall. *Prerequisites: admission to Phase II or permission of the Department Chair; EDUC 392 and EDUC 451 recommended concurrently.*

EDUC 451 Art Education Methods for the Elementary Teacher 3 cr.

Curriculum, goals, content, and organization of elementary art education. Theories of visual development and artistic behavior in age-appropriate students; materials, resources and processes for teaching art; classroom management and technology applications. Two hrs. lecture, 2 hr. lab. Credit cannot be earned for both EDUC 451 and EDUC 309. Fall.

Prerequisites: admission to Phase II or permission of the Department Chair; EDUC 392 and EDUC 450 recommended concurrently.

EDUC 454 Microcomputer Application in Education 3 cr.

Introductory course to familiarize educators with microcomputers. Microcomputers as a teaching tool; innovations, systems of instruction, model programs, matching software to school children's needs. Every semester. *Prerequisite: Phase II admission or permission of instructor.*

EDUC 490 Special Topics in Education 1/2 to 6 cr.

Special workshop on a current topic, as arranged. Repeatable for maximum of 6 credits if topics are substantially different.

EDUC 497 or PHEC 497 Teaching Internship: K-12 Programs 12 cr.

Supervised practicum in teaching in elementary and secondary schools. Joint supervision by school system and university personnel. Daily, full day for one semester. Graded P/F. Every semester. *Prerequisite: Phase III admission or permission of Department Chair. PHEC 497 HPE Capstone.*

EDUC 499 Individual Problems in Education 1 to 3 cr.

Independent study under supervision. Research paper on special topic. Requires proposal approval through Dept. of Educational Professions prior to registering. Repeatable for maximum of 6 credits. Every semester, summer.

Early Childhood Education

ECED 150 Early Childhood Foundations 3 cr.

Introduction to profession of early childhood education. Includes growth and development of young children. Examines historic, theoretical and philosophical underpinnings of current early childhood programs. Explores play, learning environments and curriculum. Looks at the context of families and communities. Requires a reflective journal, field observations, and portfolio development. Every semester. *Taken Prephase I before ECED 293 in the ECE/ELEM major's professional sequence as part of the ECE specialization.*

ECED 293 Early Childhood Learning Environment, Materials & Methods 3 cr.

Examination and assessment of developmentally appropriate environments, materials and methods for young children birth to age eight. Includes planning of physically and psychologically safe and healthy learning environments. Taken during Prephase I of ECE/ELEM major's professional sequence as part of ECE specialization. Every semester. *Prerequisite: ECED 150 and declaration of ECE/ELEM major.*

ECED 431 Early Childhood Education Curriculum Development, Implementation & Assessment 3 cr.

Philosophy and function of early childhood education curriculum. Analysis of children's needs; planning, implementing, and assessing a balanced program. Taken Phase II Block II of ECE/ELEM major's professional sequence as part of ECE specialization. Every semester. *Prerequisite: Successful completion of ECED 443 or permission of the department.*

ECED 438 Early Childhood Classroom Management 3 cr.

For the early-childhood teacher: advanced teaching skills in nurturing the young child's social experiences, self-discipline, independence, and creativity; arranging play experiences, organizing physical space, communicating with children, child study. Variable.

ECED 442 Administration & Supervision of Early Childhood Programs 3 cr.

Administrative and supervisory responsibilities for the early-childhood educator in providing quality programs for young children. Variable. *Prerequisite: permission of instructor.*

ECED 443 Adults in the Child's World 3 cr.

The early-childhood educator's influence on and collaboration with the child's caregivers; the use of local, state, and national resources to meet child, family, and community educational needs. Taken Phase II Block I of ECE/ELEM major's professional sequence as part of ECE specialization. Every semester. *Prerequisite: Phase II admission or permission of department.*

Elementary Education

ELED 307 Block 1 Clinical & Professional Assessment Component 1 cr.

Supervised assisting at the early childhood, elementary, and middle school levels. Joint supervision by school system and university personnel. Daily, full day clinical experience. Graded P/F. Every semester. *Prerequisite: Admission to Phase II.*

ELED 403 Assessment and Management of Learning 4 cr.

Component course of the 13 credit integrated Block II, Phase II of the elementary teacher education program. Block II courses center on the extension and refinement of basic concepts, skills, and information related to the teaching of mathematics, science, language arts, and social studies. The major program themes of technology, integration, teaming, performance-based instruction, professionalism, diversity, service learning, and career awareness are modeled and utilized as integrating threads. Focuses on the evaluation of students and instructional activities. Every semester. *Prerequisite: Admission to Phase II of the Teacher Education Program and recommendation of Phase I, Block I faculty team.*

ELED 470 General Curriculum 3 cr.

Planning, constructing, and organizing the school curriculum; types of curricula and current applications. Every semester. *Prerequisite: Phase II admission or permission of Department Chair.*

ELED 471 Mathematics Curriculum, Methods & Assessment 3 cr.

Planning, constructing, and organizing curriculum; types of curricula. Methods, materials, content, and assessment for teaching P-8 Mathematics. Every semester. *Prerequisite: admission to Phase II.*

ELED 472 Language Arts Curriculum, Methods & Assessment 3 cr.

Planning, constructing, and organizing curriculum; types of curricula. Methods, materials, content, and assessment for teaching Language Arts. Every semester. *Prerequisite: admission to Phase II.*

ELED 474 Science Curriculum, Methods & Assessment 3 cr.

Planning, constructing, and organizing curriculum; types of curricula. Methods, materials, content, and assessment for teaching P-8 Science. Every semester. *Prerequisite: admission to Phase II.*

ELED 475 Social Studies Curriculum, Methods & Assessment 3 cr.

Planning, constructing, and organizing curriculum; types of curricula. Methods, materials, content, and assessment for teaching P-8 Social Studies. Every semester. *Prerequisite: admission to Phase II.*

ELED 494 Teaching Internship I: N-8 6 cr.

Supervised practicum in teaching at the early childhood, elementary, and middle school levels. Joint supervision by school system and university personnel. Daily, full day clinical experience. When taken during fall semester, includes a one-week beginning of the school year experience. Graded P/F. Every semester. *Prerequisite: successful completion of Block I.*

ELED 495 Teaching Internship II: N-8 Programs 12 cr.

Supervised practicum in teaching at the early childhood, elementary, and middle school levels. Joint supervision by school system and university personnel. Daily, full day clinical experience. When taken during fall semester, includes a one-week beginning of the school year experience. Graded P/F. Every semester. *Prerequisite: successful completion of Internship I and Phase III admission. Capstone.*

Guidance

GUCO 406 Introduction to Guidance 3 cr.

History and philosophy of guidance programs; the role, organization, and methods of guidance. Variable.

EDUCATIONAL PROFESSIONS

Reading

REED 317 Content Area Reading 3 cr.

Identification of the special reading demands in content areas and development of appropriate instructional activities. The reading process as it relates to content area learning. Research, best practices, and instructional strategies. Required for all secondary and K-12 approved programs. Every semester. *Prerequisite: appropriate Phase admission.*

REED 323 Process and Acquisition of Reading 3 cr.

Process of language development, including impact of phonemic awareness, and how the brain responds to reading acquisition. Practical applications of research in language development, acquisition, and use. Understanding of the role of experiential background, prior knowledge, motivation, and personal significance to emerging readers. Every semester. *Prerequisite: Phase I admission.*

REED 416 Reading and Language 3 cr.

Practical applications of research in language development, acquisition, and use. Relevant to all education majors. Every semester. *Prerequisite: Phase II admission.*

REED 418 Reading and Writing Connections 3 cr.

Reading and writing activities in daily instruction. The role and use of authentic assessments in determining student reading performance and selection of materials appropriate to student ability levels. Taken with Secondary Block. Not open to students with credit for former REED 318. Spring. *Prerequisite: Phase II admission.*

REED 420 Assessment for Reading Instruction 3 cr.

Understanding of the use of national, state, local, and classroom reading assessment data to make ongoing instructional modifications as a strategy for prevention and intervention. Understanding of a variety of reading assessments and curriculum adjustments. Communicating assessment data about individual student reading performance to appropriate sources. Every semester. *Prerequisite: successful completion of Block I.*

REED 422 Practicum in Reading Instruction 3 cr.

Laboratory experience in correcting reading problems. Diagnosis and program planning. Tailoring of materials and techniques to the particular child. Variable. *Prerequisite: REED 420.*

REED 425 Materials and Motivations for Reading 3 cr.

Support for long term motivation of developing readers within a framework of inquiry. Experience a variety of texts to be used in classes when reading for literary experience, reading to perform a task, and reading for information. Apply strategies for selecting materials, for retrieving materials, and for evaluating materials. Understanding of accessibility, variety of media, multicultural materials, text features, and oral and written responses to literature. Knowledge of the role of parents in supporting reading programs. Every semester. *Prerequisite: Block II admission or permission of the department.*

REED 440 Children's Literature 3 cr.

Content and form of children's literature in books other than school textbooks. How to evaluate literature and use literary materials in teaching. Variable.

REED 450 Classroom Techniques in Diagnosis & Correction of Reading Difficulties 3 cr.

Lecture and laboratory to diagnose reading difficulties and plan corrective programs using a variety of materials and techniques in tutoring. Summer. *Prerequisite: REED 420 and 422.*

REED 450 Classroom Techniques in Diagnosis & Correction of Reading Difficulties 3 cr.

Lecture and laboratory to diagnose reading difficulties and plan corrective programs using a variety of materials and techniques in tutoring. Summer. *Prerequisite: REED 420 and 422.*

REED 473 Reading Instruction 3 cr.

Knowledge of best practices and instructional strategies which focus on the purposes for reading. How to use a balanced program of phonics, semantics, and syntactics in teaching reading. Methods, materials, and content for teaching reading in grades N-8. Knowledge of early identification and intervention strategies for low achieving readers. Every semester. *Prerequisite: Phase II admission.*

Secondary Education

SCED 410 Secondary Methods and Curriculum 3 cr.

Evolution of the philosophy of secondary education. Current curricula, planning, issues, and instructional methodologies in all secondary teaching areas. Required for secondary education majors. Not open to students with credit for former SCED 310. Spring. *Prerequisite: Phase II admission.*

SCED 411 English in the Secondary School 3 cr.

Subject methods course required for secondary certification in teaching English. Modern trends in curriculum and instruction. Not open to students with credit for former SCED 311. Fall. *Prerequisite: Phase II admission or permission of Department Chair; EDUC 391 recommended concurrently.*

SCED 414 Mathematics in the Secondary School 3 cr.

Subject methods course required for secondary certification in teaching mathematics. Modern trends in curriculum and instruction. Not open to students with credit for former SCED 314. Fall. *Prerequisite: Phase II admission or permission of Department Chair; EDUC 391 recommended concurrently.*

SCED 415 Methods of Teaching Modern Foreign Languages 3 cr.

A general methods course for foreign-language majors seeking certification at the secondary level or elementary education majors seeking certification in teaching a language at the elementary level. (Does not certify a secondary language major to teach the elementary level.) Not open to students with credit for former SCED 315. Fall. *Prerequisites: Phase II admission or permission of Department Chair; EDUC 391 recommended concurrently.*

SCED 416 Business Education in the Secondary School 3 cr.

Methods of teaching business content and skill competencies, organization and evaluation of work experiences, and the leadership role of the teacher in the development of student organizations. Included are: philosophy, aims, purposes and objectives of Business Education; planning, organizing, and evaluating the educational process, facilities and equipment; survey techniques used in business; teacher role in developing attitudes and preparing students for life-long learning. Proficiency in the skill areas required. Credit cannot be earned for both SCED 416 and SCED 316. Fall. *Prerequisites: Phase II admission or permission of Department Chair; EDUC 391 recommended concurrently.*

SCED 419 Science in the Secondary School 3 cr.

Subject methods course required for secondary certification in teaching science. Modern trends in curriculum and instruction. Not open to students with credit for former SCED 319. Fall. *Prerequisites: Phase II admission or permission of Department Chair; EDUC 391 recommended concurrently.*

SCED 420 Social Studies in the Secondary School 3 cr.

Subject methods course required for secondary certification in teaching social studies. Modern trends in curriculum and instruction. Not open to students with credit for former SCED 320. Fall. *Prerequisites: Phase II admission or permission of Department Chair; EDUC 391 recommended concurrently.*

SCED 496 Teaching Internship II: Secondary Education 12 cr.

Supervised practicum in teaching at secondary school level. Joint supervision by school system and university personnel. Daily, full day for one semester. Graded P/F. Every semester. *Prerequisite: Phase III admission or permission of Department Chair.*

Special Education

SPED 451 Adapting Instruction in Diverse Classrooms 3 cr.

An understanding of the instructional and social development needs of the disabled and non-disabled students in inclusive classrooms. Special attention to collaboration, technology, legislation, educational programming, instructional strategies, inclusion models, and current research related to the students enrolled in secondary school inclusion programs (middle/senior high school) and K-12 programs. Not open to students with credit for former SPED 361. Every semester. *Prerequisite: Phase II admission.*

SPED 461 Characteristics of Exceptional Children 3 cr.

Etiology, diagnosis, physical, emotional, and social characteristics of exceptional children, including the gifted, retarded, and physically handicapped. Variable.

- SPED 462 Intro. to the Education of Exceptional Children** 3 cr.
Understanding the educational needs of exceptional children; preventive and remedial education. Variable.
- SPED 463 Teaching Children with Special Needs** 3 cr.
Observation, identification, and management of children with mild to moderate learning problems. Variable. *Prerequisite: permission of instructor.*
- SPED 481 The Gifted Learner** 3 cr.
Study of recent research on characteristics, needs, and problems of gifted learners; model programs; future possibilities. Variable. *Prerequisite: PSYC 150 or EDUC 201 or permission of instructor.*
- SPED 482 Curriculum for the Gifted Learner** 3 cr.
Theoretical and practical approaches to teaching gifted learners; constructing unique plans for each teacher's needs. For those who will deal with gifted learners. Variable. *Prerequisite: at least one course in curriculum.*

Engineering

Engineering Sciences

- ENES 099 Introduction to Workshop and Machine Shop** 1 cr.
General knowledge of the available resources required for upper level physics and engineering courses. Hands-on and demonstration activities. Strong emphasis on personal safety and procedures while using the department workshop and machine shop space and equipment. One hr. integrated lecture and lab. Fall. Does not count for credit toward the 120 hours required for graduation.
- ENES 100 Introduction to Engineering Design** 3 cr.
FSU Course. Introduction to the engineering design process, computer software for word processing, spreadsheet, CAD and communication skills. Students work as teams to design and build a project. Two hrs. lecture and two hrs. recitation per week. Every semester.
- ENES 102 Statics** 3 cr.
FSU Course. The equilibrium of stationary bodies under the influence of various kinds of forces. Forces, moments, couples, equilibrium, trusses, frames and machines, beams and friction. Vector and scalar methods are used to solve problems. Three hrs. lecture and one hr. discussion/recitation per week. Spring. *Prerequisite: MATH 236.*
- ENES 219 SolidWorks Essentials** 1 cr.
Introduction to SolidWorks mechanical design automation software. Build parametric models of parts and assemblies; make drawings of those parts and assemblies. Fall.
- ENES 220 Mechanics of Materials** 3 cr.
FSU Course. Stress and deformation of solids-rods, beams, shafts, columns, tanks, and other structural, machine and vehicle members. Topics include stress transformation using Mohr's circle; shear and moment diagrams; derivation of elastic curves; and Euler's buckling formula. Design problems related to this material are given in lab. Fall. *Prerequisites: ENES 102, MATH 237, PHYS 261.*
- ENES 221 Dynamics** 3 cr.
FSU Course. Systems of heavy particles and rigid bodies at rest and in motion. Force-acceleration, work-energy and impulse-momentum relationships. Motion of one body relative to another in a plane and in space. Two hrs. lecture and two hrs. lab per week. Fall. *Prerequisites: PHYS 261, ENES 102, MATH 237.*

Electrical Engineering

**** Courses marked UMCP Course are offered only for students completing the previous UMCP/FSU collaborative electrical engineering program. A limited selection of UMCP ENEE courses is offered as needed.**

- ENEE 114 Programming Concepts for Engineers** 4 cr.
FSU Course. Principles of software development, high level languages, compiling and linking, pseudo-code, input/output, data types and variables, operators and expressions, conditionals and loops, functions, arrays, pointers, structure data types, memory

allocation, introduction to algorithms, software projects, debugging, documentation. Programs will use the C language. Three hrs. lecture and two hrs. recitation per week. Spring. *Corequisite: ENES 100.*

- ENEE 204 Basic Circuit Theory** 3 cr.
FSU Course. Basic circuit elements: resistors, capacitors, inductors, sources, mutual inductance and transformers; their I-V relationships. Kirchoff's Laws. DC and AC steady state analysis. Phasors, node and mesh analysis, superposition, theorems of Thevenin and Norton. Transient analysis for first- and second-order circuits. Three hrs. lecture and one hr. discussion/recitation per week. *Prerequisite: PHYS 262. Corequisite: MATH 432.*

- ENEE 206 Fundamental Electric & Digital Circuit Laboratory** 2 cr.
FSU Course. Introduction to basic measurement techniques and electrical laboratory equipment (power supplies, oscilloscopes, voltmeters, etc.). Design, construction, and characterization of circuits containing passive elements, operational amplifiers, and digital integrated circuits. Transient and steady-state response. This course is prerequisite to all upper level ENEE laboratories. One hour lecture and three hrs. lab per week. Spring. *Prerequisite: ENEE 244. Corequisite: ENEE 204.*

- ENEE 241 Numerical Techniques in Engineering** 3 cr.
FSU Course. Introduction to error analysis, conditioning and stability of algorithms. Numerical solution of nonlinear equations. Vector spaces and linear transformations. Matrix algebra. Gaussian elimination. LU factorization, matrix inversion. Similarity transformations and diagonalization. Iterative computation of eigenvalues. Interpolation; splines; data fitting. Numerical integration. Three hrs. lecture and one hr. discussion/recitation per week. Fall. *Prerequisite: ENEE 114, MATH 237.*

- ENEE 244 Digital Logic Design** 3 cr.
FSU Course. Gates, flip-flops, registers and counters. Karnaugh map simplification of gate networks. Switching algebra. Synchronous sequential systems. PLA's. Elements of binary arithmetic units. Three hrs. lecture and one hr. discussion/recitation per week. Fall. *Prerequisite: ENEE 114.*

- ENEE 303 Analog and Digital Electronics** 3 cr.
UMCP course. Introduction to the conceptual physical operation of PN-junction diodes, MOSFETs and bipolar transistors (BJTs). Large signal terminal characteristics of PN junction diodes, bipolar and MOSFET transistors. Digital electronics is covered at the transistor level including the inverter, NAND and NOR gates. Semiconductor memory. Basic transistor circuit configurations including the BJT common emitter (CE) and common collector (CC) circuits, and the MOSFET common source (CS) and common drain (CD) configurations. DC bias and small signal analysis of BJTs and MOSFETs. Simple multitransistor circuits including: the differential-amplifier and the current mirror. Frequency response of simple amplifiers. Fall. *Prerequisite: A "C" or higher in all 200-level ENEE courses. Corequisite: ENEE 307.*

- ENEE 307 Electronics Circuits Design Laboratory** 2 cr.
FSU course. I-V properties of diodes and transistors through simple experiments. Analysis, design, and construction of digital and analog electronic circuits at the transistor and integrated circuit levels. Operation and design of relevant multi-transistor circuits. BJT forward active operation by study of CE design, bias and small signal operation. MOS common source operation, study of invertors, NAND and NOR gates. Simulation and analysis of Random Access Memory (RAM). Study of basic transistor configurations and frequency response by building a high-fidelity audio amplifier. Differential amplifiers, active loads, current mirrors, and principles of feedback through the construction of op-amps out of discrete components. Experiments will be tightly aligned to the ENEE 303 lectures. Not open to students who have credit for former ENEE 306. One hr. lecture, three hrs. lab. Fall. *Prerequisite: C or better in all 200-level ENEE courses. Corequisite: ENEE 303.*

- ENEE 313 Introduction to Device Physics** 3 cr.
UMCP course. Basic physics of devices including crystal structure, fields in solids and properties of electrons and holes including diffusion and energy distributions. Current flow in Si by drift and diffusion, equations of motion of particles, p-n junction, depletion, fields and potentials, depletion and diffusion capacitance, and current flow under forward and reverse bias. Operation of bipolar junction and metal-oxide field effect transistors, their physical structure, operation thresholds, current flow, capacitance and current-voltage characteristics. Spring. *Prerequisites: a "C" or higher in all 200-level ENEE courses.*

ENGINEERING

ENEE 322 Signal and System Theory 3 cr.

UMCP Course. Concept of linear systems, state space equations for continuous systems, time and frequency domain analysis of signals and linear systems. Fourier, Laplace and Z transforms. Application of theory to problems in electrical engineering. Fall. *Prerequisites: ENEE 204 and MATH 432 and completion of all lower division technical courses in the EE curriculum.*

ENEE 324 Engineering Probability 3 cr.

UMCP Course. Axioms of probability, conditional probability and Bayes' rules, random variables, probability distribution and densities, functions of random variables, weak law of large numbers and central limit theorem. Introduction to random processes, correlation functions, spectral densities, and linear systems. Applications to noise in electrical systems, filtering of signals from noise, estimation, and digital communications. Spring. *Prerequisite: ENEE 322 and completion of all lower division technical courses in the EE curriculum.*

ENEE 350 Computer Organization 3 cr.

FSU course. Structure and organization of digital computers. Registers, memory, control and I/O. Data and instruction formats, addressing modes, assembly language programming. Elements of system software, subroutines and their linkages. Three hrs. lecture and one hr. discussion. Fall. *Prerequisite: ENEE 244 and "C" or better in all 200-level ENEE courses.*

ENEE 381 Electromagnetic Wave Propagation 3 cr.

UMCP course. The electromagnetic spectrum: Review of Maxwell's equations; the wave equation potentials, Poynting's theorem, relationship between circuit theory and fields; propagation of electromagnetic waves in homogeneous media and at interfaces; transmission line theory, wave-guides, radiation and antennas. Spring. *Prerequisite: PHYS 312 and completion of all lower-division technical courses in the EE curriculum.*

ENEE 408 Capstone Design Project 3 cr.

Culmination of prior course work in engineering. Utilization of modern design tools and methodologies for the design of components or systems under realistic constraints, with particular emphasis on teamwork and oral/written communication. Areas in which projects are offered include analog and digital electronic circuits, electromechanical systems and devices, control systems, signal processing, and instrumentation. 1.5 hrs. lecture and 3 hrs. lab. Spring. *Prerequisite: permission of department. Repeatable to 6 credits maximum if content differs.*

ENEE 417 Microelectronics Design Laboratory 2 cr.

FSU Course. Senior class capstone project laboratory. Students design and build fairly sophisticated circuits, mainly composed of discrete transistors and integrated circuits. Students may become involved in various projects designed to require that they synthesize from what they have learned in many of the disciplines in electrical engineering. Students gain hands-on practical experience while learning how to use their knowledge and skills to design and build a device or system. One lecture and three hours of lab per week. Variable. *Prerequisites: ENEE 306 and ENEE 312 and completion of all lower division EE technical courses.*

ENEE 435 Introduction to Wireless Sensor Networks 3 cr.

Background on networking, range of applications for WSN, various sensors, communication, protocol model, wireless transmission technology for WSN, concept of sensor motes, basic architectural elements, Medium Access Control Protocols, routing protocols, transport protocols, middleware and operating systems for WSN. Variable. *Prerequisites: Senior standing and completion of lower division courses in EE curriculum or permission of instructor.*

ENEE 439 Topics in Signal Processing 1-3 cr.

FSU Course. Selected topics of current importance in signal processing. For electrical engineering majors only. Variable. Repeatable to up to 6 credits maximum if content differs. *Prerequisite: permission of department and completion of all lower division technical courses in the EE curriculum.*

ENEE 461 Control Systems Lab 2 cr.

FSU Course. Design criteria, characteristics and limitations of modern control systems. Sensors, feedback, PID Control. Servomechanisms, control of various physical quantities such as temperature, pressure, liquid level, etc. Computer-based process control. Errors in digital control systems. Students will gain hands-on experience through a design project

to build and test a feedback control system for a real world application. One lecture and three hours of lab per week. Variable. *Prerequisites: ENEE 206 and ENEE 322 and completion of all lower-division technical courses in the EE curriculum.*

ENEE 475 Power Electronics 3 cr.

FSU Course. Basic principles of power electronics and its applications. Analytical methods, canonical circuit topologies, fundamentals of power semiconductors, snubbing circuits, drive circuits, and control methods. Variable. *Prerequisite: ENEE 302 and completion of all lower division courses in the EE curriculum.*

Mechanical Engineering

**For course descriptions of elective courses available in mechanical engineering, please refer to the Clark School of Engineering catalog of the University of Maryland, College Park.

ENME 232 Thermodynamics 3 cr.

FSU Course. Introduction to thermodynamics. Thermodynamic properties of matter. First and second law of thermodynamics, cycles, reactions, mixtures. Variable. *Prerequisites: PHYS 261 and 262.*

ENME 271 Numerical Methods in Mechanical Engineering 3 cr.

FSU Course. Develop the skills to generate readable, compact and verifiably correct MATLAB scripts and functions to obtain numerical solutions to a wide range of engineering models and to display the results with fully annotated graphics. Learn structured programming. Two lectures and two hrs. lab per week. Spring. *Prerequisite: ENES 221.*

ENME 320 Thermodynamics 3 cr.

UMCP Course. Properties, characteristics and fundamental equations of gases and vapors. Application of the first and second laws of thermodynamics in the analysis of basic heat engines, air compression vapor cycles. Flow and non-flow processes for gases and vapors. Spring. *Prerequisites: PHYS 261, PHYS 262, and MATH 237.*

ENME 331 Fluid Mechanics 3 cr.

FSU Course. Principles of fluid mechanics. Mass, momentum and energy conservation. Hydrostatics. Control volume analysis. Internal and external flow. Boundary layers. Modern measurement techniques. Computer analysis. Laboratory experiments. Two hrs. lecture and two hrs. lab per week. Fall. *Prerequisites: ENES 221, ENME 232 or 320.*

ENME 332 Transfer Processes 3 cr.

FSU Course. The principles of heat transfer. Conduction in solids. Convection. Radiation. Modern measurement techniques. Computer analysis. Two hrs. lecture and two hrs. lab per week. Spring. *Prerequisite: ENME 331.*

ENME 350 Electronics and Instrumentation I 3 cr.

FSU Course. Modern instrumentation. Basic circuit design, standard microelectronic circuits. Digital data acquisition and control. Signal conditioning. Instrumentation interfacing. Designing and testing of analog circuits. Laboratory experiments. Two hrs. lecture and two hrs. lab per week. Not open to students who have credit for former ENME 252. Fall. *Prerequisite: PHYS 263.*

ENME 351 Electronics and Instrumentation II 3 cr.

FSU Course. Continuation of ENME 350. Modern instrumentation. Basic circuit design, standard microelectronic circuits. Digital data acquisition and control. Signal conditioning. Instrumentation interfacing. Designing and testing analog circuits. Laboratory experiments. Two hours lecture and two hours lab per week. Spring. *Prerequisites: ENME 350 and PHYS 263.*

ENME 361 Vibration, Controls and Optimization I 3 cr.

UMCP Course. Fundamentals of vibration, controls, and optimization. Analysis and design in time, Laplace and frequency domains. Mathematical description of system response, system stability, control and optimization. Optimal design of mechanical systems. Spring. *Prerequisites: ENES 220, ENES 221, ENME 271, and MATH 432.*

ENME 371 Product Engineering and Manufacturing 3 cr.

FSU Course. Business aspects of engineering product development. Relationship of design and manufacturing. Product specification. Statistical process control. Design team development. The development process. Fall. *Prerequisite: ENES 221 and ENME 392.*

ENME 382 Engineering Materials & Manufacturing Processes 3 cr.

FSU Course. Basic material structures and properties. Mechanical behavior of materials. Manufacturing processes theory. Materials processing. Quality assurance. Laboratory experiments. Two hours lecture and two hours lab per week. Spring. *Prerequisite: ENES 220.*

ENME 392 Statistical Methods for Product & Process Development 3 cr.

UMCP Course. Integrated statistical methodology for the improvement of products and processes in terms of performance, quality and cost. Designed experimentation. Statistical process control. Software application. Laboratory activities. Fall. *Prerequisite: MATH 238.*

ENME 425 Microfabrication 3 cr.

Overview of microfabrication technologies and the science of miniaturization. Microsensors, nanotechnology. Photolithography, dry etching, wet etching, chemical vapor deposition, and physical vapor deposition. Three hrs. integrated lecture and lab. Spring. *Prerequisite: Senior standing in engineering/natural science or permission of instructor.*

ENME 462 Vibration, Controls and Optimization II 3 cr.

UMCP Course. Continuation of ENME 361. Fundamentals of vibration, controls, and optimization. Analysis and design in time, Laplace and frequency domains. Mathematical descriptions of system response, system stability, control and optimization. Optimal design of mechanical systems. Fall. *Prerequisites: ENME 351 and ENME 361.*

ENME 472 Integrated Product and Process Development 3 cr.

FSU Course. Integration of product development with the development process. Design strategies. Product architecture. Design for manufacturing. Selection of materials. Design for assembly. Two hours lecture and two hours lab per week. Spring. *Prerequisite: ENME 371. Capstone.*

ENME 488 Special Problems in Mechanical Engineering 3 cr.

Advanced problems in mechanical engineering with special emphasis on mathematical and experimental methods. Repeatable for maximum of 6 credits if topics are substantially different. Variable. *Prerequisite: permission of department.*

English

Writing

ENGL 100 Publication Practicum 1-2 cr.

Writing for and editing the campus literary magazine. Open to all students. (1-2 credits per semester; repeatable to 4 credits). Spring.

ENGL 101 Freshman Composition 3 cr.

Addresses the processes of composition and develops intermediate skills in writing essays with an argumentative edge. Based on readings for diverse audiences, it prepares students for writing documented essays. Every semester. *Students may not withdraw unless withdrawing from the University. Core Skill 1.*

ENGL 111 Honors: Freshman Composition 3 cr.

Development of intermediate skills in writing based on readings for general audiences. Preparation for honors-level courses. Credit cannot be earned for both ENGL 101 and ENGL 111. Every semester. *Prerequisite: enrollment in the Honors Program. Core Skill 1.*

ENGL 215 Grammar for Writing 3 cr.

Systematic study of English grammar, including parts of speech, components of sentences, phrases, clauses, sentence patterns and punctuation. Emphasis on application of grammatical principles to student writing. Variable, but normally offered during Intersession and Summer sessions only. Does not fulfill Core Skill 1 or 2, although the credits may be used to fulfill the 120 hr. minimum toward graduation. **MAY NOT BE USED TO SATISFY THE REQUIREMENTS FOR THE MAJOR OR MINOR IN ENGLISH.**

ENGL 300 Critical Writing About Literature 3 cr.

Introduction to literary theory to develop critical perspectives on literary works and provide flexible writing strategies. Advanced writing about literature. Required of English majors and minors. Prior literature at 200-level required. Readings involve literary analysis and criticism. Every semester. *Prerequisite: C or better in ENGL 101 or 111. Core Skill 2.*

ENGL 308 Social Sciences Advanced Composition 3 cr.

Development of advanced skills in writing based on reading for social science audiences. Preparation of extended papers; attention to research tools and documentation. Students may receive credit for only one of the following: 308, 309, 310 or 312. Every semester. *Prerequisites: C or better in ENGL 101 or 111; and at least 42 credits or permission of Chair. Core Skill 2.*

ENGL 309 Advanced Composition: Humanities 3 cr.

A special advanced composition course which fulfills all of the reading and writing requirements of English 308 and 310, but centers research on topics appropriate to the humanities. Development of advanced writing skills. Extensive and research-based papers; attention to research tools and documentation. Students may receive credit for only one of the following: 308, 309, 310, or 312. Fall. *Prerequisites: C or better in English 101 or 111; and at least 42 credits or permission of instructor. Core Skill 2.*

ENGL 310 General Advanced Composition 3 cr.

Development of advanced skills in writing. Students may receive credit for only one of the following: ENGL 308, 309, 310, or 312. Every semester. *Prerequisites: C or better in ENGL 101 or 111; and at least 42 credits or permission of Chair. Core Skill 2.*

ENGL 312 Honors: Advanced Composition 3 cr.

Development of advanced skills in writing. Both reading and writing assignments more challenging than those in other Advanced Composition courses (ENGL 308, 310). Credit cannot be earned for more than one of the following: ENGL 308, 309, 310, or 312. Variable. *Prerequisites: C or better in ENGL 101 or ENGL 111, at least 42 credits, and enrollment in Honors Program. Core Skill 2.*

ENGL 330 Business Writing 3 cr.

Basic writing for business and para-professional occupations. Writing resumés, job applications, memos and reports, and other kinds of business writing. Every semester. *Prerequisites: C or better in ENGL 101 or 111; and at least 42 credits or permission of Chair. Core Skill 2.*

ENGL 334 Creative Writing: Fiction 3 cr.

Major elements of fiction writing: style, characterization, point of view, structure, pacing, conflict. Class critiques of student work. Every semester. *Prerequisite: C or better in ENGL 101 or 111.*

ENGL 335 Creative Writing: Poetry 3 cr.

Major elements of poetry: imagery, metaphor, theme, form. Both lyric and narrative poetry. Class critiques of student work. Every semester. *Prerequisite: C or better in ENGL 101 or 111.*

ENGL 336 Journalistic Writing 3 cr.

Introduction to the newspaper industry, effective newsgathering, and the specialized formats and style of straight news and feature stories. Communication and promotional activities of the journalist-turned-public-relations professional. Every semester. *Prerequisite: C or better in ENGL 101 or 111.*

ENGL 338 Technical Writing 3 cr.

Principles and practice of writing related to science, industry, and government. Effective style, organization, and mechanics of writing reports. Every semester. *Prerequisites: C or better in ENGL 101 or 111; and at least 42 credits or permission of Chair. Core Skill 2.*

ENGL 339 Scientific Writing 3 cr.

Introduction to formats, prose, and style specifications for Natural Science curricula. Focuses on language, research, critical analysis, and interdisciplinary impact of scientific discoveries. Variable. *Prerequisites: C or better in ENGL 101/111; at least 42 credits or permission from Chair. Core Skill 2.*

ENGL 360 Creative Nonfiction 3 cr.

Merging of the skills of storytelling and reporting to write personal essays and literary journalism. Fall. *Prerequisite: ENGL 334, 335, or 336.*

ENGLISH

- ENGL 402 Editing and Production** 3 cr.
Design, layout, and editing techniques for professional publications. Reinforcement of copy editing and proofreading skills. Spring. *Prerequisite:* ENGL 300, 308, 309, 310, 330, or 338.
- ENGL 430 The Composing Processes** 3 cr.
A survey of theory and research on the composing processes. Every semester. *Prerequisite:* 6 hrs. of writing courses, including one from the 300 writing series offered by the English department.
- ENGL 434 Advanced Fiction Writing** 3 cr.
Continued study of fiction writing through advanced individual work on short stories, a novel, or a novella. Within a workshop setting, students will work toward producing publishable-quality fiction and learn how to approach publishers and editors. Fall. *Prerequisite:* ENGL 334 or permission of instructor.
- ENGL 435 Advanced Poetry Writing** 3 cr.
Continued study of poetry writing through advanced individual work on lyrical, dramatic, and narrative poems. Within a workshop setting, students will work towards publishable-quality poetry. Spring. *Prerequisite:* ENGL 335.
- ENGL 436 Advanced News and Feature Writing** 3 cr.
Skills in gathering and writing news. Techniques of New Journalism and writing for magazines. Spring. *Prerequisite:* ENGL 336 or permission of instructor.
- ENGL 460 Form and Theory of Fiction and Poetry** 3 cr.
In-depth study of the techniques and methods employed by major writers of fiction and poetry, including consideration of structure, language, form, voice, theme, point of view, and character. Fall. *Prerequisite:* ENGL 334 or 335.
- ENGL 470 Senior Workshop** 3 cr.
An integrated senior-year experience that requires students to use their accumulated skills, knowledge, and creative impulses to complete a final creative writing portfolio of publishable quality. Course includes tutorials, workshops, marketing and submission of original work, and final readings. Spring. *Prerequisite:* ENGL 434 or 435.
- ENGL 492 Internship Seminar** 1 cr.
Academic component of internship. Requires co-registration in 495. Graded A-F. Credit for 492 may be counted toward major. Every semester.
- ENGL 494 Field Experience in Writing** 3 cr.
Requires nine work-hours per week of practical writing experience in an approved, supervised, professional setting. Every semester. *Prerequisites:* Junior or senior standing and permission of the faculty coordinator.
- ENGL 495 Internship in English** 6 or 12 cr.
Experiential component of internship: guided work experience in conjunction with 492; must directly relate to academic program. Full-time interns register for 12 credits in 495 and 1 credit in 492. Part-time interns register for 6 credits in 495 and 1 credit in 492. English 495 is graded P/F. Every semester. *Prerequisites:* junior or senior status, in good academic standing; submission of Internship Agreement form to internship director prior to registering; major or minor in English, or minor in Public Relations, Journalism or Film Studies.
- Literature and Language**
- ENGL 150 Introduction to Literature** 3 cr.
A thematic study of literature, looking across genres and cultures at contemporary topics. Continued development of writing skills. Every semester. *GEP Group B.*
- ENGL 206 Modern American Drama** 3 cr.
An introductory survey of representative American plays and playwrights of the 20th century with attention to the evolution of Modern American Theatre and analysis of the efforts of the playwright and theatrical professionals. Fall, even-numbered years. *Prerequisite:* ENGL 101 or 111 or equivalent. Also offered as THEA 206.
- ENGL 207 Introduction to Film Studies** 3 cr.
A cross-cultural examination of film with a focus on developing critical skills and formal approaches to cinematic analysis through such concepts as genre, cinematography, camera movement and sound. Weekly film viewing. Fall. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.
- ENGL 208 Film and American Culture** 3 cr.
Critical investigation of popular American movies, emphasizing the role films have historically played in projecting, reflecting and challenging cultural values and beliefs. Weekly film screening. Spring, even-numbered years. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.
- ENGL 221 Intro. to Literature/Intermediate Composition** 3 cr.
Critical reading of expository prose and significant poetry, drama, and fiction from a variety of cultures and eras, with emphasis on developing intermediate writing skills. Preparation of short papers and essay exams. Graded A-F. A passing grade (D or better) satisfies the GEP Group B requirement for ENGL 150. Students meeting the competencies of freshman composition purchase three credits for ENGL 101. Students in 221 may thus fulfill both the core skill (ENGL 101, when the credits are purchased) and the GEP Group B requirement of ENGL 150, or they may fulfill only one, or neither. Every semester. *Open only to students never enrolled in ENGL 101 or ENGL 111. Students may not withdraw unless withdrawing from the University. Core Skill 1 and/or GEP Group B.*
- ENGL 231 African American Literature** 3 cr.
Critical examination of major African American writings. Variable. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.
- ENGL 250 Honors: Comparative Literature** 3 cr.
Literature generated by the cross-cultural interface of Western countries with those third-world areas that have reclaimed their national identities since World War II. Credit cannot be earned for both ENGL 150 and ENGL 250. Variable. *Prerequisite:* acceptance into the Honors Program or permission of instructor. *GEP Group B.*
- ENGL 260 British Literature: Beowulf to Present** 3 cr.
A survey of British literature from Beowulf to the present. Includes major works from each period to provide historical perspective. Designed for English majors and minors. Every semester. *Prerequisite:* C or better in ENGL 101 or 111.
- ENGL 261 American Literature: Colonial to Present** 3 cr.
A survey of American literature from colonial times to the present. Includes works from each period to provide historical perspective. Designed for English majors and minors. Every semester. *Prerequisite:* C or better in ENGL 101 or 111.
- ENGL 270 European & Neo-European Literature** 3 cr.
Works, in translation, important to European and Neo-European cultures, such as selections from the Old Testament, the literature of ancient Greece and Rome, Italian, French, Spanish, German, Russian, etc., literatures. Fall. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.
- ENGL 271 Asian & African Literature** 3 cr.
Including works, in translation, from Asian and African cultures, such as the major works of the Middle East, India, the African nations, China, and Japan. Spring. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.
- ENGL 276 Adolescent Literature** 3 cr.
Definition, classification, and analysis of adolescent literature and its value. Contemporary and classical works appropriate for or written especially for adolescents. Spring. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.
- ENGL 280 Mythology and Literature** 3 cr.
Greco-Roman literature, American Indian legends, and myths from diverse cultures examined in a literary and socio-cultural context. Variable. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.
- ENGL 281 Literature Into Film** 3 cr.
Critical examination of how literary works are translated into film, analyzing the means by which the director and others (actors, cinematographers, editors) interpret the literary work being adapted. Weekly film viewing. Fall, even-numbered years. *Prerequisite:* C or better in ENGL 101 or 111 or equivalent.

- ENGL 282 Shakespeare on Film** 3 cr.
A critical examination of Shakespeare's plays on film, considering the films as interpretations and adaptations. The emphasis will be both literary - how do the films interpret and revise Shakespeare's drama - and cultural - what do these films reveal about the culture that produced them. Weekly film viewing. Fall, odd-numbered years. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 290 Topics in Language and Literature** 3 cr.
A selected aspect of language or literature. May be taken more than once for credit if subtitle is different. Repeatable for a maximum of 6 credits if topics are substantially different. Variable. *English 101 or 111 must be taken concurrently with or prior to ENGL 290.*
- ENGL 306 Introduction to English Linguistics** 3 cr.
A study of the grammars and grammatical aspects of English as well as of language use in society, language change, and language acquisition and processing. Every semester. *Prerequisite: C or better in ENGL 101 or 111.*
- ENGL 340 Shakespeare** 3 cr.
A selection from the histories, comedies, major tragedies, and problem plays or romances. Every semester. *Prerequisite: C or better in ENGL 101 or 111.*
- ENGL 344 Film Theory** 3 cr.
Critical survey of world film with an emphasis on theoretical schools and movements. Three hours discussion with a weekly film viewing. Spring, odd-numbered years. *Prerequisites: ENGL 101 or 111 or equivalent, ENGL 207 or permission of instructor.*
- ENGL 371 Literature of the Middle Ages** 3 cr.
Literature of the Anglo-Saxon and Medieval periods. Credit cannot be earned for both ENGL 371 and ENGL 411. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 372 Early Modern Literature** 3 cr.
Literature from the Early Modern Period or Renaissance (16th-17th centuries). Focus on British writers with attention to the literature of the discovery of the New World. Credit cannot be earned for both ENGL 372 and ENGL 307. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 373 Literature of the Enlightenment** 3 cr.
Literature of 1650-1750 in Great Britain and America that represents movements toward philosophical, spiritual, scientific, social, and personal enlightenment. Credit cannot be earned for both ENGL 373 and either ENGL 322 or ENGL 352. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 374 Literature of the Age of Revolution** 3 cr.
Literature of the mid and late eighteenth century on both sides of the Atlantic. Credit cannot be earned for both ENGL 374 and either ENGL 332 or ENGL 352. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 375 Romanticism** 3 cr.
Literature of Romantic movement in the 19th century, with attention to major themes of Romantic and Transcendental writers, on both sides of the Atlantic. Credit cannot be earned for both ENGL 375 and either ENGL 303 or ENGL 313. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 376 Realism and Naturalism** 3 cr.
Literature of the later 19th century from both sides of the Atlantic. Credit cannot be earned for both ENGL 376 and either ENGL 323 or ENGL 407. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 377 Modernism** 3 cr.
Literature from the turn of the twentieth century to WWII from both sides of the Atlantic. Credit cannot be earned for both ENGL 377 and either ENGL 407, ENGL 404, or ENGL 426. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 378 Postmodernism** 3 cr.
Literature written after WWII from both sides of the Atlantic. Credit cannot be earned for both ENGL 378 and either ENGL 408, ENGL 424, or ENGL 426. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 379 Postcolonial Literature** 3 cr.
Literatures of former British and other European colonies from the second half of the twentieth century through the present, with emphasis on issues such as colonialism, nationalism, and modernity. Variable. *Prerequisite: C or better in ENGL 101 or 111 or equivalent.*
- ENGL 416 History of the English Language** 3 cr.
From the beginning to contemporary usage; changes in sounds, grammatical and spelling forms, syntax, and vocabulary. Spring. *Prerequisite: C or better in ENGL 101 or 111.*
- ENGL 418 Second Language Acquisition: Theory & App.** 3 cr.
Introduction to theories of how children and adults learn second languages, with application to conducting research or to teaching/tutoring children and adults who are second language learners (principally English as a second language). Fall, even-numbered years.
- ENGL 421 Jane Austen in Literature and Film** 3 cr.
Examination of the five major novels of Jane Austen in literature and in film versions. Variable. *Prerequisite: C or better in ENGL 101/111.*
- ENGL 431 World Drama I: Premodern** 3 cr.
World drama from the 5th Century B.C. Greeks to the late 19th century. Representative dramatists and forms from both the West and the East. Multicultural emphasis on the use and development of drama. Fall, even-numbered years. *Prerequisite: C or better in ENGL 101 or 111; ENGL 150/250 or THEA 106 or permission of instructor. Also offered as THEA 431.*
- ENGL 432 World Drama II: Twentieth Century** 3 cr.
World drama during the 20th century. Representative dramatists and forms from both the West and the East. Multicultural emphasis on the variety of dramatic forms. Spring, odd-numbered years. *Prerequisite: C or better in ENGL 101 or 111; ENGL 150/250 or THEA 106 or permission of instructor. Also offered as THEA 432.*
- ENGL 440 Literature of the Environment** 3 cr.
Critical, multi-cultural and historical study of literature of the environment, emphasizing the variety of attitudes toward the land in essays and poetry. Fall, odd-numbered years. *Prerequisite: C or better in ENGL 101 or 111.*
- ENGL 450 Women and Literature** 3 cr.
A cross-cultural study of womanhood as portrayed by male and female writers over the centuries. Fall, even-numbered years. *Prerequisite: C or better in ENGL 101 or 111.*
- ENGL 471 Seminar in Critical Theory** 3 cr.
Study of literary critical theory and application to an independent student project. Required of English majors in the literature concentration. Fall. *Prerequisites: C or better in ENGL 101 or 111; senior status.*
- ENGL 480 Senior Seminar in English** 3 cr.
Integration of previous course material and student's own experience in the discipline for a critical analysis of a topic in literature. Topics will vary. Senior thesis required. Variable. *Prerequisite: C or better in ENGL 101 or 111.*
- ENGL 489 English Capstone** 1 cr.
Conversion of students' working portfolios, accumulated during their careers as English majors, into "best works" collections for professional application and departmental assessment purposes. Other assessment activities possible. Every semester. *Prerequisite: senior status.*
- ENGL 490 Selected Topics in English** 3 cr.
A select aspect or body of literature of limited scope and topical interest. Subject varies; see Academic Schedule for specific titles. Repeatable for a maximum of 6 credits if topics are substantially different. Spring. Seniors only. *Prerequisite: C or better in ENGL 101 or 111.*
- ENGL 499 Independent Study** 1-3 cr.
Guided reading and/or writing projects. Repeatable for a maximum of 6 credits if topics are substantially different. Variable. *Prerequisites: permission of the department chair and a faculty director, normally given only to majors of junior or senior standing with at least a B average in the major.*

ENVIRONMENTAL HUMANITIES

Reading Improvement and Development**ENGL 105 Critical Reading** 3 cr.

The reading process: development of literal comprehension and critical analysis in various content areas. Fall. *Students required to enroll in this course based upon results of the reading placement test administered by the University may not withdraw unless withdrawing from the University.*

Environmental Humanities**HUMA 495 Project in Environmental Humanities** 3-9 crs.

Guided field experience supplemented by appropriate readings and written reports leading to a substantial research paper or to a creative project. Both experiential and academic components are graded P/F. *Prerequisite: Completion of all other courses in the minor and permission of the Environmental Humanities Committee.*

Environmental Policy**EPOL 491 Seminar in Environmental Policy** 3 cr.

Designed to synthesize course work in Environmental Policy. Required of students completing a minor in Environmental Policy. Students will select topics, make presentations, and participate in discussions. Variable. *Prerequisite: permission of coordinator.*

Finance

You cannot receive credit for both a FINA course and the same course formerly labeled BUAD.

FINA 301 Introduction to Personal Financial Planning 3 cr.

Overview of elements in the personal financial planning process: goal identification and budgeting, tax management, insurance planning and risk management, investments planning, retirement income and benefits, and issues in estate planning. Fall.

FINA 303 Principles of Finance 3 cr.

Introduction to basic principles of the three traditional divisions of finance: financial markets and institutions, investment and portfolio analysis, and corporate finance. Does not count for accounting majors. Spring. *Prerequisites: core skill requirement in mathematics, ACCT 211 and ECON 200 or ECON 201/211.*

FINA 370 Corporate Finance 3 cr.

Principles of financial management within business enterprises. Basics of financial analysis, stocks and bonds valuation, capital budgeting, capital structure decisions, dividend policy, and working capital management. Every semester. *Prerequisites: MATH 106 or MATH 220, ACCT 211, ECON 201/211 and ECON 202/212. Prerequisite or corequisite: ACCT 212.*

FINA 371 Insurance Planning and Risk Management 3 cr.

The nature of risk and its effect on the business enterprise. Various types of insurance, underwriting practices, actuarial and contractual problems, and government regulations. Spring.

FINA 375 Financial Institutions Management 3 cr.

Concepts of financial intermediation, characteristics of institutions within the financial services industry, regulation, and financial innovation. Management of liquidity, credit, interest rate, and other risks in a global economic environment. Fall. *Prerequisite: FINA 370.*

FINA 377 Retirement Income Planning 3 cr.

Retirement income savings planning. Characteristics of various pension plans. Management of defined contribution plans and defined benefit plans, investment of pension assets and performance evaluation of pension funds. Fall. *Prerequisites: ACCT 312 or FINA 301 or 303 or 370.*

FINA 381 Principles of Real Estate 3 cr.

Industry principles and factors influencing the real estate business. Contracts, deeds, valuation, financing, and government regulation. Fall.

FINA 405 Short-term Financial Management 3 cr.

Traditional analytical techniques and new approaches to liquidity management. Working capital accounts (cash, receivable, inventory and accounts payable management) and topics such as bank relations, off balance sheet financing, variance analysis models, improved liquidity indicators, and hedging techniques. Variable. *Prerequisite: FINA 370 or FINA 476.*

FINA 420 Entrepreneurial Finance 3 cr.

Introduction to financial issues relevant to small and emerging businesses, with special emphasis on sourcing capital. Analysis of the financial needs of new business ventures, profit management and cash flow analysis, entrepreneurial capital budgeting, accessing government sources of financing, working capital management, long-term financial policy, as well as external expansion through mergers and acquisitions. Spring. *Prerequisite: FINA 370.*

FINA 451 Estate Planning & Advanced Topics in Financial Planning 3 cr.

Study and application of the legal, tax, and human factors surrounding the efficient transfer of property including property ownership, probate, wills, intestacy, trusts, federal estate and gift taxation, contemporary techniques in individual estate planning, industry regulation and ethical practices for the estate planner. Synthesis of the financial planning process and discussion of advanced topics in financial planning. Variable. *Prerequisites: Two from FINA 371, FINA 377, FINA 475 and ACCT 420.*

FINA 475 Securities Investment 3 cr.

Investment opportunities in financial instruments. Valuation of fixed income, equity, and derivative securities. Evaluation of mutual funds. Investment strategies for portfolio management: portfolio selection, diversification, and performance analysis. Spring. *Prerequisite: FINA 370 or ACCT 312.*

FINA 476 Financial Management 3 cr.

Financial planning and performance evaluation in the business enterprise; obtaining and investing funds. Case-study approach to financial decision-making: basic financial analysis, working capital management, capital budgeting, long-term financing, leasing, mergers, acquisitions, and bankruptcy. Not open to students who have credit for the former BUAD 376. Every semester. *Prerequisites: FINA 370 or ACCT 312.*

FINA 477 International Financial Management 3 cr.

Analysis of financial management in a multinational enterprise. Multinational working capital management, management of foreign exchange risks, translation and transaction exposure, participation in global financial markets, multinational capital budgeting, and political risks. You cannot receive credit for both FINA 477 and FINA 470. Fall. *Prerequisite: FINA 370 or ACCT 312.*

FINA 479 Financial Policy 3 cr.

Advanced topics in corporate financial policy. Extensive case study and readings-based approaches to developing and implementing financial policy. Short-term financial planning, advanced capital budgeting, valuation of the firm, long-term strategic financial planning and issues of corporate restructuring. Spring. *Prerequisites: FINA 370 and one from FINA 375 or FINA 475 or FINA 476. Finance Capstone.*

FINA 490 Special Topics in Business Administration - Finance 3 cr.

A detailed study of a limited topic, problem, or period. Topics vary from semester to semester. Fall. *Prerequisites: 90 credits and 18 hrs. of business administration course work.*

FINA 494 Internship in Finance 3 or 6 cr.

Guided work experience in finance with business, nonprofit, or government organizations. Minimum of 135 clock hours of experience for 3 credits or 270 for 6 credit hours. Academic components include but not limited to one internship paper for 3 credits or two internship papers for 6 credit hours, internship log, and site supervisor's evaluation of the student's performance. Previous experiences are not acceptable for credit. Maximum of 6 credit hours. A 6 credit Internship choice counts as one elective course. Repeatable for maximum of 6 credits. Every semester. *Prerequisites: junior or senior standing; department chair's approval.*

FINA 499 Independent Study in Finance 1 - 3 cr.

Research and report on a specific topic not covered by regularly rostered courses. Topic will be defined by the student in conjunction with faculty sponsor. Proposals must be approved prior to registration. You cannot receive credit for both a BMIS course and the same course formerly labeled BUAD. Repeatable for maximum of 4 credits. Every semester. *Prerequisites: 18 credits of business administration course work, 90 credits and permission of department chair.*

Foreign Languages & Literature**Intercultural Studies****MDFL 111 Intercultural Understanding** 3 cr.

The study of the concept of Culture as well as its multiple manifestations and the case study of three diverse peoples. Team taught. Variable. *GEP Group F.*

Special Topics**MDFL 190 Selected Topics in Foreign Lang. and Literature** 3 cr.

A variable topic in a foreign language, literature, or culture other than French or Spanish such as Italian, Japanese, German, Arabic or Chinese. Specific title listed in course schedule. Repeatable for a maximum of 15 credits if topics are substantially different. Variable.

MDFL 290 Selected Topics in Foreign Language & Literature 1-4 cr.

A variable topic in a foreign language, literature, or culture other than French or Spanish such as Italian, Japanese, German, Arabic or Chinese more advanced than MDFL 190. Specific title listed in course schedule. Repeatable for a maximum of 15 credits if topics are substantially different. Variable.

MDFL 390 Selected Topics in Foreign Language & Literature 1-4 cr.

A variable topic on language, literature or culture. Specific title listed on course schedule. Repeatable for a maximum of 15 credits if topics are substantially different. Variable. *Prerequisite: permission of department.*

Literature in Translation**MDFL 211 Introduction to World Literature I** 3 cr.

Literary masterpieces in translation, illustrating spiritual, social, and esthetic life from ancient times through the Renaissance. Guest lectures in various literatures. Variable. *Prerequisite: ENGL 101 or 111.*

MDFL 212 Introduction to World Literature II 3 cr.

Literary masterpieces in translation from the 17th century to the present. Guest lectures in various literatures. Variable. *Prerequisite: ENGL 101 or 111.*

MDFL 301 Latin American Women's Issues 3 cr.

Study of the history and realities of Latin American women from the colonial period through contemporary Latin America. Variable. *GEP Group F.*

MDFL 407 Latin American and Spanish Film 3 cr.

A study principally of the most recent films from Latin America and Spain. Taught in English (may not be taken to satisfy the Spanish major). Not open to students with credit for SPAN 407. Two hrs. lecture and two hrs. lab. Variable.

MDFL 417 World Film 3 cr.

A study of the principal films from around the world. The course is organized geographically and chronologically. Variable. *Prerequisite: junior or senior standing or permission of the instructor.*

Linguistics**LING 301 Introduction to Language** 3 cr.

Introduction to the study of language. The nature of language; language families; techniques of linguistic analysis; linguistic change. Conducted in English. Variable.

French**FREN 101 Basic Elements of French I** 3 cr.

Fundamental skills: listening, speaking, reading, writing. Emphasis on active performance. Language laboratory. Not for students with high school or college French except by special placement. Fall.

FREN 102 Basic Elements of French II 3 cr.

Continued development of basic skills. Emphasis on active performance. Language laboratory. Spring. *Prerequisite: FREN 101.*

FREN 211 French Grammar, Composition, and Conversation I 3 cr.

Intensive grammar, oral command of the language, introduction to expository writing. Language laboratory. For students with two or more years of high school French, or FREN 102. Fall.

FREN 212 French Grammar, Composition & Conversation II 3 cr.

Sequel to FREN 211. Spring.

FREN 250 Overview of French Language and Culture 3 cr.

Survey of French language through study of major aspects of French and Francophone cultures. Serves as a gateway to advanced study in French. May be taken concurrently with a 300-level course. Fall. *Prerequisite: FREN 212 or equivalent. GEP Group B.*

FREN 330 Advanced Conversation 3 cr.

Emphasis on development and strengthening of oral-aural skills. Listening and speaking activities, simulation and role playing, phonetics and pronunciation practice. Extensive use of authentic audio and video materials, both recorded and live. Not open to students who have received credit for former FREN 311. Fall. *Prerequisite or corequisite: FREN 250 or equivalent.*

FREN 331 Advanced Composition 3 cr.

Emphasis on advanced grammar and reading and writing skills. Reading of authentic newspaper and magazine articles and current and relevant materials in the social sciences and other content areas. Not open to students who have received credit for former FREN 312. Spring. *Prerequisite or corequisite: FREN 250 or equivalent.*

FREN 332 French for the Professions 3 cr.

Vocabulary, reading, writing, and speaking for contact with the French professional world. Use of role-plays, authentic French business materials, analysis of French professional sectors, culture, and etiquette. Spring. *Prerequisite or corequisite: FREN 250 or equivalent.*

FREN 335 Intro. to French Literary Texts 3 cr.

Introduction to the current methodologies of literary analysis through the chronological study of selected writers and works from the Medieval period to the modern era. Not open to students who have received credit for former FREN 315. Variable. *Prerequisite or corequisite: FREN 250 or equivalent.*

FREN 336 French Civilization Through Film and Literature 3 cr.

Broad survey of French history from the Renaissance to present day through analysis of French and Francophone film tradition, focusing on a specific, enduring theme of Francophone culture, and incorporating major literary works. Emphasis on aural/oral skills with some supplementary reading in French. Every other fall beginning 2006. *Prerequisite or corequisite: FREN 250 or permission of instructor.*

FREN 410 French Poetry and Drama 3 cr.

Masterpieces of French poetry and drama in esthetic and cultural context. Every other spring beginning Spring 2007. *Prerequisite: FREN 250 or equivalent.*

FREN 411 French Fiction, Non-Fiction and Film 3 cr.

Masterpieces of French fiction, non-fiction and film in esthetic and cultural context. Every other spring beginning Spring 2006. *Prerequisite: FREN 250 or equivalent.*

FOREIGN LANGUAGES & LITERATURE

FREN 430 Individual and Society in Francophone World 3 cr.

Analysis of a problem or theme of French individual and social identity within the French social science and philosophical traditions. Every other fall beginning Fall 2006.
Prerequisite: FREN 250.

FREN 431 Translation 3 cr.

Theory and practice of oral interpretation and written translation from French to English, using real-life examples from social sciences, commerce, natural sciences, media, and the law. Every other fall beginning Fall 2005. *Prerequisite FREN 250 or permission of instructor.*

FREN 490 Special Topics in French Language and Literature 3 cr.

A selected topic such as an author or work, a genre or theme, translation or interpreting. Repeatable for a maximum of 9 credits if topics are substantially different. Variable.
Prerequisite: FREN 250 or equivalent.

FREN 493 Senior Seminar in French Literature 3 cr.

Capstone in French literature incorporating dossier of written work, oral presentation, extended reading and critical analysis of French literary text or director of multiple films.
Prerequisite: 90 credits or permission of department chair.

FREN 495 Internship in French 6-12 cr.

Guided work experience in a French speaking organization either in the US or abroad. Graded P/F. The credit is not applicable toward the major. Every semester and summer.
Prerequisites: junior or senior status, major or minor in French, and permission of department.

FREN 496 Senior Seminar in French Professional Studies 3 cr.

Capstone in French Professional Studies incorporating dossier of written work, oral presentation, and internship or research project. *Prerequisite: 90 credits or permission of department chair.*

FREN 498 Readings in French 1 to 4 cr.

Intensive readings and a term paper. Repeatable for a maximum of 6 credits if topics are substantially different. Variable. *Prerequisite: FREN 250 or equivalent.*

FREN 499 Individual Problems in the French Language 1 to 4 cr.

Individual research or activity requiring submission of a final paper or completed project. Repeatable for a maximum of 6 credits if topics are substantially different. Variable.
Prerequisite: FREN 250 or equivalent.

Spanish**SPAN 101 Basic Elements of Spanish I 3 cr.**

Fundamental skills: listening, speaking, reading, writing. Emphasis on active performance. Language laboratory. Not for students with high school or college Spanish except by special placement. Every semester.

SPAN 102 Basic Elements of Spanish II 3 cr.

Continued development of basic skills. Emphasis on active performance. Language laboratory. Variable. *Prerequisite: SPAN 101.*

SPAN 211 Spanish Grammar, Composition, & Conversation I 3 cr.

Intensive grammar, oral command of the language, introduction to expository writing. Language laboratory. For students with at least two years of high school Spanish, or SPAN 102. Every semester.

SPAN 212 Spanish Grammar, Composition, & Conversation II 3 cr.

Sequel to SPAN 211. Variable.

SPAN 250 Overview of Spanish Language & Culture 3 cr.

Survey of Spanish language through study of major aspects of Spanish and Latin American cultures. Serves as a gateway to advanced study in Spanish. May be taken concurrently with a 300-level course. Every semester. *Prerequisite: SPAN 212 or equivalent. GEP Group B.*

SPAN 330 Spanish for Practical Communication I 3 cr.

Emphasis on development and strengthening of oral-aural skills. Listening and speaking activities, simulation and role playing, phonetics and pronunciation practice. Extensive use of authentic audio and video materials, both recorded and live. Not open to students who have received credit for former SPAN 311. Variable. *Prerequisite or corequisite: SPAN 250 or equivalent.*

SPAN 331 Spanish for Practical Communication II 3 cr.

Development of fundamental writing skills through review of specific grammatical topics and analysis of significant reading selections. Conducted entirely in Spanish. Not open to students who have received credit for SPAN 312. Variable. *Prerequisite or corequisite: SPAN 250 or equivalent.*

SPAN 332 Spanish for the Professions I 3 cr.

Emphasis on intensive conversation and acquisition of vocabulary pertinent to the professions while focusing on the Spanish-speaking professional culture. Conducted in Spanish. Variable. *Prerequisite or corequisite: SPAN 250 or equivalent.*

SPAN 333 Introduction to Culture and Civilization of Spain 3 cr.

Spanish culture: political, literary, economic, social, and artistic life in Spain. Not open to students who have received credit for former SPAN 313. Variable. *Prerequisite or corequisite: SPAN 250 or equivalent.*

SPAN 334 Introduction to Culture & Civilization of Latin America 3 cr.

Latin American culture: political, literary, economic, social, and artistic life in Latin America. Not open to students who have received credit for former SPAN 314. Variable. *Prerequisite or corequisite: SPAN 250 or equivalent.*

SPAN 335 Introduction to Study of Spanish Literature 3 cr.

Esthetics of Spanish poetry, fiction, and drama. Not open to students who have received credit for former SPAN 315. Variable. *Prerequisite or corequisite: SPAN 250 or equivalent.*

SPAN 350 Spanish Phonetics and Pronunciation 3 cr.

Introduction to Spanish phonetics with the objective of improving pronunciation and intonation in Spanish. Students will learn terminology for classifying Spanish sounds as well as basic phonetic transcription with an introduction to the International Phonetic Alphabet (IPA). Variable. *Prerequisite or corequisite: SPAN 250 or equivalent.*

SPAN 401 Literature of Spain I 3 cr.

Survey of literature of Spain from the Middle Ages through the seventeenth century. Representative figures and major literary developments. Variable. *Prerequisites: SPAN 250 and two 300-level Spanish courses.*

SPAN 402 Literature of Spain II 3 cr.

Survey of literature in Spain from the eighteenth century to the present. Representative figures and major literary developments. Variable. *Prerequisites: SPAN 250 and two 300-level Spanish courses.*

SPAN 403 Spanish American Literature I 3 cr.

Survey of literature in Latin America from the Pre-Hispanic period through the early twentieth century. Representative figures and major literary developments. Variable. *Prerequisites: SPAN 250 and two 300-level Spanish courses.*

SPAN 404 Spanish American Literature II 3 cr.

Survey of literature in Latin America from the early twentieth century to the present. Representative figures and major literary developments. Variable. *Prerequisites: SPAN 250 and two 300-level Spanish courses.*

SPAN 407 Latin American and Spanish Film 3 cr.

A study principally of the most recent films from Latin America and Spain. 2 hours lecture and 2 hours lab. Not open to students with credit for MDFL 407. Variable. *Prerequisites: Two 300-level Spanish courses.*

SPAN 408 Comparative Grammar and Translation 3 cr.

Comparative study of English and Spanish grammar and lexicon and basic Spanish-to-English translation. Prerequisite for SPAN 436 Spanish-English Translation. Variable. *Prerequisites: Two 300-level Spanish courses or permission of instructor.*

- SPAN 425 Latinos in the USA** 3 cr.
Identification, study, analysis, and consideration of the different origins, circumstances of living, problems and achievements of Latino communities in the United States. Variable. *Prerequisites: Two 300-level Spanish courses or permission of the instructor.*
- SPAN 432 Spanish for the Professions II** 3 cr.
Strategies to effectively read and write specialized documents for a variety of professions, taking into account the Spanish or Spanish-American cultural context. Conducted entirely in Spanish. Variable. *Prerequisite or co-requisite: SPAN 250.*
- SPAN 435 Literature of Women Writers** 3 cr.
Critical survey of the work of women writers from the Spanish-speaking world including some writers from the U.S.A. who write in Spanish. The survey includes ample range of writing from poetry to movie scripts. Variable. *Prerequisites: Two 300-level Spanish courses or permission of instructor.*
- SPAN 436 Spanish–English Translation** 3 cr.
Introduction to translation theory and method, with a specific focus on Spanish to English translation. Students will practice these theories and methods through both in-class and out-of-class translation assignments. Variable. *Prerequisite: SPAN 408.*
- SPAN 489 Capstone in Spanish** 3 cr.
Capstone experience in Spanish language and cultures, incorporating an oral presentation, dossier of written work, faculty assessment of language and cultural proficiency, and articulation of goals for the use of the language and culture in professional setting. Every semester. *Prerequisite: 90 credits or permission of department chair.*
- SPAN 490 Special Topics in Spanish Language & Literature** 3 cr.
A selected topic such as an author or work, a genre or theme, translation or interpreting. Repeatable for a maximum of 9 credits if topics are substantially different. Variable. *Prerequisites: two 300-level Spanish courses and permission of instructor.*
- SPAN 495 Internship in Spanish** 6-12 cr.
Guided work experience in a Spanish speaking organization either in the US or abroad. Graded P/F. The credit is not applicable toward the major. Every semester and summer. *Prerequisites: junior or senior status, major or minor in Spanish, and permission of department.*
- SPAN 498 Readings in Spanish** 1 to 4 cr.
Intensive readings and a term paper. Repeatable for a maximum of 6 credits if topics are substantially different. Variable. *Prerequisites: three 400-level Spanish courses and permission of instructor.*
- SPAN 499 Individual Problems in Spanish Language** 1 to 4 cr.
Individual research or activity requiring submission of a final paper or completed project. Repeatable for a maximum of 6 credits if topics are substantially different. Variable. *Prerequisite: three 300-level Spanish courses and permission of instructor.*
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- Geography**
- GEOG 103 Physical Geography** 4 cr.
Earth-sun relations, map reading and interpretations, landforms, elements of weather and climate, and climate regions. Three hrs. lecture and 2 hrs. lab. Every semester. *GEP Group C.*
- GEOG 104 Human Geography** 3 cr.
Systematic consideration of factors influencing the distribution of human beings in relation to population dynamics and migration, economic development and urbanization, and cultural diversity. Every semester. *GEP Groups D or F.*
- GEOG 110 World Regional Geography: Cultural Diversity** 3 cr.
Earth's natural and cultural diversity, their interconnections, and their dynamic processes examined in each major world region. Variable. *GEP Group D or F.*
- GEOG 113 Honors: Physical Geography** 4 cr.
Earth-sun relations, map reading interpretation, landforms, elements of weather and climate, and climate regions. Three hrs. lecture, 2 hrs. lab, and four Saturday field trips. Variable. Credit cannot be earned for both GEOG 103 and GEOG 113. *Prerequisite: acceptance into the Honors Program or permission of instructor. GEP Group C.*
- GEOG 114 Honors: Human Geography** 3 cr.
Systematic consideration of factors influencing the distribution of human beings in relation to population dynamics and migration, economic development and urbanization, and cultural diversity. Credit cannot be earned for both GEOG 104 and GEOG 114. Spring. *Prerequisite: acceptance into the Honors Program or permission of instructor. GEP Group D or F.*
- GEOG 150 Earth, Wind, and Fire: An Environmental Science Approach to Natural Hazards and Disasters** 3 cr.
Survey of the environmental science of natural hazards and disasters, including floods, hurricanes, volcanoes, earthquakes, landslides and global climate change. Discussion of impacts to society caused by hazards and disasters, and human activities increasing hazards and disasters. Consideration of the risk of disasters and hazards. Variable.
- GEOG 205 Descriptive Meteorology** 3 cr.
Aspects of the atmosphere, weather variables, radiation, clean and dirty air, clouds and precipitation, atmospheric electricity, and weather forecast and modification. Field work included. Also offered as PHSC 205. Spring.
- GEOG 207 Physical Geology and Geomorphology** 4 cr.
A process oriented approach to develop a fundamental understanding of geology and geomorphology. Experiential laboratory and field experiences of subsurface and surficial interactions with tectonic, hydrologic and atmospheric processes. At least one field trip will be required. Three hrs. lecture and 2 hrs. lab. Not open to students who have credit for former GEOG 307. Spring. *Prerequisite: GEOG 103/113 or permission of instructor.*
- GEOG 208 Earth System History** 4 cr.
Chronology of the earth's history from hypothesized origins through the Holocene. Paleogeography, paleotectonics, and floral and faunal evolution. Lab study of sediments, fossils as indicators of rock age and environment, and geologic maps and structure sections. One field trip may be required. Three hrs. lecture and 2 hrs. lab. Not open to students who have credit for former GEOG 308. Fall. *Prerequisite: GEOG 103 (or 113) or permission of instructor.*
- GEOG 275 Fundamentals of Geographic Data Handling** 3 cr.
Exploring sources, characteristics, and types of geospatial data. Discussion of techniques for manual and automated handling of geographically referenced information. Two hrs. lecture and 2 hrs. lab. Every semester. *Prerequisites or co-requisites: GEOG 103 (or 113) and MATH 209, or permission of instructor. Tech. Fluency.*
- GEOG 300 Economic Geography** 3 cr.
The distribution of world economic activities. Agriculture, mining, the manufacturing industries, trade, and transportation. Fall. *Prerequisite: GEOG 104/114 or GEOG 110 or sophomore standing.*
- GEOG 301 Geography of North America** 3 cr.
Major national and geographic regions of the United States, Canada, and Mexico. Relationship between natural and economic factors. Fall, odd-numbered years. *Prerequisite: GEOG 103/113 or GEOG 104/114 or GEOG 110 or permission of instructor.*
- GEOG 302 Geography of Maryland** 3 cr.
A geographic analysis of the State. Spring. *Prerequisite: GEOG 103/113 or GEOG 104/114 or GEOG 110 or permission of instructor.*
- GEOG 310 Fundamentals of Cartography** 3 cr.
The art and science of compiling and producing thematic maps as a medium for communication and research. Emphasis is on map design, symbolization, and data classification through desktop mapping and map animation software applications. Two hrs. lecture and 2 hrs. lab. Every semester. *Prerequisites: GEOG 103 (or 113) or GEOG 104 (or 114), or GEOG 110 or permission of instructor.*

GEOGRAPHY

GEOG 317 Principles of Geographic Information Science 3 cr.

An examination of the basic theory, concepts, data structures, operations, and applications of geographic information systems (GIS) as a science. Lectures supplemented by computer-based laboratory exercises. Two hrs. lecture and 2 hrs. lab. Fall. *Prerequisites:* GEOG 275 and GEOG 380 or completion of one additional MATH course or a Level II Math class or DVMT 100 or proficiency at Level III on the Math placement test, or permission of instructor. GEOG 310 recommended.

GEOG 320 Geography of Latin America 3 cr.

Physical and human processes that explain the spatial patterns and landscapes of Latin America. Spring, even-numbered years. *Prerequisite:* GEOG 103/113 or GEOG 104/114 or GEOG 110 or permission of instructor.

GEOG 324 Urban Geography: Internal City Patterns 3 cr.

Introduction to urban North American land use and social activities. Theories of internal urban patterns, present patterns, and implications for the future. Housing patterns, commercial and industrial activities, urban transportation, political fragmentation, and the potential role of urban planners. Spring. *Prerequisite:* GEOG 104/114 or GEOG 110 or sophomore standing.

GEOG 325 Urban Geography: Metropolitan Systems 3 cr.

Introduction to urban areas and their distribution. Locational characteristics of cities as centers of manufacturing, distribution, and services. Historic growth patterns and planning strategies for future development. Fall. *Prerequisite:* GEOG 104/114 or GEOG 110 or sophomore standing.

GEOG 335 Oceanography 3 cr.

Basic principles of oceanographic science and discussion of the role of oceans in global environmental systems. Variable. Also offered as SCIE 335. *Prerequisites:* GEOG 103 (or 113), BIOL 149, and completion of a college level mathematics course.

GEOG 340 Soil: Genesis, Nature and Characterization 3 cr.

Origin and processes of soil formation, change with time and environmental factors including use, identification and delineation on the landscape, and interpretation and usage of soil surveys. Two hrs. lecture and 2 hrs. lab./field session. Not open to students who have credit for former GEOG 440. Fall. *Prerequisite:* GEOG 103/113 or permission of instructor. GEOG 207 completion or co-registration strongly recommended.

GEOG 360 Food Systems 3 cr.

Geographic examination of the production, distribution, and consumption of food. Cultural and spatial foundations of the global food system and its impacts on human and natural systems. Sustainable food systems. Fall, odd-numbered years. *Prerequisite:* GEOG 104/114 or GEOG 110 or permission of instructor.

GEOG 380 Research Methods in Geography 3 cr.

Examines qualitative and quantitative methods for handling geo-spatial data. Design of geographic research, approaches to data collection and synthesis, inferential and descriptive geo-spatial statistics, and presentation of findings. Spring. *Prerequisites:* GEOG 275 and 9 hrs. of geography or permission of instructor.

GEOG 400 Geography of Asia 3 cr.

Cultural, economic and physical transformation of East, South and Southeast Asia. Variable. *Prerequisite:* GEOG 103/113 or GEOG 104/114 or GEOG 110.

GEOG 401 Geography of Europe 3 cr.

Physical, historical, and cultural features that have shaped the current landscapes of Europe. Three hrs. lecture. Spring, odd-numbered years. *Prerequisite:* GEOG 103/113 or GEOG 104/114 or GEOG 110 or permission of instructor.

GEOG 402 Geography of Northern Eurasia 3 cr.

Physical and human processes that explain the spatial patterns and landscapes of Russia, Ukraine, Mongolia and adjacent states. Variable. *Prerequisite:* GEOG 103/113 or GEOG 104/114 or GEOG 110 or permission of instructor.

GEOG 403 The Geography of Sub-Saharan Africa 3 cr.

Cultural, economic, physical and political potentials of Sub-Saharan Africa. Complex spatial patterns that define the Sub-Saharan African landscape. Fall, even-numbered years. *Prerequisite:* GEOG 103/113 or GEOG 104/114 or GEOG 110 or permission of instructor.

GEOG 404 Geography of the Middle East and Central Asia 3 cr.

Physical and human systems that have shaped the current landscapes and societies of North Africa, the Middle East, the Islamic republics of the former Soviet Union, and Afghanistan. Spring, even-numbered years. *Prerequisite:* GEOG 103/113 or GEOG 104/114 or GEOG 110 or permission of instructor.

GEOG 405 Global Climate System 3 cr.

Overview of the global climate system. Ocean-atmosphere, land-surface-atmosphere and biosphere-atmosphere interactions. Oscillations and teleconnections. Variability and climate change. Fall. *Prerequisite:* GEOG 103/113. GEOG 205/PHSC 205 recommended.

GEOG 406 Management & Conservation of Nat. Resources 3 cr.

Current problems associated with the use and misuse of natural resources. Fall, even-numbered years. *Prerequisites:* GEOG 103/113 and GEOG 104/114 or permission of instructor.

GEOG 407 Political Geography 3 cr.

Geographic factors affecting national identity and the present development of countries. Consideration of the spatial organization of political units at the international and domestic scale. Fall. *Prerequisite:* GEOG 104/114 or GEOG 110 or junior standing.

GEOG 407 Political Geography 3 cr.

The world patterns of nations; geographic factors affecting the background and present development of countries. Fall. *Prerequisite:* GEOG 104/114 or GEOG 110 or junior standing.

GEOG 410 Locational Analysis 3 cr.

Theories and methods of analyzing and explaining the spatial location of economic activities. Emphasis on theoretical, methodological and practical issues. The relationship between consumer behavior and the location of industrial and service facilities is examined. Spring, even-numbered years. *Prerequisite:* GEOG 104/114 or GEOG 110 or junior standing.

GEOG 412 Geographic Visualization 3 cr.

Explores cartographic applications of computer animation, multimedia presentations and interface design for research, data exploration, and visual communication of geo-spatial ideas. Spring even-numbered years. *Prerequisites:* GEOG 275 and GEOG 310 or permission of instructor.

GEOG 413 Remote Sensing — Image Interpretation 3 cr.

Fundamental principles of remote sensing and image interpretation applications in Geography; the remote sensing process, Earth surface energy/matter interactions, photogrammetry basics, color theory & digital image display, introductory digital image processing, and a survey of image types including panchromatic, color-infrared, multispectral, thermal, and radar. Two hrs. lecture and 2 hrs. lab. Fall. *Prerequisite:* GEOG 275 or permission of instructor.

GEOG 414 Digital Image Processing and Analysis 3 cr.

Digital image processing and analysis related to environmental and natural resource management. Satellite data acquisition, data formats and packaging techniques, image processing and analytical techniques, image classification and interpretation, integration of digital image processing applications and modeling with GIS. Two hrs. lecture and 2 hrs. lab. Spring. *Prerequisites:* GEOG 275 and GEOG 413 or permission of instructor.

GEOG 415 Applied Design in the Mapping Sciences 3 cr.

Examines maps as means of visual communication, map use (and misuse), cognition, design theory, visual variables, and color theory. Computer based exercises and a final project. Fall. Two hr. lecture, 2 hr. lab. *Credit may not be earned for both GEOG 415 and GEOG 315. Prerequisites:* GEOG 275 and GEOG 310.

GEOG 417 Geospatial Analysis 3 cr.

Further exploration of GIS theory and applications of spatial analysis and modeling. Includes spatial modeling, building geodatabases by integrating data from separate sources, scripting languages and techniques, and electronic map serving. Student-led discussions and computer-based lab exercises. Two hrs. lecture and 2 hrs. lab. Spring. *Prerequisite:* GEOG 317 or permission of instructor.

GEOG 418 Cartometrics 3 cr.

Examines the map's role as a tool for measuring geo-referenced data including spatial transformations, interpolation and generalization. Computer based projects, selected

readings and group discussion. Spring, odd-numbered years. Two hrs. lecture and 2 hrs. lab. *Prerequisites:* GEOG 310 and GEOG 317.

GEOG 421 Regional Planning 3 cr.

Contemporary topics in regional planning and development. Group and individual projects and research. Fall, beginning Fall 2010. *Prerequisite:* GEOG 325 or permission of instructor.

GEOG 423 Geography of the Suburbs 3 cr.

Geographic patterns of suburbanization in North America. Economic, social, political and environmental issues and planning challenges of modern suburbs. Comparative suburbanization in global perspective. Variable. Intersession and summer. *Prerequisites:* GEOG 104/114 and 12 credits in GEOG, SOCI, ECON, and/or POSC.

GEOG 425 Geography of Transportation 3 cr.

The linkages and flows of goods, services, and people from area to area. The influence of various transportation modes in the historical development of regions; the role of transportation planning in shaping future metropolitan and regional settlements. Spring, odd-numbered years. *Prerequisite:* GEOG 104/114 or GEOG 110 or junior standing.

GEOG 427 Geography of Languages and Religions 3 cr.

Languages and religions examined from a geographic perspective. Emphasis placed on the five geographic themes of culture region, cultural diffusion, cultural integration, cultural landscape, and cultural ecology. Fall, even-numbered years. *Prerequisite:* GEOG 104/114 or GEOG 110 or junior standing. (GEP Group F).

GEOG 429 Synoptic Climatology 3 cr.

Climatology of atmospheric global circulation patterns and associated weather types. Spring of even numbered years. *Prerequisite:* GEOG 405 or permission of instructor.

GEOG 430 Surface Water Hydrology 4 cr.

Physical principles governing occurrence and movement of water, including precipitation, evaporation and transpiration, runoff, infiltration, soil water movement, and stream channel morphology. Lab/field experience with stream gauging, infiltration measurement, soil hydraulic conductivity, flow frequency analysis and related phenomena. Human influence on surface water hydrology. Three hrs. lecture and 2 hrs. lab. Spring. *Prerequisite:* GEOG 103/113 or permission of instructor.

GEOG 431 Quaternary Environments 3 cr.

Quaternary environments are reconstructed from evidence collected via paleontology, meteorology, sedimentology, ecology, archaeology, anthropology, climatology and many other sources. By relating this evidence to geomorphology it is possible to examine the factors that initiate, drive and determine landscape evolution. Two hrs lectures and two hrs lab. Field component required. Spring, even-numbered years. *Prerequisite:* GEOG 103/113 or permission of instructor.

GEOG 432 Groundwater Hydrology 3 cr.

Principles governing the physical and chemical nature of water below the earth's surface, including fundamental concepts of groundwater flow, water-rock interaction, and groundwater-surface water interactions. Exploration of human influence on the groundwater environment. Spring. *Prerequisites:* GEOG 207 and MATH 220 or MATH 236, or permission of instructor.

GEOG 433 Surveying and Field Techniques 3 cr.

Theory of measurements, computation, and instrumentation; field work, use of Global Positioning Systems (GPS) and compilation of topographic base maps; evaluation of errors; profiling, grading, slope and grade stakes. Fieldwork will include use of a variety of instruments. One hr. lecture and 4 hrs. lab. Fall. *Recommended:* MATH 103 and GEOG 275.

GEOG 441 Soil Analysis 3 cr.

Physical and chemical characteristics of soils as they relate to suitability for plant growth and reproduction. Laboratory and field testing of soil and soil-forming material. Physical properties of soil, moisture relationships, organic matter content, and chemical constituents. Two hrs. lecture and 2 hrs. lab/field session. Fall. *Prerequisite:* GEOG 340 or permission of instructor.

GEOG 445 Biogeography 3 cr.

Patterns of plant and animal distributions in the landscape are stressed and are considered in light of historical, environmental and biotic influences. Historical development of

contemporary regional distributions, survey of world biomes and the importance of disturbance and human-induced changes on biotic distributions are considered. Spring. *Prerequisite:* GEOG 103 (or 113) or BIOL 149. BIOL 340 is recommended.

GEOG 450 Urban Planning 3 cr.

City planning: needs assessment, land use suitability, policy, and design. Participation in limited scope planning projects. Spring. *Prerequisite:* GEOG 324 or permission of instructor.

GEOG 454 Geography of Tourism 3 cr.

A review of the geographical distribution of tourism, travel patterns, and tourism impacts on natural environments and local populations. Fall, odd-numbered years. *Prerequisite:* GEOG 104/114 or GEOG 110 or junior standing.

GEOG 455 Tourism Planning 3 cr.

Planning activities associated with the development and marketing of tourist activities. Consideration of both business and leisure travel. Group project focus. Spring, even-numbered years. *Prerequisite:* GEOG 454.

GEOG 460 Natural Hazards in the Physical Environment 3 cr.

Study of hazards to human society arising from wind, water, and earth either independently or from human activities. Perception, prevention, and mitigation of hazards; spatial distribution and impact on global populations. Variable. *Prerequisite:* GEOG 103 or permission of instructor.

GEOG 469 Dynamic Climatology 3 cr.

Dynamics of the global climate system. Radiation, thermodynamics, mechanics, angular momentum. Numerical weather and climate prediction. Dynamics of climate change. Spring of odd numbered years. *Prerequisite:* GEOG 405 or permission of instructor.

GEOG 470 Soil and Water Engineering 4 cr.

Principles and methods for soil and water management related to surface land disturbances. Methods for calculating storm runoff and erosion, design of flow conveyances and water detention basins, and computer assisted modeling. Three hrs. lecture and 2 hrs. lab. Fall. *Prerequisites:* Completion of GEOG 103 and GEOG 275, or permission of the instructor.

GEOG 471 Engineering for Land Development 3 cr.

Basic engineering techniques used in designing landforms, drainage systems, and roadways for land development projects. An overview of project development, equipment and management strategies. Two hrs. lecture, 2 hrs. lab. Spring. *Prerequisites:* Completion GEOG 103 and GEOG 275, or permission of the instructor.

GEOG 472 Environmental Planning 3 cr.

Principles and methods used in environmental assessments and site analysis. Students will prepare an environmental impact statement, site development plan, or mine reclamation plan. Two hrs. lecture, 2 hrs. lab. Spring. *Prerequisite:* GEOG 103 (or 113) or permission of the instructor. Capstone for Environmental Analysis and Planning major.

GEOG 473 Environmental Law 3 cr.

A survey of federal and state environmental laws and regulations. History and role of environmental regulation related to air and water pollution, waste disposal, and resource development. Fall. *Prerequisite:* GEOG 103/113 or junior standing.

GEOG 475 Glacial & Periglacial Geomorphology 3 cr.

Examination of the process, history and characteristics of the cryosphere. Glacial dynamics, associated sedimentary deposits and cold non-glacial frost dominated geomorphic processes and landforms. Analysis of glacial and periglacial landscapes using field data, sedimentary and biological evidence, remote sensing imagery and numerical models. Two hrs. lecture, 2 hrs. lab. Spring, odd-numbered years. *Prerequisites:* GEOG 103/113 and GEOG 207.

GEOG 476 Fluvial & Coastal Geomorphology 3 cr.

Examination of fluvial and near-shore coastal landscapes and sediments developed under the influence of moving water. Analysis of fluvial and near-shore landforms using field data, sedimentary and biological evidence, remote sensing imagery and numerical models. Two hrs. lecture, 2 hrs. lab. Fall, even-numbered years. *Prerequisites:* GEOG 103/113 and GEOG 207.

HEALTH

GEOG 480 The Geographic Perspective 3 cr.

The historical development of geographic thought with an emphasis on how geographers structure research questions. Spring. *Prerequisite: junior standing and 18 hours of geography completed.*

GEOG 481 Geography Capstone 0 cr.

Creation of a portfolio comprised of student work that demonstrates achievement of the established learning goals for the Geography major. Grade P/F. Every semester. *Prerequisite: Senior standing or permission of department chair.*

GEOG 485 Senior Project 1 cr.

Capstone project in Urban and Regional Planning. Completion of independent project with public presentation of findings. Grade P/F. Every semester. *Corequisite: GEOG 421 or GEOG 450.*

GEOG 486 Earth Science Capstone 0 cr.

Capstone portfolio in Earth Science. Collection of students' work which demonstrates achievement of established learning goals for Earth Science program. For professional application. Graded P/F. Every semester. *Prerequisite: Senior standing or permission of department chair.*

GEOG 488 Environmental Practicum 3 cr.

A self-paced, independent research study capstone course for concentrators in Environmental Science in Earth Science. The student will select an environmentally-related topic in consultation with his/her advisory committee, prepare a research proposal, conduct a literature review and/or collect field data, and complete a substantive research paper (adhering to the format of a major professional journal) which is also presented in an open public forum. Every semester, summer. *Prerequisites: completion of 24 credit hours in this concentration, senior standing, GPA of at least 2.0 in the concentration and approval of department chair prior to registration.*

GEOG 490 Special Topics in Geography 3 cr.

A specialized topic or recent development in geography. Variable. Repeatable for maximum of 6 credits if topics are substantially different. *Prerequisite: 6 hrs. of geography or permission of instructor.*

GEOG 492 Internship: Research in Geography 3 or 6 cr.

Academic component of internship. Requires co-registration in 495. Graded A-F. Every semester, summer.

GEOG 495 Internship in Geography 6 or 9 cr.

Experiential component of internship: guided work experience in conjunction with 492; must directly relate to academic program. Interns register for 9 credits in 495 and 6 credits in 492 or 6 credits in 495 and 3 credits in 492. Co-registration in other courses requires prior approval of the internship coordinator. Graded P/F. Every semester, summer. *Prerequisites: major in Geography, Earth Science, Urban and Regional Planning, or Environmental Analysis and Planning with 24 hrs. completed, senior status, GPA of at least 2.5 in the major; approval of Department Chair; attendance at orientation meeting in semester prior to internship; submission of internship application by fifth week of semester prior to internship (application includes a resume and an internship proposal); requirements of cooperating agency, if any.*

GEOG 499 Research in Geography 1-6 cr.

Research in field of interest chosen by student and faculty. Every semester, summer. Repeatable for maximum of 6 credits. *Prerequisites: minimum of 15 hrs. of geography completed, GEOG 380, and permission of Department Chair.*

Health**HEED 100 Personal Wellness 2 cr.**

Students will be assisted in developing an understanding of and appreciation for the importance of including lifelong wellness practices and physical activities in their daily lives. Students plan, implement and evaluate own wellness plan. Every semester.

HEED 103 Foundations of Exercise & Sport Science 3 cr.

The study of both the history and philosophy of exercise and sport science. Emphasis placed on the subdisciplines of athletic training and health/fitness. Every semester.

HEED 104 Foundations of Health Education 3 cr.

Introduction to theories and practices guiding professional health educator responsibilities and competencies. Spring. *Prerequisite: Major in Health and Physical Education.*

HEED 200 Nutrition 3 cr.

Principles of nutrition. The effect of food habits on family health. Nutritional requirements for different stages of human development. Application to various economic levels and social backgrounds. Every semester.

HEED 206 Introduction to Athletic Training 3 cr.

Provides the student interested in Athletic Training the first extensive exposure to the field. Focuses on the theoretical base of the field as well as introductory injury prevention and management concepts. Fall. *Prerequisite: HEED 103.*

HEED 208 Health Education For Special Populations 1 cr.

Special understanding necessary to the adaptation of health education to disabilities of individual persons. Fall. *Prerequisite: HEED 104.*

HEED 210 Athletic Taping and Bracing Techniques 1 cr.

The art and science of applying athletic tape and braces in the prevention and treatment of athletic injuries. Fall.

HEED 222 Emergency Medical Techniques in Athl. Training 4 cr.

An introduction to the daily management of the athletic training clinical environment. Fall.

HEED 223 Clinical Experiences in Athletic Training I 1 cr.

An introduction to the daily management of the athletic training clinical environment. Spring.

HEED 230 Assessment Design in Health & PE 3 cr.

Cognitive, affective and psychomotor domain assessments for health and physical education following national and state standards. Follows Bloom's Revised Taxonomy. Fall. *Prerequisite: HEED 104; health and physical education majors only.*

HEED 232 School Health I: ATOD & Safety Education 2 cr.

Content and theory in the teaching of alcohol, tobacco, drugs, safety and injury prevention in a school health education program. May not be taken by students who have credit for former HEED 207 or 209. Fall. *Prerequisite: HEED 104.*

HEED 233 School Health II: Human Sexuality & Nutrition Education 3 cr.

Content and theory in the teaching of family life and human sexuality, mental and emotional health, and nutrition in a school health education program. May not be taken by students who have credit for former HEED 220, 221 or 224. Spring. *Prerequisite: HEED 104.*

HEED 234 School Health III: Disease Prevention 3 cr.

Content and theory in the teaching of personal, consumer, community and environmental disease prevention in a school health education program. May not be taken by students who have credit for former HEED 225, 226 or 227. Fall. *Prerequisite: HEED 104.*

HEED 305 Care and Prevention of Athletic Injuries 3 cr.

Introduction to athletic injury management. Emphasis on prevention and care of muscular skeletal injuries. Spring.

HEED 306 Organization & Administration of Exercise & Sports Science 3 cr.

Effective administration and management strategies in exercise and sport science. Human resource management, financial management, facility design and planning, client management issues, and legal liability issues addressed. Emphasis on athletic administration, athletic training and health/fitness management. Fall.

HEED 311 Assessment & Evaluation Methodology 3 cr.

Testing and measurement techniques; evaluation procedures. Practice in testing and interpretation. May not be taken by students who have credit for former PHEC 311. Fall. *Prerequisite: HEED 230.*

- HEED 318 Orthopedic Assessment I: Upper Extremity** 4 cr.
General and specific athletic injury assessment procedures. Emphasis is placed on the upper extremity, head, abdomen, throat and thorax assessment. 3 hrs. lecture, 2 hrs. lab. Spring. *Prerequisite:* HEED 206.
- HEED 319 Orthopedic Assessment II: Lower Extremity** 4 cr.
General and specific athletic injury assessment procedures Emphasis is placed on the spine, pelvis, and lower extremity including gait and postural analysis. 3 hrs. lecture, 2 hrs. lab. Fall. *Prerequisite:* HEED 318.
- HEED 320 Pharmacology and General Medical Conditions** 3 cr.
Pathology and clinical information about various general medical conditions commonly seen in the physically active. Spring.
- HEED 322 Clinical Experiences in Athletic Training II** 1 cr.
The in-depth study of both the theoretical and practical clinical aspects of athletic training. Fall.
- HEED 323 Clinical Experiences in Athletic Training III** 1 cr.
The continued in-depth study of both the theoretical and practical clinical aspects of athletic training. Spring.
- HEED 330 Epidemiology of Health and Disease** 3 cr.
Examination of the contributions of lifestyle, genetics, environmental and social factors, and health care access to health and well-being of individuals and populations. Variable. *Prerequisite:* HEED 101.
- HEED 340 Organization & Administration of Athletic Training** 3 cr.
Administration and management strategies in athletic training. Human resource management, financial management, facility design and planning, client management, ethics and legal liability issues. Fall. *Prerequisite:* HEED 206.
- HEED 404 Health Instruction** 3 cr.
Basic concepts of health education. Implementing a health education program for grades K-12. Every semester. *Required in BLOCK semester prior to PHEC 497 for Teacher Education. Prerequisites:* HEED 416 and admission to PHASE II.
- HEED 408 Therapeutic Modalities in Sports Medicine** 4 cr.
The study of both the theoretical basis and practical usage of various therapeutic modalities. Designed for individuals who routinely treat sports-related injuries. 3 hrs. lecture, 2 hrs. lab. Spring. *Prerequisite:* HEED 318.
- HEED 413 Rehabilitation Techniques in Sport Medicine** 4 cr.
Various aspects of the rehabilitation process for the physically active or athletic population. Goals, techniques, evaluation methods and specific rehabilitation programs covered. Credit cannot be earned for both HEED 413 and PHEC 413. 3 hrs. lecture, 2 hrs. lab. Fall. *Prerequisite:* HEED 319.
- HEED 416 Curriculum Design in Health Education** 3 cr.
Health Education curriculum development, implementation, and evaluation; implementation of program strategies from evaluation results. Fall. *Prerequisite:* Major in Health and Physical Education; junior standing.
- HEED 418 Current Issues in Health** 3 cr.
Identification and investigation of problems and solutions relevant to existing or emergent health topics. Spring.
- HEED 422 Clinical Experiences in Athletic Training IV** 1 cr.
Summary of NATA competencies required for certification examination. Emphasis is placed on clinical decision making skills. Fall. *Prerequisites:* HEED 322 and HEED 323. *Athletic Training Capstone.*
- HEED 423 Clinical Experiences in Athletic Training V** 1 cr.
Summary of NATA competencies required for certification examination. Emphasis is placed on clinical managerial skills. Spring. *Prerequisites:* HEED 322 and HEED 323. *Athletic Training Capstone.*

HEED 450 Evidence-Based Practice in Athletic Training 3 cr.
Scientific experimentation vs. anecdotal case description in athletic training. Student learns to systematically find, appraise and use the most current and valid research findings as the basis for clinical decisions. *Prerequisites:* Senior and permission of instructor.

HEED 480 Capstone I in Athletic Training 3 cr.
Finalization of the theoretical and clinical application of upper body injury assessment and rehabilitation techniques used by athletic trainers, preparation for BOC exam. Fall.

HEED 485 Capstone II in Athletic Training 3 cr.
Finalization of the theoretical and clinical application of lower body injury assessment and rehabilitation techniques used by athletic trainers, athletic nutrition, pharmacology and preparation for BOC exam. Spring.

HEED 492 Seminar in Health Promotion 3 cr.
Monthly full day seminar meetings addressing work-related topics. Students must be enrolled in HEED 495 and have completed all other course work. Every semester.

HEED 495 Internship in Health Promotion 9 cr.
Special work experiences related to the health promotion academic program. Full-time students must register for a minimum of 9 credit hours of internship. Graded P/F. Variable. *Prerequisite:* Completion of 90 credit hours or more with a "C" or better in the concentration and senior status.

Health Promotion

You may not receive credit for both a HLTH course and the same course formerly labeled HEED or PHEC.

HLTH 101 Community Health Promotion 3 cr.
Introduction to the profession, theories, and practice of health promotion. Spring.

HLTH 125 Health and Culture 3 cr.
An examination of personal and community health issues and problems as experienced across the cultural landscape of the United States. Fall. GEP Group F.

HLTH 330 Epidemiology of Health 3 cr.
Examination of the contributions of lifestyle, genetics, environmental and social factors, and health care access to health and well-being of individuals and populations. Fall. *Prerequisite:* HLTH 101.

HLTH 405 Sexuality 3 cr.
Content and topics related to sexual and reproductive health relative to the individual and society. Every semester.

HLTH 430 Methods & Materials for Health Promotion 3 cr.
Development of skills to formulate program goals, delineate program objectives, employ a variety of educational techniques, select resources, and integrate behavior change strategies for individual and population-based health education and promotion programs. Spring. *Prerequisites:* 6 hours in HLTH.

HLTH 435 Health Promotion Programming 3 cr.
Development and application of skills in planning, implementation, and evaluation of multi-level health promotion programs. Variable. Fall. *Prerequisite:* HLTH 430.

HLTH 483 Field Experience in Health Promotion 1 to 6 cr.
Field experience in health promotion. Sites of study may vary. Offered as needed. Repeatable for maximum of six credits if placement sites are different. *Prerequisite:* permission of instructor.

HISTORY

History

HIST 100 The Contemporary World in Historical Perspective 3 cr.

A consideration of major historical developments of the last century in diverse areas of the world that illuminate contemporary problems. Every semester. *GEP Group B or F.*

HIST 103 History of the United States 3 cr.

Survey of the political, social, economic, and diplomatic trends in United States history from 1492 until 1876. Every semester.

HIST 104 History of the United States 3 cr.

Survey of the political, social, economic, and diplomatic trends in United States history from 1876 to the present. Every semester.

HIST 111 Honors: The Contemporary World in Historical Perspective 3 cr.

A consideration of major historical developments of the last century in diverse areas of the world that illuminate contemporary problems. Both reading and writing assignments are more challenging than those in HIST 100. Credit cannot be earned for both HIST 100 and HIST 111. Spring. *Prerequisite: enrollment in the Honors Program or permission of the instructor. GEP Group B or F.*

HIST 113 World History 3 cr.

Survey of Western and Non-Western Civilizations and cultures from the earliest times to 1500. Fall.

HIST 114 World History 3 cr.

Survey of Western and non-Western Civilizations and cultures from 1500 to 1900. Spring.

HIST 290 Special Topics in History 3 cr.

A study of an historical topic, problem, or period allowing for more specific focus and greater depth than is possible at the 100-level. Variable. Repeatable for maximum of 6 credits if topics are substantially different.

HIST 299 Writing and Research in History 3 cr.

The study and practice of the techniques of historical research and writing. Completion of this course with a C or better is required for *final* admission to the History major. Every semester. *Prerequisite: complete at least one of HIST 103/104/113/114 and enroll concurrently with or soon after completing at least one 300-400 level course.*

HIST 301 Traditional Africa 3 cr.

The African pre-colonial states: their governments, economic systems, cultural patterns, achievements, and relations with other African and non-African peoples. Also offered as AAST 300. Not open to students who have credit for former HIST 452. Spring.

HIST 303 History of Latin America 3 cr.

Earlier Latin American history: Aztecs, Incas, and Mayas, the Age of Conquest, the colonial period and the struggle for independence. Variable.

HIST 304 History of Latin America 3 cr.

Later Latin American history: the development of the Latin American nations from independence until the present. Variable.

HIST 306 Medieval Europe 3 cr.

A topical survey of European history and Europe's interactions with its neighbors from the 5th century to about 1300. The environmental, economic, social, political, and cultural factors that made for a distinctive civilization in Europe and provided the foundations for future developments in European history. Variable.

HIST 307 Renaissance and Reformation Europe 3 cr.

The political, social, economic, and cultural transformation of Europe from medieval (1300) to early modern (1600). Emphasis on cultural innovation (Renaissance) and religious diversity and conflict (Reformation). Variable.

HIST 308 Europe, 1600-1815 3 cr.

European history from 1600 through Napoleon. The political, social, economic, and cultural development of Europe from a traditional society to the beginnings of the modern period. Variable.

HIST 310 Ancient Greece and Rome 3 cr.

Bronze Age, Archaic, and Classic civilizations of Greece; Alexander and Hellenistic era; early Italy and the Etruscans; Roman republic and empire; fall of Rome. A balance of political, cultural, socio-economic aspects, and interactions with neighboring peoples. Variable.

HIST 341 The Modern and Contemporary Middle East 3 cr.

The religious and secular history of the Middle East from the late 19th century to the present era. National and international aspects of the region before, during, and after the Western imperial thrust into the area. Variable.

HIST 353 Contemporary Africa 3 cr.

The 20th-century emergence of representative African nations; the achievements of these nations; their current political, economic, and social problems. Credit cannot be earned for both HIST 453 and HIST 353. Variable.

HIST 360 Modern and Contemporary Asia 3 cr.

The rising spirit of nationalism, colonial resistance movement, reactions of the imperial powers, and the emergence of new nations against the background of the old cultures. The economic, political, social, and diplomatic implications of the change. Credit cannot be earned for both HIST 460 and HIST 360. Variable.

HIST 376 Modern Europe 3 cr.

European history in the modern period, from the Napoleonic era (1799-1815) to present day, with particular attention to geographic, historical, political and economic distinctions between western and eastern Europe. Credit cannot be earned for both HIST 476 and 376. Variable.

HIST 403 Imperial Russia 3 cr.

The political, economic, social and cultural history of the Russian empire, from its roots in the ninth-century Kievan state to its fullest expansion under the last Romanov tsar, Nicholas II. Variable.

HIST 404 Revolutionary and Soviet Russia 3 cr.

Russia since the revolution of 1905: political developments, both domestic and foreign; economic system, organization; social and cultural evolution. Variable.

HIST 409 World Environmental History 3 cr.

Historical study of environmental dimensions of change in human history. Historical case examples covering most world regions, and periods such as prehistory, the ancient world, agrarian societies, and the recent industrial world. Credit cannot be earned for both HIST 309 and HIST 409. Variable.

HIST 418 Native Peoples of the Americas 3 cr.

Survey of the history of Native American peoples in the Western Hemisphere from pre-Columbian times to the present. The impact of Europeans on native societies and cultures and the natives' relationships with the emerging nation-state. Credit cannot be earned for both HIST 318 and HIST 418. Variable. *GEP Group F.*

HIST 419 A History of Terrorism 3 cr.

The study of terrorism, or conspiratorial political violence that targets the few to gain the attention of the many, in historical context. A consideration of political, economic, social and cultural factors in the evolution of terrorism as a global phenomenon. Credit cannot be earned for both HIST 319 and HIST 419. Variable.

HIST 420 Green: Environment and Economy in US History 3 cr.

Environmental history of colonial America and the United States (1607-Present). Particular attention paid to the impact of economic development on the natural world, the politics of conservation, and the changing ecology of daily life. Credit cannot be earned for both HIST 320 and HIST 420. Variable.

HIST 433 Public History 3 cr.

An introduction to the ideas and methods of public history, emphasizing practical application of research, writing and critical thinking skills in the public sector. Variable.

HIST 436 Women's Issues in World History 3 cr.

The historical study of the major issues affecting women's lives in the modern age (18th-21st centuries) and across multiple cultures. Variable. *GEP Group F.*

HIST 437 History of Korea 3 cr.

Survey of Korean history from the foundations of society on the peninsula to modern

times. Looks at how Koreans have utilized their historical memory to define themselves. *Every third semester beginning spring 2010.*

HIST 445 History of Maryland 3 cr.
Survey of Maryland history from its founding until the present. Credit cannot be earned for both HIST 345 and HIST 445. Variable.

HIST 450 The History of Mexico 3 cr.
The development of Mexican society from the pre-Columbian period to the present. The Aztec and Mayan civilizations, the implanting of Spanish control, the origins of the Mexican Revolution and its long-range impact. Variable.

HIST 455 Latin American Revolutions 3 cr.
Twentieth-century revolutions in Latin America. Theories of revolution, the causes, leaders and followers, post-revolutionary developments and the international consequences of Latin American revolutions. Variable.

HIST 457 India 3 cr.
The philosophical, political, economic, and diplomatic evolution of India from antiquity until the present. Variable.

HIST 458 History of China 3 cr.
Social, political, economic, and diplomatic aspects from the prehistoric and early dynastic era to the current age. Variable.

HIST 459 History of Japan 3 cr.
Social, political, economic, and diplomatic aspects from the prehistoric and early dynastic era to the current age. Variable.

HIST 461 Colonial America, 1607-1763 3 cr.
From the settlement of Jamestown through the French and Indian War. European backgrounds, religious developments, regional differences, Indian relations, and cultural life. Variable.

HIST 462 Revolutionary America 1763-1789 3 cr.
From the conclusion of the French and Indian War to the formation of the United States Constitution: British-American imperial relations; cultural developments in the 18th century; origins, impact, and general nature of the American Revolution; and the formation of the Federal Union. Variable.

HIST 463 The Age of Jefferson and Jackson, 1789-1848 3 cr.
From Washington's presidency through the administration of James K. Polk. The philosophies of Hamilton and Jefferson, the origins of political parties, politics of the Jackson era, Indian removal, the development of transportation, the frontier, slavery, abolitionism, and emerging sectionalism. Variable.

HIST 464 The Civil War and Reconstruction, 1849-1877 3 cr.
From the end of the Mexican War through the period of Southern Reconstruction: growth and sectionalism, and the social, political, military, and economic impact of the War Between the States. Variable.

HIST 465 Gilded Age America, 1877-1913 3 cr.
From the presidency of Hayes through the Progressive Era: the labor movement, growth of the city, immigration, imperialism, art and architecture, and politics. Variable.

HIST 466 The United States in the 20th Century, 1914-1945 3 cr.
The home front during World War I, postwar reaction, the 1920s, the Stock Market Crash, the Great Depression, the New Deal, and American society during World War II. Variable.

HIST 467 The U.S. in the 20th Century, 1945-Present 3 cr.
The Truman, Eisenhower, and Kennedy Years; the Cold War and McCarthyism; the 1960s; Black and student movements; Johnson and Vietnam; Nixon and Watergate; and more recent presidencies. Variable.

HIST 470 America and the Vietnam War 3 cr.
An interdisciplinary study of the origins, development and consequences of the United States involvement in Vietnam from 1950-1975, with emphasis on political and social history. Variable.

HIST 475 Genocide and Mass Violence 3 cr.
Genocides of the modern era from that of the Herero of German Southwest Africa (early

20th century) to that of Darfur in the Sudan (early 21st century). Variable.

HIST 480 The American West 3 cr.
The West from the Mississippi River to the Pacific, including Alaska, emphasizing the 19th century. Spanish exploration; the fur empire; Indian assimilation and extinction; the cowboy's frontier; mining frontier; women in the West; the myth of lawlessness; the West in art, literature, and song; the 20th century West. Credit cannot be earned for both HIST 380 and HIST 480. Variable.

HIST 481 Experiential History/International 3 cr.
Experiential exploration of various topics in international history through student re-enactment using role playing/game models. Taught in rotation by interested faculty. Repeatable for a maximum of 6 credits if topics are substantially different. Variable.

HIST 482 Experiential History/Americas 3 cr.
Experiential exploration of various topics in Americas history through student re-enactment using role playing/game models. Taught in rotation by interested faculty. Repeatable for a maximum of 6 credits if topics are substantially different. Variable.

HIST 484 Practicum in History 3 cr.
Practical experience in public history through placement with an organization or agency for the purpose of completing a specific project. May be repeated once for credit in a different placement. Variable. Repeatable for maximum of 6 credits if placement sites are substantially different.

HIST 485 Seminar in History 3 cr.
Topics in history presented by students, faculty, and invited guests. Individual research (senior thesis) with interim reports and formal presentation of paper. Discussion leadership expected. Spring. *Prerequisite: completion of HIST 299 with a C or better and senior standing. Capstone.*

HIST 489 Special Topics in International History 3 cr.
A detailed study of a limited topic, problem, or period in European/African/Asian history. Topics vary from semester to semester. Variable. Repeatable for maximum of 6 credits combined of HIST 489 and HIST 390 if topics are substantially different.

HIST 490 Special Topics in History of the Americas 3 cr.
A detailed study of a limited topic, problem, or period of North or South American history. Topics vary from semester to semester. Variable. Repeatable for maximum of 6 credits if topics are substantially different.

HIST 492 Internship Seminar 3 cr.
Academic component of internship. Requires co-registration in 495. Graded A-F. Normally Summer. *Prerequisites: junior or senior status, in good academic standing, submission of Internship Agreement form to internship director prior to registering.*

HIST 495 Internship in History 6-12 cr.
Experiential component of internship: guided work experience in conjunction with 492; must directly relate to academic program. Full-time interns register for 12 credits in 495 and 3 credits in 492 and may not enroll in other courses. Part-time interns register for 6 credits in 495 and 3 credits in 492. Graded P/F. Normally Summer. *Prerequisites: junior or senior status, in good academic standing, submission of Internship Agreement form to internship director prior to registering.*

HIST 498 Readings in History 3 cr.
Directed readings in some specialized area or topic of history. The topic must relate to an upper level history course previously taken in that area. Normally limited to seniors majoring in history with at least a 3.0 GPA in all history courses. *Permission of advisor, instructor, and chair of the department must be secured during the preceding semester.* In exceptional circumstances, may be repeated once for credit. Intersession and Summer. Repeatable for maximum of 6 credits.

HIST 499 Individual Research in History 3 cr.
The preparation of a research paper under the direction of the History Department. The topic must relate to an upper level history course previously taken in that area. Normally limited to seniors majoring in history with at least a 3.0 GPA in all history courses. *Permission of advisor, instructor and chair of department must be secured during the preceding semester.* In exceptional circumstances, may be repeated once for credit. Intersession and Summer. Repeatable for maximum of 6 credits.

HUMANITIES • INFORMATION TECHNOLOGY

Humanities

HUMA 309 Zen Practice 1-2 cr.
A “lab” experience supplementing in-class theoretical learning with practical and direct experience of zazen meditation under instructor guidance (1 cr.). Optional second credit earned through workshop attendance at the Rochester Zen Center. Variable. *Requires concurrent enrollment in ENGL 309.*

HUMA 444 Metaphysics and Modern Physics 3 cr.
Interdisciplinary study of 20th-century physics and ancient Asian metaphysics. Concepts of reality proposed by Newton, Einstein, Heisenberg, and other physicists; and by Lao-Tzu, Buddha, Hui Neng, and other ancient philosophers. Also offered as PHSC 444. Spring.

Information Technology

ITEC 312 Human-Computer Interaction 3 cr.
Basic concepts of human-computer interaction, human factors, performance analysis, cognitive processing, usability studies, human-centered software, accessibility, emerging technologies, developing effective interfaces. Variable. *Prerequisites: Grade of C or better in COSC 130 and PSYC 150/151.*

ITEC 315 Programming 3 cr.
Fundamental data structures including the use of stacks, queues, graphs and trees; fundamental programming constructs including basic syntax and semantics; object oriented programming; algorithms and problem solving; event-driven programming; recursion. Variable. *Prerequisites: Grade of C or better in COSC 100/110 or grade of C or better in COSC 101 and COSC 130 or permission of the instructor.*

ITEC 345 Database Systems I 3 cr.
Introduction to principles of database development focusing on major business functions and benefits of databases, database planning, database models, database design, and database applications. Learn how to approach a real world database project, convert the project requirement to a design and finally implement using a commercial database management system. Variable. *Prerequisite: Grade of C or better in ITEC 315.*

ITEC 355 Network Implementation 3 cr.
Foundations of networking, LANs, WANs, service providers, packets, hubs, routers, switches, Internet protocols, layered models, physical layer, security, and application areas. Variable. *Prerequisite: Grade of C or better in COSC 102 and ITEC 315.*

ITEC 360 Operating Systems 3 cr.
Fundamentals of operating systems including both Unix and Windows operating systems; architecture and organization; computing infrastructure; enterprise deployment software; firmware; hardware; installation; maintenance; administrative activities; administrative domains. Variable. *Prerequisites: Grade of C or better in COSC 102 and COSC 315.*

ITEC 363 PC Module Installation and Maintenance 3 cr.
Managing, maintaining, and troubleshooting PC hardware. Two hrs. lecture, 2 hrs. lab. Variable. *Prerequisite: Grade of C or better in ITEC 360.*

ITEC 364 PC Software Installation and Maintenance 3 cr.
Managing, maintaining, and trouble-shooting PC software. Survey of current software applications like MS servers, SAP, Knowledge Management software, and other Enterprise Resource Planning software. Two hrs. lecture, 2 hrs lab. Variable. *Prerequisites: Grade of C or better in ITEC 360.*

ITEC 410 Diversity in the Global Information Technology 3 cr.
Issues and influences that information technology (IT) has had on the global society and culture. Changing nature of work, education, government, culture, and society around the world; place of professionals entering the global IT workforce. Global ethical issues such as intellectual property rights, computer-related crime, privacy concerns, public policy issues, and IT influences on global economics. Variable. *Prerequisite: Grade of C or better in COSC 305.*

ITEC 414 Knowledge Management 3 cr.
Basic concepts, skills, tools, techniques, and practices of knowledge management in the context of information sciences and information technology. Technologies including intranets, groupware, web logs, content management systems, and collaborative tools in both individual and organizational contexts. Use these KM technologies, review case studies, research methods of knowledge organization, and analyze and evaluate KM processes and systems. Variable. *Prerequisite: Grade of C or better in ITEC 315.*

ITEC 442 Electronic Commerce 3 cr.
Develop knowledge of E-commerce concepts and terminology. E-marketplaces, E-commerce economic impacts, market research, company-centric B2B, E-supply chain, corporate portals, E-government, E-learning. Introduction to implementing an e-commerce system. Variable. *Prerequisite: Grade of C or better in ITEC 315.*

ITEC 445 Database Systems II 3 cr.
Advanced topics such as database security, importing and exporting data, creating indexes and views, script writing, and performing administrative tasks on a database server. An advanced project implementation is required. Variable. *Prerequisite: Grade of C or better in ITEC 345.*

ITEC 452 Network and Administration Security 3 cr.
Basic network management, network configurations; routing fundamentals, basic router troubleshooting; introduction to network security; protocols for security services; securing network systems and applications: email security, web security, IP security and VPN, remote secure login, security in routing, firewalls. Variable. *Prerequisite: Grade of C or better in ITEC 355.*

ITEC 462 Emerging Issues and Technologies 3 cr.
Introduction to emerging issues, technology forecasting and analysis; overview of emerging issues and leading technologies in information technology and how they impact information systems, users, the IT labor force and society. Variable. *Prerequisite: Grade of C or better in ITEC 360.*

ITEC 470 Security and Risk Management 3 cr.
Security issues, management processes, architecture and models; risk analysis and management; security planning, analysis and safeguards; security policies development and administration; contingency planning, incidence handling and response; security standards and certification processes. Variable. *Prerequisites: At least 72 credits earned and permission of the instructor.*

ITEC 475 Computer and Cyber Forensics 3 cr.
Fundamental issues and concepts of computer forensics; aspects of computer and cyber crime; methods to uncover, protect, exploit, and document digital evidence; tools, techniques, and procedures to perform computer and cyber crime investigation. Variable. *Prerequisite: Grade of C or better in ITEC 355 or ITEC 360.*

ITEC 480 Project Management 3 cr.
Basic concepts, skills, tools, techniques, and practices of project management in the context of information technology planning and managing information technology projects. Basic phases of the project management life-cycle: Initiating, Planning, Executing, Controlling, Closing. Fundamental project management knowledge areas: Integration, Scope, Time, Cost, Quality, Human Resources, Quality, Risk, and Procurement. Practical experience via usage of project management software tools. Variable. *Prerequisites: At least 72 credits earned and permission of the instructor.*

ITEC 489 Capstone 1 cr.
Creation of professional vita, formation of portfolio consisting of student's best examples of programs and research papers. Amalgamation of curricular concepts into a unified entirety. Every semester. *Prerequisites: At least 72 credits earned and completion of all core courses and a grade of C or better in at least two required advanced courses.*

ITEC 491 Seminar in Information Technology 1-6 cr.
Group study of advanced topics under faculty supervision; up to 3 credits can apply to major or minor in information technology. Repeatable for a maximum of 6 credits if topics are substantially different; up to 3 credits count towards major or minor. Variable. *Prerequisites: Grade of C or better in core courses and written permission of faculty supervisor. DEPARTMENT APPROVAL REQUIRED PRIOR TO REGISTERING.*