

SCHOOL OF AGRICULTURAL AND NATURAL SCIENCES



Center for Food Science and Technology

The School of Agricultural and Natural Sciences is comprised of three academic departments: Agriculture, Human Ecology, and Natural Sciences. The Dean of the School is also the Research Director of 1890 Land-Grant programs. Undergraduate programs in pre-veterinary medicine, plant and soil science, animal and poultry science, agribusiness, agricultural studies, nutrition, dietetics, fashion merchandising, early child development, family and consumer sciences, biology, chemistry and environmental science are representative of the School's varied curricula. Graduate programs, at both the Masters and Doctoral levels, are offered in Marine Estuarine and Environmental Sciences, and the Master's degree is offered Food and Agricultural Sciences. The doctorate is also offered in Food Science and Technology and in Toxicology. The faculty within the School of Agricultural and Natural Sciences are actively involved in state-of-the-art individual and collaborative research projects/programs and garner external funding from highly competitive sources to support their initiatives. Additional programs in the School of Agricultural and Natural Sciences are the Living Marine Resource Cooperative Science Center, Child and Family Development Center, the University Farm, the Agricultural Experiment Station, The Maryland Fish and Wildlife Co-op Unit, and the USDA/ARS Center of Excellence in Food Safety.

DEPARTMENT OF AGRICULTURE

Dean and 1890 Research Director

Carolyn B. Brooks, Ph.D.

Chair and Professor

Lurline E. Marsh, Ph.D.

1890 Associate Research Director and Associate Professor

Arthur L. Allen, Ph.D.

Professors

Robert Dadson, Ph. D.

Ejigou Demissie, Ph.D.

Associate Professors

Thomas Handwerker, Ph.D.

Jeannine Harter-Dennis, Ph.D.

George Heath, Ph.D., DVM

Theodore Mollett, Ph.D.

Okeleke Nzeogwu, Ph.D.

Jurgen Schwarz, Ph.D.

Niki Whitley, Ph.D.

Assistant Professors

George Shorter, Ph.D.

Salina Parveen, Ph.D.

Voranuch Suvanich, Ph.D.

Research Assistant Professors

Kisun Yoon, Ph.D.

Corrie Cotton, MLA

Research Associates

Fawzy Hashem, Ph.D.

Iqbal Javaid, Ph.D.

Farm Manager:

Earle Canter

- skills in information management;
- critical and analytical thinking skills necessary to integrate theory and real-world situations for making management decisions;
- the ability to communicate effectively;
- the ability to compete in a technological, computer-information oriented, global society.

Additionally, we strive to prepare students who can interact successfully in an ethnically diverse workforce that is comprised of people of socially and culturally diverse backgrounds.

GOAL

The goal of our academic programs is to provide the nation and the world with graduates who have attained intellectual and professional competencies. Graduates of the Department of Agriculture will have received cross-disciplinary and interdisciplinary training that will enable them to successfully integrate into any career related to the food and agricultural sciences.

OBJECTIVES

To provide an interdisciplinary program in the mathematical, biological, physical, and social sciences, and humanities to support individual areas of concentration in the food and agricultural sciences, including conservation and preservation of our natural resources

To prepare students to interpret and apply scientific principles and techniques in the ever-evolving food, agricultural, and environmental sciences, on a global basis

To promote civic responsibilities of our students, faculty, and staff through community interactions

To provide students with the applied information technology skills necessary to compete successfully in today's workforce.

DESCRIPTION OF PROGRAMS

The department offers two distinct degree programs. These programs are Agribusiness and General Agriculture. Specific descriptions of degree programs and degree program concentrations are given in the following narrative.

MISSION

The mission of the Department of Agriculture is to provide students with an active learning environment that will prepare them to compete successfully in a global society. Graduates of our programs will be poised to make significant, positive contributions to the food and agricultural sciences, which is in keeping with the land-grant philosophy of learning, discovery, and engagement. Thus, it is our never-ending task to provide students with a nurturing environment that offers opportunities for discovery through experiential learning. Accomplishment of our task will result in graduates who have

The **General Agriculture Degree Program** is designed to prepare students in the application of scientific principles, practices, and techniques requisite for careers in the agri-industry job market and for continued study at the graduate level. Students enrolled in this program may select a course of study in one of the following concentrations: Agricultural Education, Plant and Soil Science, and Animal and Poultry Science or Agricultural Studies.

The **Agricultural Education Concentration** leads to the Bachelor of Science degree in General Agriculture and concurrent teacher certification. This concentration prepares students to become qualified teachers and to successfully assume the complex role of a teacher in the classroom of the twenty-first century. Agricultural Education includes general education, professional education, and specialized education. The curriculum for each student will vary depending on needs and interest. The flexibility of the curriculum provides the student an opportunity to select courses in various areas of agriculture. The primary goal of the undergraduate teacher education program is to insure success within the teaching profession by 1) providing a comprehensive knowledge base that insures competency in agriculture subject matter areas, and 2) providing the opportunity to develop sophisticated clinical skills. Students enrolled in this program are provided a carefully planned course of study that emphasizes excellence in both theoretical and applied learning.

The **Plant and Soil Science Concentration** provides students with baccalaureate degree training in appropriate concentrations qualifying them for careers in agronomic and horticultural sciences, marketing production, governmental service, research, and/or graduate studies. Courses in this program are designed to incorporate laboratory, hands-on experiences, internships, and coop-education. This curriculum is designed to provide students with a broad background in the basic sciences and general education. The flexibility of the program allows students to focus in basic or applied plant sciences.

The **Animal and Poultry Science Concentration** is designed to provide students with the basic concepts of animal and poultry science, the fundamentals of modern production systems, and the applied management techniques used in today's animal and poultry industries. Two major program options leading to a Bachelor of Science degree in General Agriculture are offered.

Option 1 is a career-oriented program designed to provide students with a thorough knowledge of poultry and animal production combined with a working knowledge of economics and agri-business. Students successfully completing this program will receive a B.S. degree in General Agriculture and will be prepared for advancement in a career in poultry and animal production.

Option 2 is a pre-professional program which includes the prerequisite courses required to apply to the various veterinary colleges or to poultry and/or animal science graduate programs in the areas of nutrition, physiology, diseases, and genetics.

Students may apply to veterinary schools in the USA and abroad. It is the responsibility of the student to determine the admission requirements of any veterinary schools of interest prior to application.

The **Agricultural Studies Concentration** is designed to allow students to explore the Food, Fiber, Natural Resources, Environmental, Biological, Social and Natural Sciences without specializing in any particular concentration area. Ag Studies is a "student centered" individualized curriculum that will allow the student, in consultation with a faculty advisor, to select courses from approved programs to customize a program of study that best fits the student's career goals. While this concentration offers a great deal of program flexibility, restriction is built into the curriculum to ensure that each student's program meets University requirements for the baccalaureate degree. Ag Studies students must satisfactorily complete a minimum number of upper level (300 and above) courses to complete the program. By completing courses in the department and Ag Studies core, students obtain a strong foundation of agricultural knowledge and skills. On-the-job training, which provides hands-on experiential learning, can be obtained through internships. Internships are highly recommended so that students can apply classroom knowledge and develop industry and/or government contacts while acquiring technical and field experience that will prepare them for a highly competitive and diversified workforce. A student's program should be planned in consultation with his/her departmental advisor, and approved by the AGST Oversight Committee and the Department Chair.

The **Agribusiness Degree Program** combines instruction in the agricultural sciences and economics with particular emphasis on the management of agricultural production and marketing firms, decision-making, and problem solving in public policy. The core curriculum of the program is developed from courses offered in the Departments of Agriculture, Business, Management and Accounting, Mathematics, and Computer Science.

By combining these areas in the curriculum, the agribusiness program is designed to: (1) meet the requirements for agribusiness competency essential for today's production agriculture, and (2) provide students sufficient expertise to allow them to enter management levels of diverse agribusiness firms. In addition, the curriculum includes a broad range of elective courses, which allows the student in agribusiness to structure a

program consistent with his/her personal interests and goals.

Agribusiness students are also strongly encouraged to be involved in an internship or cooperative education program with a university-approved agribusiness firm, a federal or state agency, or an international organization during their junior or senior year. This arrangement provides students with training, experience, and a first-hand look at various career opportunities.

PROGRAM REQUIREMENTS

Specific requirements for minors in Agribusiness and General Agriculture are as follows:

A grade of C or better will be required in the courses taken to satisfy the minors in General Agriculture or Agribusiness. In accordance with the guidelines below, specific minor programs for individual students will be set up and approved by the Chair of the Department or a designee.

A Minor in Agribusiness requires a minimum of 18 hours in Agribusiness courses.

A Minor in General Agriculture requires a minimum of 18 hours in the Plant and Soil Sciences, or in Animal and Poultry Science.

ALTERNATIVE CREDITS

Beginning Fall 2005, all students who enroll in degree programs will be required to complete 12 alternative credits before graduating. Alternative credits can be earned by completing internships, summer and winter session courses, on-line courses, and courses completed while studying abroad.

**BACHELOR OF SCIENCE DEGREE
AGRIBUSINESS
Recommended and Required Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 42-43 Credits

Students should consult with their departmental advisor when making course selections.

- A. Curriculum Area I - (Arts and Humanities) 9 Credits**
- Students must select ENGL 203 plus two additional courses
ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401
- B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits**
- | Course No. | Title | Credits |
|---|---|---------|
| ECON 201/201H | Principles of Economics I | 3 |
| <u>Students must select one course:</u> | | |
| | BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H | 3 |
- C. Curriculum Area III - (Biological and Physical Sciences) 8 Credits**
- Student must select any two (2) courses plus one lab from the following:
 BIOL 101, BIOL 103 (lab), BIOL 111, BIOL 113 (lab), ENV5 101, BIOL 112, BIOL 114 (lab), CHEM 101, CHEM 103 (lab), CHEM 102, CHEM 104 (lab), CHEM 111, CHEM 113 (lab), PHYS 101, PHYS 103 (lab), PHYS 121, PHYS 123 (lab), PHYS 122, PHYS 124 (lab), PHYS 161, PHYS 181, PHYS 182, PHYS 184 (lab), PHYS 263
- D. Curriculum Area IV - (Mathematics) 6-7 Credits**
- | Course No. | Title | Credits |
|------------|--|---------|
| MATH 109 | College Algebra <u>or</u> | 3 |
| MATH 111H | Honors Elementary Mathematics Analysis | 4 |
| MATH 210 | Elementary Statistics | 3 |
- E. Curriculum Area V - (English Composition) 9 Credits**
- | Course No. | Title | Credits |
|--------------|----------------------|---------|
| ENGL 101/H/W | Basic Composition I | 3 |
| ENGL 102/H/W | Basic Composition II | 3 |
| ENGL 305/H/W | Technical Writing | 3 |
- F. Curriculum Area VI - (Emerging Issues) 4 Credits**
- | Course No. | Title | Credits |
|------------|-------------------------------|---------|
| | Free Elective | 3 |
| AGNR 111 | First Year Experience Seminar | 1* |
- *Required for all Department of Agriculture students**

II. Program Core Requirements 15 Credits

Course No.	Title	Credits
AGEC 213	Introduction to Agricultural Economics	3
AGME 283	Engineering Principles Applied to Agriculture	3
AGRI 301	Seminar	1
ANPT 114	Introduction to Animal Science	4
PLSC 184	Introduction to Plant Science	3
PLSC 185	Introduction to Plant Science Lab	1

III. Major Core Requirements* 48 Credits

Course No.	Title	Credits
ACCT 201	Introductory Financial Accounting I	3
ACCT 202	Introductory Corporate & Managerial Accounting	3
AGBU 223	Introduction to Agribusiness	3
AGBU 313	Quantitative Methods in Agribusiness	3
AGBU 323	Agribusiness Management	3
AGBU 471	Agribusiness Seminar II	1
AGEC 333	Agricultural Price Analysis	3
AGEC 423	Marketing Agricultural Products	3
AGEC 433	International Agricultural Markets, Trade and Development	3
AGEC 443	Farm Management	3
AGEC 453	Agricultural Finance	3
AGEC 463	Agricultural Policy	3
CSDP 220	Introduction to Computer Use	4
ECON 202/H	Principles of Economics II/Honors Principles of Economics II	3
ECON 300	Intermediate Micro Economic Theory	3
MATH 112	Calculus I	4

***A minimum grade of "C" is required for each course.**

IV. Supportive Requirements ** 6 Credits

Choose a minimum of 6 credit hours from courses listed below

Course No.	Title	Credits
ACCT 301	Cost and Budgetary Control	3
AGBU 300	Internship I	3
AGBU 371	Agribusiness Seminar I	1
AGBU 400	Internship II	3
AGEC 419	Agricultural Cooperatives	3
BUAD 302/H	Organization and Accounting Management	3
BUAD 307	Industrial Relations	3
BUAD 412	Business Law	3
BUAD 411/H	Operations Research & Decision Theory	3
CSDP 240	Principles of Data Processing	3
ECON 301	Intermediate Macro Economic Theory	3
ECON 303	Labor Economics	3
ECON 302	Money and Banking	3
ECON 304	The Economics of Black America	3
ECON 402	Economics of Development	3

****A minimum cumulative grade of "C" (GPA 2.0) is required for supportive courses.**

V. Free Electives 9 Credits

TOTAL PROGRAM REQUIREMENTS 120

Please see requirements for passing the English proficiency exam also.

AGRIBUSINESS
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
AGNR	111	First Year Experience Seminar	1
ANPT	114	Intro. to Animal Science	4
ECON	201	Principles of Economics I <u>or</u>	
ECON	201H	Honors Principles of Economics I	3
ENGL	101	Basic Composition I <u>or</u>	
ENGL	101H	Honors Basic Composition I	3
MATH	109	College Algebra <u>or</u>	3
MATH	111H	Honors Elem. Math Analysis	4
Semester Total			14/15

SPRING SEMESTER			HOURS
AGME	283	Eng. Prin. of Appl. to Agric.	3
ECON	202	Principles of Economics II <u>or</u>	
ECON	202H	Honors Principles of Economics II	3
ENGL	102	Basic Composition II <u>or</u>	
ENGL	102H	Honors Composition II	3
		Free Elective	3
MATH	112	Calculus I	4
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
AGEC	213	Introduction to Ag. Economics	3
ENGL	203	Fund. of Contemporary Speech	3
		GER CURR. AREA I	3
		GER CURR. AREA II	3
PLSC	184	Intro. to Plant Science	3
PLSC	185	Intro to Plant Science Lab	1
Semester Total			16

SPRING SEMESTER			HOURS
AGBU	223	Intro. to Agri-Business	3
CSDP	220	Intro. to Computer Programming	4
		GER CURR. AREA I	3
		GER CURR. AREA III	4
Semester Total			14

JUNIOR YEAR

FALL SEMESTER			HOURS
ACCT	201	Intro. Financial Accounting	3
AGBU	313	Quantitative Methods in AGBU	3
AGBU	323	Agribusiness Management	3
ECON	300	Int. Micro. Econ. Theory	3
		GER CURR. AREA III	4
Semester Total			16

SPRING SEMESTER			HOURS
ACCT	202	Intro. Corp. & Managerial Acct.	
		Program Area IV:	3
AGEC	333	Agricultural Price Analysis	3
AGRI	301	Seminar	1
		Elective	3
ENGL	305	Technical Writing	3
		Supportive Course	3
Semester Total			16

SENIOR YEAR

FALL SEMESTER			HOURS
AGEC	433	Int. Agr. Mkts, Trade & Dev.	3
AGEC	453	Agric. Finance	3
AGEC	463	Agri. Policy	3
		Elective	3
		Supportive Course	3
Semester Total			15

SPRING SEMESTER			HOURS
AGEC	423	Mkt. of Agric. Products	3
AGEC	443	Farm Management	3
		Program Area IV:	
		Supportive Course	3
		Elective	3
Semester Total			12

Total Credits Required **120**

**GENERAL AGRICULTURE
AGRICULTURE EDUCATION CONCENTRATION
Recommended and Required Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 42 Credits

Students should consult with their departmental advisor when making course selections.

A. Curriculum Area I - (Arts and Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: ECON 201 or ECON 201H, ECON 202 or ECON 202H,
 GEOG 201 or GEOG 202, HIST 101 or HIST 111H,
 HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342
 SOCI 101 or SOCI 111H 3

PSYC 200 Introduction to Psychology 3

C. Curriculum Area III - (Biological and Physical Sciences) 11 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Lab	1
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry I Lab	1
ENVS 101	Introduction to Environmental Science	3

D. Curriculum Area IV - (Mathematics) 3 Credits

Course No.	Title	Credits
MATH 109	College Algebra or higher	3

E. Curriculum Area V - (English Composition) 9 Credits

Course No.	Title	Credits
ENGL 101	Basic Composition I	3
ENGL 102	Basic Composition II	3
ENGL 305/305W	Technical Writing <u>or</u>	
ENGL 310/W	Advanced Composition	3

F. Curriculum Area VI - (Emerging Issues) 4 Credits

Course No.	Title	Credits
Free Elective		3
AGNR 111	First Year Experience Seminar	1

II. Program Core Requirements* 15 Credits

Course No.	Title	Credits
AGRI 301	Seminar	1
AGEC 213	Introduction to Agriculture Economics	3
AGME 283	Engineering Principles Applied to Agriculture	3
ANPT 114	Introduction to Animal Science	4
PLSC 184	Introduction to Plant Science and	3
PLSC 185	Introduction to Plant Science Lab	1

III. Professional Core (Agriculture Education)* 45 Credits

Course No.	Title	Credits
AGED 313	Supervised Experience Programs	3
EDCI 200	Introduction to Contemporary Education	3
EDCI 288	PRAXIS Preparation	1+
EDCI 311	Comprehensive Assessment in Education	3
EDCI 400	Senior Seminar in Education	3
EDCI 406	Classroom Management	3
EDCI 409	Teaching Reading in the Content Areas: Part I	3
EDCI 410	Teaching Reading in the Content Areas: Part II	3
EDCI 427A	Curriculum and Instruction in Agriculture	3
EDCI 490A	Teaching Internship	6
EDCI 480A	Teaching Internship	6
EDSP 428	Communication and Collaboration in Special Education	3
PSYC 305	Developmental Psychology	3
PSYC 307	Educational Psychology	3

* A minimum grade of "C" is required for each course

+Credit does not count toward graduation.

IV. Supportive Requirements 18 Credits**

Course No.	Title	Credits
BUED 212	Computer Concepts/Applications I	3
	Select 200-400 level Agriculture courses with permission of the advisor	15

**A minimum grade of "C" is required for supportive courses

TOTAL PROGRAM REQUIREMENTS 120

**AGRICULTURE EDUCATION
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER		HOURS
ANPT 114	Intro. to Animal Science	4
AGNR 111	First Year Experience. Seminar	1
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Lab	1
ENGL 101	Basic Composition I	3
MATH 109	College Algebra or Higher	<u>3</u>
Semester Total		15

SPRING SEMESTER		HOURS
AGME 283	Engineering Prin. Applied Ag	3
Elective	Select one Agricultural course	3
ENGL 102	English Composition II	3
	GER CURR. AREA II	3
	GER CURR. AREA I	<u>3</u>
Semester Total		15

SOPHOMORE YEAR

FALL SEMESTER		HOURS
AGEC 213	Intro. to Ag. Economics	3
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry I Lab	1
EDCI 288	PRAXIS Preparation	1+
ENGL 203	Fund. of Contemporary Speech	3
EDCI 200	Intro. to Contemporary Education	3
PSYC 200	Intro. to Psychology	<u>3</u>
Semester Total		17

SPRING SEMESTER		HOURS
Elective	Select one Agricultural course	3
ENGL 305/W	Technical Writing <u>or</u>	
ENGL 310/W	Advanced Composition	3
	GER CURR. AREA I	3
PSYC 305	Developmental Psychology	3
PSYC 307	Educational Psychology	<u>3</u>
Semester Total		15

JUNIOR YEAR

FALL SEMESTER	HOURS
----------------------	--------------

AGED 213	Supv. Experience Program	3
BUED 212	Computer Concepts/Apps. I	3
Elective	Select one Agricultural course	3
Elective	Select one Agricultural course	3
PLSC 184	Intro. to Plant Science	3
PLSC 185	Intro. to Plant Science Lab	<u>1</u>
Semester Total		16

SPRING SEMESTER		HOURS
AGRI 301	Seminar	1
EDCI 406	Classroom Management	3
EDCI 409	Teaching Reading Content I	3
Elective	Select one Agricultural Course	3
Elective	Select one Agricultural course	<u>3</u>
Semester Total		13

SENIOR YEAR

FALL SEMESTER		HOURS
EDCI 311	Comprehensive Assessment	3
EDCI 427A	Curr. And Instr. in Agriculture	3
EDCI 410	Teaching Reading Content II	3
EDSP 428	Comm. & Coll. in Special Ed.	3
Elective	Select one Agricultural course	<u>3</u>
Semester Total		15

SPRING SEMESTER		HOURS
EDCI 400	Senior Seminar	3
EDCI 480A	Teaching Internship	6
EDCI 490A	Teaching Internship	<u>6</u>
Semester Total		15

Total Credits Required 120

+Credit does not count toward graduation.

**GENERAL AGRICULTURE
AGRICULTURAL STUDIES CONCENTRATION
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 41 Credits

Students should consult with their departmental advisor when making course selections.

- A. Curriculum Area I - (Arts and Humanities) 9 Credits**
Students must select ENGL 203 plus two additional courses
ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401
- B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits**
Students must select one course in each of two disciplines
SOCIAL SCIENCES: ECON 201 or ECON 201H, ECON 202 or ECON 202H, GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342, SOCI 101 or SOCI 111H
BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H
- C. Curriculum Area III - (Biological and Physical Sciences) 7-8 Credits**
Students must select two science courses—one must include a laboratory:
 BIOL 101, BIOL 103 (Lab.), BIOL 111, BIOL 112, CHEM 101, CHEM 102, CHEM 103 (Lab.), CHEM 104 (Lab.), CHEM 111C, ENVS 101, PHYS 101, PHYS 101, PHYS 103 (Lab.), PHYS 102, PHYS 161, HYS 181H, PHYS 182H, PHYS 263
- D. Curriculum Area IV - (Mathematics) 3 Credits**
- | Course No. | Title | Credits |
|------------|---------------------------|---------|
| MATH 109 | College Algebra or Higher | 3 |
- E. Curriculum Area V - (English Composition) 9 Credits**
- | Course No. | Title | Credits |
|--------------|-----------------------------|---------|
| ENGL 101/H/W | Basic Composition I | 3 |
| ENGL 102/H/W | Basic Composition II | 3 |
| ENGL 305/H/W | Technical Writing <u>or</u> | 3 |
| ENGL 310/W | Advanced Composition | 3 |
- F. Curriculum Area VI - (Emerging Issues) 7 Credits**
- | Course No. | Title | Credits |
|------------|-------------------------------|---------|
| AGNR 111 | First Year Experience Seminar | 1* |
| | Free Elective | 6 |
- *Required for all Department of Agriculture Students**

II. Program Core Requirements* 15 Credits

Course No.	Title	Credits
AGEC 213	Introduction to Agriculture Economics	3
AGME 283	Engineering Principles Applied to Agriculture	3
AGRI 301	Seminar	1
ANPT 114	Introduction to Animal Science	4
PLSC 184	Introduction to Plant Science and	3
PLSC 185	Introduction to Plant Science Lab	1

III. Ag Studies Core* 27 Credits

Select a minimum of 27 credit hours of which one three credit-hour course must be selected from at least three current Department Programs.

*** A minimum grade of "C" is required for each of these courses**

IV. Supportive Requirements 37 credits**

Select 37 credits hours which will enhance and strengthen the students' chosen Food & Agricultural Science interest area. A minimum of 20 credit hours must be selected from the 200-400 level.

**** A minimum cumulative grade of "C" (GPA 2.0) is required for Supportive Courses**

TOTAL PROGRAM REQUIREMENTS 120

AGRICULTURAL STUDIES CONCENTRATION
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
AGNR	111	First Year Exper. Seminar	1
ANPT	114	Intro to Animal Science	4
ENGL	101	Basic Composition I	3
MATH	109	College Algebra or higher	3
PLSC	184	Introduction to Plant Science	3
PLSC	185	Intro to Plant Science Lab	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	111	Principles of Biology	3
BIOL	113	Principles of Biology Lab	1
		(or)	
BIOL	101	Theories/Appl of Bio Sc	3
BIOL	103	Biological Science Lab	1
		General Education elective	3
ENGL	102	Basic Composition II	3
		Behavior Science requirement	3
		Free Elective	<u>3</u>
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
AGME	283	Engineering Prin. Appl to Ag	3
AGEC	213	Intro. to Ag. Economics	3
		Ag Studies core - Program 1	3
CHEM	101	General Chemistry	3
CHEM	103	General Chemistry Lab <u>or</u>	1
CHEM	111	Principles of Chemistry	3
CHEM	113	Principles of Chemistry I lab	1
ENGL	203	Fund. of Contemp. Speech	<u>3</u>
Semester Total			16

SPRING SEMESTER			HOURS
		Ag Studies Core - Program 2	3
		Ag Studies Core - Program 3	3
		Art & Humanities requirement	3
		Social Science requirement	3
		Supportive area course (200-400 level)	<u>3</u>
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
		Ag Studies core from Agriculture	3
ENGL	305/W	Technical Writing (or)	
ENGL	310/W	Advanced Composition	3
		Supportive area course	
		(200-400 level)	2
		Supportive area course	
		(200-400 level)	3
		Supportive area course	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
AGRI	301	Seminar	1
		Ag Studies core from Agriculture	3
		Ag Studies core from Agriculture	3
		Arts & Humanities credit	3
		Supportive area course	2
		Supportive area course	
		(200-400 level)	<u>2</u>
Semester Total			14

SENIOR YEAR

FALL SEMESTER			HOURS
		Ag Studies core from Agriculture	3
		Supportive area course	
		(200-400 level)	3
		Supportive area course	
		(200-400 level)	3
		Supportive area course	
		(200-400 level)	3
		Supportive area course	
		(200-400 level)	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
		Ag Studies core from Agriculture	3
		Supportive area course	
		(200-400 level)	3
		Supportive area course	3
		Ag Studies core from Agriculture	3
		Supportive area course	<u>3</u>
Semester Total			15

Total Credits Required 120

Some upper level Agriculture courses may need BIOL or CHEM at a higher level than 101 and 103.

**GENERAL AGRICULTURE
ANIMAL and POULTRY SCIENCE CONCENTRATION
OPTION I (BUSINESS/TECHNOLOGY)
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 43 Credits

Students should consult with their departmental advisor when making course selections.

A. Curriculum Area I - (Arts and Humanities) 9 Credits

Course No.	Title	Credits
<u>Students must select ENGL 203 plus two additional courses</u>		
ARTS:	ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109	
HISTORY:	HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310	
LANGUAGE:	FREN 101, FREN 102, SPAN 101, SPAN 102	
LITERATURE:	ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401	

B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits

Course No.	Title	Credits
<u>Students must select one course in each of two disciplines</u>		
SOCIAL SCIENCES:	ECON 201 <u>or</u> ECON 201H, ECON 202 <u>or</u> ECON 202H, GEOG 201 <u>or</u> GEOG 202, HIST 101 <u>or</u> HIST 111H, HIST 102 <u>or</u> HIST 112H, POLI 200 <u>or</u> POLI 200H, POLI 342, SOCI 101 <u>or</u> SOCI 111H	3
BEHAVIORAL SCIENCES:	CRJS 101, HUEC 203, HUEC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H	3

C. Curriculum Area III - (Biological and Physical Sciences) 12 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I and	3
BIOL 113	Principles of Biology I Lab	1
CHEM 111	Principles of Chemistry I and	3
CHEM 113	Principles of Chemistry I Lab	1
CHEM 112	Principles of Chemistry II and	3
CHEM 114	Principles of Chemistry II Lab	1

D. Curriculum Area IV - (Mathematics) 3 Credits

Course No.	Title	Credits
MATH 110	Trigonometry and Analytical Geometry or Higher	3*
* Placement in MATH 110 is based on placement test scores or successful completion of MATH 109.		

E. Curriculum Area V – (English Composition) 9 Credits

Course No.	Title	Credits
ENGL 101/W	Basic Composition I	3
ENGL 102/W	Basic Composition II	3
ENGL 305/W	Technical Writing	3

F.	Curriculum Area VI - (Emerging Issues)	4 Credits
	Course No.	Title
		Free Elective
	AGNR 111	First Year Experience Seminar
		**Required for all Department of Agriculture students
		3
		1**
II.	Program Core Requirements	15 Credits
	Course No.	Title
	ANPT 114	Introduction to Animal Science
	AGEC 213	Introduction to Agriculture Economics
	AGME 283	Engineering Principles Applied to Agriculture
	AGRI 301	Seminar
	PLSC 184	Introduction to Plant Science
	PLSC 185	Introduction to Plant Science Lab
		4
		3
		3
		1
		3
		1
III.	Major Core Requirements	27 Credits
	Course No.	Title
	ANPT 214	Animal & Avian Physiology
	ANPT 223	Introduction Poultry Technology & Management
	ANPT 304	Reproductive Physiology of Domestic Animals
	ANPT 313	Introduction to Animal & Avian Nutrition
	ANPT 424	Animal & Avian Health & Diseases
		Select three 400 level courses from ANPT Production
		4
		3
		4
		3
		4
		9
IV.	Supportive Requirements	30 Credits
	Course No.	Title
	ACCT 201	Introduction to Financial Accounting
	ACCT 202	Intro. Corporate & Managerial Accounting
	BIOL 222	Genetics
	BIOL 223	Genetics Laboratory
	BIOL 301	Microbiology and
	BIOL 303	Microbiology Lab or
	AMIC 324	Agricultural Microbiology
	BUAD 132	Introduction to Business
	BUED 212	Computer Concepts/Applications. I
	CHEM 211	Fundamentals of Organic Chemistry I and
	CHEM 213	Fundamentals of Organic Chemistry I Lab
		Select two 300-400 Level courses as from:
		BUAD, ACCT, ECON, AGBU or AGECE elective
		3
		3
		3
		1
		4
		3
		3
		3
		1
		6
V.	Free Electives	5 Credits
	TOTAL PROGRAM REQUIREMENTS	120

**ANIMAL AND POULTRY SCIENCE CONCENTRATION
OPTION. 1 (BUSINESS/TECHNOLOGY)
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
AGNR	111	First Year Experience Seminar	1
ANPT	114	Intro. to Animal Science	4
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
ENGL	101	Basic Composition I	3
		GER CURR AREA I	<u>3</u>
		Semester Total	15

SPRING SEMESTER			HOURS
BUAD	132	Introduction to Business	3
ENGL	102	Basic Composition II	3
		Free Elective	3
		GER CURR AREA II	3
MATH	110	Trig. & Anal. Geo. or Higher	<u>3</u>
		Semester Total	15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
ANPT	214	Animal & Avian Physio.	4
ANPT	223	Intro. to Poultry Tech. Mngt.	3
CHEM	111	Prin. of Chemistry I	3
CHEM	113	Prin. of Chemistry I Lab	1
PLSC	184	Intro. to Plant Science	3
PLSC	185	Intro. to Plant Science Lab	<u>1</u>
		Semester Total	15

SPRING SEMESTER			HOURS
AGME	283	Engineering Prin. Applied Ag	3
BIOL	222	Genetics	3
BIOL	223	Genetics Lab	1
CHEM	112	Principles of Chemistry II	ENGL
CHEM	114	Principles of Chemistry II Lab	1
		GER CURR AREA I	<u>3</u>
		Semester Total	14

JUNIOR YEAR

FALL SEMESTER			HOURS
ACCT	201	Intro. Financial Accounting	3
AGEC	213	Intro. to Agricultural Economics	3
ANPT	313	Intro. to Animal/Avian Nutrition	3
CHEM	211	Fund. of Organic Chem I and	
CHEM	213	Fund. of Organic Chem. I Lab or	4
CHEM	331	Elementary Organic Chem.	4
ENGL	203	Fund. of Contemporary Speech	<u>3</u>
		Semester Total	16

SPRING SEMESTER			HOURS
ACCT	202	Intro. Corporate &. Man. Acctt.	3
AGRI	301	Ag Seminar: Pro. Dvlpmnt.	1
ANPT	304	Repro. Physiology	4
ANPT		400 Level Production Elective	3
BIOL	301	Microbiology and	
BIOL	303	Microbiology Lab or	
AMIC	324	Agricultural Microbiology	<u>4</u>
		Semester Total	15

SENIOR YEAR

FALL SEMESTER			HOURS
ANPT		400 Level Production Elective	3
BUED	212	Computer Concepts/Apl. I	3
		FREE Electives	5
		GER CURR. AREA II	3
		Select 300-400 Level course: BUAD, ACCT, ECON AGBU or AGEC course	<u>3</u>
		Semester Total	17

SPRING SEMESTER			HOURS
ANPT		400 Level Production Elective	3
ANPT	424	Animal & Avian Health & Dis.	4
ENGL	305/W	Tech. Writing	3
		Select a 300-400 Level course: BUAD, ACCT, ECON, AGBU or AGECE	<u>3</u>
		Semester Total	13

Total Credits Required 120

**GENERAL AGRICULTURE
ANIMAL AND POULTRY SCIENCE CONCENTRATION
OPTION II (PRE-VETERINARY/PRE-PROFESSIONAL)
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 43 Credits

Students should consult with their departmental advisor when making course selections.

A. Curriculum Area I - (Arts and Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109, MUSI 301H
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II - (Social Sciences) 6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: ECON 201 or ECON 201H, ECON 202 or ECON 202H
 GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102
or HIST 112H, POLI 200 or POLI 200H, POLI 342, SOCI 101
or SOCI 111H 3

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361,
 PSYC 200, SOCI 201, SOWK 200 or SOWK 200H 3

C. Curriculum Area III - (Biological and Physical Sciences) 12 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Lab	1
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry I Lab	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry II Lab	1

D. Curriculum Area IV - (Mathematics) 3 Credits

Course No.	Title	Credits
MATH 110	Trigonometry and Analytical Geometry <u>or</u>	
MATH 112	Calculus I	3*

Placement in MATH 110 is based on placement test scores or successful completion of MATH 109.

E. Curriculum Area V - (English Composition) 9 Credits

Course No.	Title	Credits
ENGL 101	Basic Composition I	3
ENGL 102	Basic Composition II	3
ENGL 305/W	Technical Writing <u>or</u>	
ENGL 310/W	Advanced Composition	3

F.	Curriculum Area VI - (Emerging Issues)	4 Credits																																																
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>AGNR 111</td> <td>First Year Experience Seminar</td> <td>1**</td> </tr> <tr> <td></td> <td>Free Elective</td> <td>3</td> </tr> </table>	Course No.	Title	Credits	AGNR 111	First Year Experience Seminar	1**		Free Elective	3																																								
Course No.	Title	Credits																																																
AGNR 111	First Year Experience Seminar	1**																																																
	Free Elective	3																																																
	**Required for all Department of Agriculture Students																																																	
II.	Program Core Requirements	15 Credits																																																
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>AGEC 213</td> <td>Introduction to Agricultural Economics</td> <td>3</td> </tr> <tr> <td>AGME 283</td> <td>Engineering Principles Applied to Agriculture</td> <td>3</td> </tr> <tr> <td>AGRI 301</td> <td>Agriculture Seminar: Professional Development</td> <td>1</td> </tr> <tr> <td>ANPT 114</td> <td>Introduction to Animal Science</td> <td>4</td> </tr> <tr> <td>PLSC 184</td> <td>Introduction to Plant Science</td> <td>3</td> </tr> <tr> <td>PLSC 185</td> <td>Introduction to Plant Science Lab</td> <td>1</td> </tr> </table>	Course No.	Title	Credits	AGEC 213	Introduction to Agricultural Economics	3	AGME 283	Engineering Principles Applied to Agriculture	3	AGRI 301	Agriculture Seminar: Professional Development	1	ANPT 114	Introduction to Animal Science	4	PLSC 184	Introduction to Plant Science	3	PLSC 185	Introduction to Plant Science Lab	1																												
Course No.	Title	Credits																																																
AGEC 213	Introduction to Agricultural Economics	3																																																
AGME 283	Engineering Principles Applied to Agriculture	3																																																
AGRI 301	Agriculture Seminar: Professional Development	1																																																
ANPT 114	Introduction to Animal Science	4																																																
PLSC 184	Introduction to Plant Science	3																																																
PLSC 185	Introduction to Plant Science Lab	1																																																
III.	Major Core Requirements	24 Credits																																																
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>ANPT 214</td> <td>Animal & Avian Physiology</td> <td>4</td> </tr> <tr> <td>ANPT 223</td> <td>Introduction to Poultry Technology and Management</td> <td>3</td> </tr> <tr> <td>ANPT 304</td> <td>Reproduction Physiology</td> <td>4</td> </tr> <tr> <td>ANPT 313</td> <td>Introduction to Animal & Avian Nutrition</td> <td>3</td> </tr> <tr> <td>ANPT 424</td> <td>Animal and Avian Health and Diseases</td> <td>4</td> </tr> <tr> <td>ANPT</td> <td>Select two 400 level ANPT Production courses</td> <td>6</td> </tr> </table>	Course No.	Title	Credits	ANPT 214	Animal & Avian Physiology	4	ANPT 223	Introduction to Poultry Technology and Management	3	ANPT 304	Reproduction Physiology	4	ANPT 313	Introduction to Animal & Avian Nutrition	3	ANPT 424	Animal and Avian Health and Diseases	4	ANPT	Select two 400 level ANPT Production courses	6																												
Course No.	Title	Credits																																																
ANPT 214	Animal & Avian Physiology	4																																																
ANPT 223	Introduction to Poultry Technology and Management	3																																																
ANPT 304	Reproduction Physiology	4																																																
ANPT 313	Introduction to Animal & Avian Nutrition	3																																																
ANPT 424	Animal and Avian Health and Diseases	4																																																
ANPT	Select two 400 level ANPT Production courses	6																																																
IV.	Supportive Requirements**	35 Credits																																																
	Select a minimum of 35 credits.																																																	
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>BIOL 222</td> <td>Genetics</td> <td>3</td> </tr> <tr> <td>BIOL 223</td> <td>Genetics Lab</td> <td>1</td> </tr> <tr> <td>CHEM 211</td> <td>Fundamentals of Organic Chemistry I</td> <td>3</td> </tr> <tr> <td>CHEM 213</td> <td>Fundamentals of Organic Chemistry I Lab</td> <td>1</td> </tr> <tr> <td>CHEM 212</td> <td>Fundamentals of Organic Chemistry II</td> <td>3</td> </tr> <tr> <td>CHEM 214</td> <td>Fundamentals of Organic Chemistry II Lab</td> <td>1</td> </tr> <tr> <td>CHEM 341</td> <td>Biochemistry I</td> <td>3</td> </tr> <tr> <td>CHEM 343</td> <td>Biochemistry I Lab</td> <td>1</td> </tr> <tr> <td>PHYS 121</td> <td>Introductory Physics I</td> <td>3</td> </tr> <tr> <td>PHYS 123</td> <td>Introductory Physics I Lab</td> <td>1</td> </tr> <tr> <td>PHYS 122</td> <td>Introductory Physics II</td> <td>3</td> </tr> <tr> <td>PHYS 124</td> <td>Introductory Physics II Lab</td> <td>1</td> </tr> <tr> <td></td> <td>Select from MATH 210, 260 <u>or</u> BUED 212 <u>or</u> CSDP</td> <td>3</td> </tr> <tr> <td></td> <td>Select BIOL 301 <u>or</u> AMIC 324</td> <td>4</td> </tr> <tr> <td></td> <td>Select from BIOL 326, BIOL 311, BIOL 322, BIOL 420, BIOL 436, BIOL 426)</td> <td>4</td> </tr> </table>	Course No.	Title	Credits	BIOL 222	Genetics	3	BIOL 223	Genetics Lab	1	CHEM 211	Fundamentals of Organic Chemistry I	3	CHEM 213	Fundamentals of Organic Chemistry I Lab	1	CHEM 212	Fundamentals of Organic Chemistry II	3	CHEM 214	Fundamentals of Organic Chemistry II Lab	1	CHEM 341	Biochemistry I	3	CHEM 343	Biochemistry I Lab	1	PHYS 121	Introductory Physics I	3	PHYS 123	Introductory Physics I Lab	1	PHYS 122	Introductory Physics II	3	PHYS 124	Introductory Physics II Lab	1		Select from MATH 210, 260 <u>or</u> BUED 212 <u>or</u> CSDP	3		Select BIOL 301 <u>or</u> AMIC 324	4		Select from BIOL 326, BIOL 311, BIOL 322, BIOL 420, BIOL 436, BIOL 426)	4	
Course No.	Title	Credits																																																
BIOL 222	Genetics	3																																																
BIOL 223	Genetics Lab	1																																																
CHEM 211	Fundamentals of Organic Chemistry I	3																																																
CHEM 213	Fundamentals of Organic Chemistry I Lab	1																																																
CHEM 212	Fundamentals of Organic Chemistry II	3																																																
CHEM 214	Fundamentals of Organic Chemistry II Lab	1																																																
CHEM 341	Biochemistry I	3																																																
CHEM 343	Biochemistry I Lab	1																																																
PHYS 121	Introductory Physics I	3																																																
PHYS 123	Introductory Physics I Lab	1																																																
PHYS 122	Introductory Physics II	3																																																
PHYS 124	Introductory Physics II Lab	1																																																
	Select from MATH 210, 260 <u>or</u> BUED 212 <u>or</u> CSDP	3																																																
	Select BIOL 301 <u>or</u> AMIC 324	4																																																
	Select from BIOL 326, BIOL 311, BIOL 322, BIOL 420, BIOL 436, BIOL 426)	4																																																
	**A minimum cumulative grade of "C" (GPA 2.0) is required for supportive courses.																																																	
V.	Free Electives	3 Credit																																																
	TOTAL PROGRAM REQUIREMENTS	120																																																

**GENERAL AGRICULTURE
ANIMAL AND POULTRY SCIENCE CONCENTRATION
OPTION II: (PRE-VETERINARY/PRE-PROFESSIONAL)
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
AGNR	111	First Year Experience Seminar	1
ANPT	114	Introduction to Animal Science	4
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	114	Principles of Chemistry I Lab	1
ENGL	101	Basic Composition I	<u>3</u>
Semester Total			16

SPRING SEMESTER			HOURS
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
ENGL	102	Basic Composition II	3
		Free Elective	3
MATH	110	Analytical Geometry <u>or</u>	
MATH	112	Calculus I	3
		GER CURR AREA II	<u>3</u>
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
AGEC	213	Intro. to Ag. Economics	3
ANPT	214	Animal & Avian Physiology	4
ANPT	223	Intro. to Poultry Tech Mgmt	3
CHEM	211	Fund. of Org. Chem. I	3
CHEM	213	Fund. of Org. Chem. I Lab	1
PLSC	184	Intro to Plant Science	3
PLSC	185	Intro to Plant Science Lab	<u>1</u>
Semester Total			18

SPRING SEMESTER			HOURS
AGME	283	Eng. Prin. Appl. To Ag.	3
BIOL	222	Genetics	3
BIOL	223	Genetics Lab	1
CHEM	212	Fund. of Org. Chem. II	3
CHEM	214	Fund. of Org. Chem. II Lab	1
ENGL	203	Fund. of Cont. Speech	<u>3</u>
Semester Total			14

JUNIOR YEAR

FALL SEMESTER			HOURS
PHYS	121	Gen. College Physics I	3
PHYS	123	Gen. College Physics I Lab	1
ANPT	313	Intro. to Animal/Avian Nutrition	3
		GER CURR. AREA II	3
MATH	210	Elementary Statistics <u>or</u>	
MATH	260	Statistics for Scientists. <u>or</u>	
		CSPD Elective <u>or</u>	
BUED	212	Computer Concepts/ Appli. I	3
ELECTIVE		GER Area I	<u>3</u>
Semester Total			16

SPRING SEMESTER			HOURS
AGRI	301	Seminar	1
ANPT	304	Repro. Physio. Dom. Ani.	4
AMIC	323	Agricultural Micro <u>or</u>	
BIOL	301	Microbiology	4
PHYS	122	Gen. College Physics II	3
PHYS	124	Gen. College Physics II Lab	<u>1</u>
Semester Total			13

SENIOR YEAR

FALL SEMESTER			HOURS
ANPT		400 Level Production Elective	3
CHEM	341	Biochemistry	3
CHEM	343	Biochemistry Lab	1
ENGL	305/W	Technical Writing <u>or</u>	
ENGL	310	Advanced Comp.	3
		GER CURR. AREA I	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
ANPT		400 Level Production Elective	3
ANPT 424		Animal & Avian Health & Dis.	4
		Select one course:	
		BIOL 311, BIOL 322,	
		BIOL 326/327, BIOL 420/421,	
		BIOL 426M	4
		FREE Elective	<u>3</u>
Semester Total			14

Total Credits Required 120

**GENERAL AGRICULTURE
PLANT AND SOIL SCIENCE CONCENTRATION
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 43 Credits

Students should consult with their departmental advisor when making course selections.

- A. Curriculum Area I - (Arts and Humanities) 9 Credits**
- Students must select ENGL 203 plus two additional courses
ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401
- B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits**
- Students must select one course in each of two disciplines:
SOCIAL SCIENCES: ECON 201 or ECON 201H, ECON 202 or ECON 202H, 3
 GEOG 201 or GEOG 202, HIST 101 or HIST 111H,
 HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342
 SOCI 101 or SOCI 111H
BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEC 220, HUEC 361,
 PSYC 200, SOCI 201, SOWK 200 or SOWK 200H 3
- C. Curriculum Area III - (Biological and Physical Sciences) 12 Credits**
- | Course No. | Title | Credits |
|------------|---------------------------------------|---------|
| BIOL 111 | Principles of Biology I and | 3 |
| BIOL 113 | Principles of Biology Lab I | 1 |
| CHEM 111 | Principles of Chemistry I and | 3 |
| CHEM 113 | Principles of Chemistry I Lab | 1 |
| CHEM 112 | Principles of Chemistry II and | 3 |
| CHEM 114 | Principles of Chemistry II Lab | 1 |
- D. Curriculum Area IV - (Mathematics) 3 Credits**
- | Course No. | Title | Credits |
|------------|---------------------------|---------|
| MATH 109 | College Algebra or Higher | 3 |
- E. Curriculum Area V - (English Composition) 9 Credits**
- | Course No. | Title | Credits |
|--------------|-----------------------------|---------|
| ENGL 101/H/W | Basic Composition I | 3 |
| ENGL 102/H/W | Basic Composition II | 3 |
| ENGL 305/H/W | Technical Writing <u>or</u> | |
| ENGL 310/W | Advanced Composition | 3 |

F.	Curriculum Area VI - (Emerging Issues)	4 Credits																																													
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>Free Elective</td> <td></td> <td>3</td> </tr> <tr> <td>AGNR 111</td> <td>First Year Experience Seminar</td> <td>1*</td> </tr> </table> <p>*Required for all Department of Agriculture Students</p>	Course No.	Title	Credits	Free Elective		3	AGNR 111	First Year Experience Seminar	1*																																					
Course No.	Title	Credits																																													
Free Elective		3																																													
AGNR 111	First Year Experience Seminar	1*																																													
II.	Program Core Requirements*	15 Credits																																													
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>AGEC 213</td> <td>Introduction to Agriculture Economics</td> <td>3</td> </tr> <tr> <td>AGME 283</td> <td>Engineering Principles Applied to Agriculture</td> <td>3</td> </tr> <tr> <td>AGRI 301</td> <td>Seminar</td> <td>1</td> </tr> <tr> <td>ANPT 114</td> <td>Introduction to Animal Science</td> <td>4</td> </tr> <tr> <td>PLSC 184</td> <td>Introduction to Plant Science</td> <td>3</td> </tr> <tr> <td>PLSC 185</td> <td>Introduction to Plant Science Lab</td> <td>1</td> </tr> </table>	Course No.	Title	Credits	AGEC 213	Introduction to Agriculture Economics	3	AGME 283	Engineering Principles Applied to Agriculture	3	AGRI 301	Seminar	1	ANPT 114	Introduction to Animal Science	4	PLSC 184	Introduction to Plant Science	3	PLSC 185	Introduction to Plant Science Lab	1																									
Course No.	Title	Credits																																													
AGEC 213	Introduction to Agriculture Economics	3																																													
AGME 283	Engineering Principles Applied to Agriculture	3																																													
AGRI 301	Seminar	1																																													
ANPT 114	Introduction to Animal Science	4																																													
PLSC 184	Introduction to Plant Science	3																																													
PLSC 185	Introduction to Plant Science Lab	1																																													
III.	Major Requirements	24 Credits																																													
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>AGRN 423</td> <td>Plant Nutrition & Soil Fertility</td> <td>3</td> </tr> <tr> <td>AMIC 324</td> <td>Agricultural Microbiology</td> <td>4</td> </tr> <tr> <td>BIOL 112</td> <td>Principle of Biology II and</td> <td></td> </tr> <tr> <td>BIOL 114</td> <td>Principle of Biology II Lab or</td> <td></td> </tr> <tr> <td>BIOL 112H</td> <td>Honors Principles of Biology II and</td> <td></td> </tr> <tr> <td>BIOL 114H</td> <td>Honors Principles of Biology II Lab</td> <td>4</td> </tr> <tr> <td>BUED 212</td> <td>Computer Concepts/Applications I and</td> <td>3</td> </tr> <tr> <td>CHEM 211</td> <td>Fundamentals of Organic Chemistry I and</td> <td></td> </tr> <tr> <td>CHEM 213</td> <td>Fundamentals of Organic Chemistry I Lab or</td> <td></td> </tr> <tr> <td>CHEM 211H</td> <td>Honors Fundamentals of Organic Chemistry I and</td> <td>3</td> </tr> <tr> <td>CHEM 213H</td> <td>Honors Fundamentals of Organic Chemistry I Lab</td> <td>1</td> </tr> <tr> <td>HORT 203</td> <td>Introduction to Horticultural Science</td> <td></td> </tr> <tr> <td>HORT 203H</td> <td>Honors Introduction to Horticultural Sciences</td> <td>3</td> </tr> <tr> <td>SOIL 203</td> <td>Introduction to Soil Science</td> <td>3</td> </tr> </table> <p>* A minimum grade of "C" is required for each of these courses</p>	Course No.	Title	Credits	AGRN 423	Plant Nutrition & Soil Fertility	3	AMIC 324	Agricultural Microbiology	4	BIOL 112	Principle of Biology II and		BIOL 114	Principle of Biology II Lab or		BIOL 112H	Honors Principles of Biology II and		BIOL 114H	Honors Principles of Biology II Lab	4	BUED 212	Computer Concepts/Applications I and	3	CHEM 211	Fundamentals of Organic Chemistry I and		CHEM 213	Fundamentals of Organic Chemistry I Lab or		CHEM 211H	Honors Fundamentals of Organic Chemistry I and	3	CHEM 213H	Honors Fundamentals of Organic Chemistry I Lab	1	HORT 203	Introduction to Horticultural Science		HORT 203H	Honors Introduction to Horticultural Sciences	3	SOIL 203	Introduction to Soil Science	3	
Course No.	Title	Credits																																													
AGRN 423	Plant Nutrition & Soil Fertility	3																																													
AMIC 324	Agricultural Microbiology	4																																													
BIOL 112	Principle of Biology II and																																														
BIOL 114	Principle of Biology II Lab or																																														
BIOL 112H	Honors Principles of Biology II and																																														
BIOL 114H	Honors Principles of Biology II Lab	4																																													
BUED 212	Computer Concepts/Applications I and	3																																													
CHEM 211	Fundamentals of Organic Chemistry I and																																														
CHEM 213	Fundamentals of Organic Chemistry I Lab or																																														
CHEM 211H	Honors Fundamentals of Organic Chemistry I and	3																																													
CHEM 213H	Honors Fundamentals of Organic Chemistry I Lab	1																																													
HORT 203	Introduction to Horticultural Science																																														
HORT 203H	Honors Introduction to Horticultural Sciences	3																																													
SOIL 203	Introduction to Soil Science	3																																													
IV.	Supportive Requirements**	35 Credits																																													
	<u>Select a minimum of 24 credit hours</u>																																														
	<table border="0"> <tr> <td>Course No.</td> <td>Title</td> <td>Credits</td> </tr> <tr> <td>AGME</td> <td>Select Courses with Advisor's Approval</td> <td></td> </tr> <tr> <td>AGRI 483/H</td> <td>Recombinant DNA Technology</td> <td>3</td> </tr> <tr> <td>AGRI 499</td> <td>Special Topics in Agriculture</td> <td>3</td> </tr> <tr> <td>AGRN 333A</td> <td>Weed Science</td> <td>3</td> </tr> <tr> <td>AGNR 353</td> <td>Natural Resources Conservation</td> <td>3</td> </tr> <tr> <td>AGNR 283</td> <td>Agriculture and the Environment</td> <td>3</td> </tr> <tr> <td>AGRN 413/H</td> <td>Global Agronomic Crops</td> <td>3</td> </tr> <tr> <td>AGRN 499</td> <td>Independent Study in Plant & Soil Sci.</td> <td>1-4</td> </tr> <tr> <td>AGNR 483</td> <td>Principles of Geographic Information Systems</td> <td>3</td> </tr> <tr> <td>AGRN 463/H</td> <td>Plant Genetics & Breeding</td> <td>3</td> </tr> <tr> <td>ENTO 313</td> <td>General and Applied Entomology</td> <td>3</td> </tr> <tr> <td>FDST 493</td> <td>Food Chemistry</td> <td>3</td> </tr> <tr> <td>HORT 313</td> <td>Floriculture & Ornamental Horticulture or</td> <td></td> </tr> <tr> <td>HORT 313H</td> <td>Honors Floriculture & Ornamental Horticulture</td> <td>3</td> </tr> </table>	Course No.	Title	Credits	AGME	Select Courses with Advisor's Approval		AGRI 483/H	Recombinant DNA Technology	3	AGRI 499	Special Topics in Agriculture	3	AGRN 333A	Weed Science	3	AGNR 353	Natural Resources Conservation	3	AGNR 283	Agriculture and the Environment	3	AGRN 413/H	Global Agronomic Crops	3	AGRN 499	Independent Study in Plant & Soil Sci.	1-4	AGNR 483	Principles of Geographic Information Systems	3	AGRN 463/H	Plant Genetics & Breeding	3	ENTO 313	General and Applied Entomology	3	FDST 493	Food Chemistry	3	HORT 313	Floriculture & Ornamental Horticulture or		HORT 313H	Honors Floriculture & Ornamental Horticulture	3	
Course No.	Title	Credits																																													
AGME	Select Courses with Advisor's Approval																																														
AGRI 483/H	Recombinant DNA Technology	3																																													
AGRI 499	Special Topics in Agriculture	3																																													
AGRN 333A	Weed Science	3																																													
AGNR 353	Natural Resources Conservation	3																																													
AGNR 283	Agriculture and the Environment	3																																													
AGRN 413/H	Global Agronomic Crops	3																																													
AGRN 499	Independent Study in Plant & Soil Sci.	1-4																																													
AGNR 483	Principles of Geographic Information Systems	3																																													
AGRN 463/H	Plant Genetics & Breeding	3																																													
ENTO 313	General and Applied Entomology	3																																													
FDST 493	Food Chemistry	3																																													
HORT 313	Floriculture & Ornamental Horticulture or																																														
HORT 313H	Honors Floriculture & Ornamental Horticulture	3																																													

Course No.	Title	Credits
HORT 333	Landscape Design Theory	3
HORT 353	Turf Maintenance and Management	3
HORT 383	Horticultural Therapy	3
HORT 463	Plant Tissue Culture	3
HORT 423/H	Horticultural Crops	3
NRES 404	Conservation Biology	3
PLSC 283	Agriculture and the Environment	3
PLSC 474	Plant Pathology <u>or</u>	
PLSC 474H	Honors Plant Pathology	4
PLSC 440	Plant Physiology	4
PLSC 484	Internship in Agriculture and Natural Resources	3-6
SOIL 443/H	Soil Chemistry	3

Select a minimum of 11 credit hours

Course No.	Title	Credits
BIOL 222	Genetics	3
BIOL 223	Genetics Lab	1
BIOL 402	Ecology	4
BUAD	Select Courses with Advisor's Approval	
BUED	Select Courses with Advisor's Approval	
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry II Lab	1
CHEM 311	Analytical Chemistry I	4
CHEM 312	Analytical Chemistry II	4
CHEM 341	Biochemistry I	3
CHEM 343	Biochemistry I Lab	1
ENVS	Select Courses with Advisor's Approval	
ENVS	Choice of an ENVS Course	3-4
HUEC	Select Courses with Advisor's Approval	
MATH	Select Courses with Advisor's Approval	
PHYS	Select Courses with Advisor's Approval	

**** A minimum cumulative grade of C (GPA 2.0) is required for Supportive Courses**

V. Elective Requirements 3 Credits

Electives must be chosen with the approval of the student's advisor

TOTAL PROGRAM REQUIREMENTS 120

PLANT AND SOIL SCIENCE CONCENTRATION
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
AGNR	111	First Year Exper. Seminar	1
CHEM	111	Principles of Chemistry I and	
CHEM	113	Principles of Chem. I Lab or	
CHEM	111H	Honors Principles of Chem. I	3
CHEM	113H	Honors Principles of Chem. I Lab	1
ENGL	101/H	Basic Composition I	3
MATH	109	College Algebra or higher	3
PLSC	184	Introduction to Plant Science	3
PLSC	185	Intro to Plant Science Lab	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II and	
BIOL	114	Principles of Biology II Lab or	
BIOL	112H	Honors Prin. of Biology II and	3
BIOL	114H	Honors Prin. of Biology II Lab	1
CHEM	112/H	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
ENGL	102	Basic Composition II or	
ENGL	102H	Honors Basic Composition II	3
		Free Elective	3
		GER CURR. AREA I	<u>3</u>
Semester Total			17

SOPHOMORE YEAR

FALL SEMESTER			HOURS
AGEC	213	Intro. to Ag. Economics or	
AGEC	213H	Honors Intro. to Ag Economics	3
ANPT	114	Intro. to Animal Science or	
ANPT	114H	Honors Intro. to Animal Sci.	4
CHEM	211	Fund. Of Organic Chem. I and	
CHEM	213	Fund. of Organic Chem. I Lab or	
CHEM	211H	Hnrs. Fund. of Org. Chem. I and	3
CHEM	213H	Hnrs. Fund. of Org. Chem. I Lab	1
ENGL	203	Fund. of Contemporary Speech	3
HORT	203	Intro to Horticultural Sci.	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
AGME	283	Engine. Prin. Applied to Ag	3
AGRN	203	Introduction to Soil Science	3
BIOL	111	Principles of Biology I and	
BIOL	113	Principles of Biology Lab I or	
BIOL	111H	Honors Prin. of Biology I	3
BIOL	113H	Honors Prin. of Biology I	1
BUED	212	Computer Concepts/App I	3
		GE CURR. AREA II	<u>3</u>
Semester Total			16

JUNIOR YEAR

FALL SEMESTER			HOURS
ENGL	305/W	Technical Writing	3
		GER CURR. AREA I	6
		Plant & Soil Sci. Elective, Math or Sci. Supp. Course	3
		Science or Math Sup. Course	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
AGRI	301	Agriculture Seminar	1
AMIC	324	Agricultural Microbiology	4
		GER CURR. AREA II	3
		Science or Math Sup. Course and/or Plant and Soil Science Elective	3
		Science or Math Sup. Course	<u>3</u>
Semester Total			14

SENIOR YEAR

FALL SEMESTER			HOURS
AGRN	423	Plant Nutri. and Soil Fert. or	
AGRN	423H	Hnrs. Plant Nutri.& Soil Fert.	3
		Science or Math Electives and/or Plant/ Soil Science Electives	7
		Science, Math or Plant/Soil Science Supportive Course	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
		*FREE Elective	3
		Plant and Soil Science Elective	3
		Plant and Soil Science Electives	<u>7</u>
Semester Total			13

Total Required Credits 120

MINOR PROGRAMS

AGRIBUSINESS

A **Minor in Agribusiness** requires a minimum of 18 hours from the courses listed below:

Course	No.	Title	Credits
AGBU	313	Quantitative Methods in Agribusiness	3
AGBU	323	Agribusiness Management	3
AGBU	371	Agribusiness Seminar I	1
AGEC	213	Introduction to Agricultural Economics	3
AGEC	333	Agricultural Price Analysis	3
AGEC	419	Agricultural Cooperatives	3
AGEC	423	Marketing Agricultural Products	3
AGEC	433	International Agricultural Markets, Trade and Development	3
AGEC	443	Farm Management	3
AGEC	453	Agricultural Finance	3
AGEC	463	Agricultural Policy	3

A **Minor in General Agriculture** requires a minimum of 18 hours for the Plant and Soil Sciences, or for Animal and Poultry Science.

COURSE DESCRIPTIONS

AGRIBUSINESS

AGBU 223/H Introduction to Agribusiness 3 crs.

The course offers definition and scope of agribusiness firms and explains the characteristics of agribusiness firms. It also examines trends of their expansion/decline and explores career opportunities available in agribusiness. Prerequisite: AGECE 213.

AGBU 300 Internship I 3 crs.

This course offers the opportunity to students to observe and participate in management operation at university-approved agribusiness firms. A written appraisal of theoretical and/or applied management, economics, or business concepts observed during the internship is required. Prerequisite: Junior standing in Agribusiness.

AGBU 313/H Quantitative Methods in Agribusiness 3 crs.

Agribusiness problems will be addressed through the use of indices, graphics, budgeting, discounting, simulation, basic statistical measure, and micro-computers. Prerequisites: AGECE 213 and MATH 210.

AGBU 323/H Agribusiness Management 3 crs.

The course offers an examination and study of the organization, management, and operation of agribusiness firms with reference to the application of management principles for effective decision making. Prerequisite: AGBU 223.

AGBU 371 Seminar I 1 cr.

A term paper with focus on economic, business or management analysis of current issues in agribusiness is required. Prerequisite: Junior standing in Agribusiness or Business.

AGBU 400 Internship II 3 crs.

The course offers the opportunity to students to observe and participate in management operation at University-approved agribusiness firms. A written appraisal of theoretical and/or applied management, economics or business concepts observed during the internship is required. Prerequisite: Senior standing in Agribusiness.

AGBU 471 Seminar II 1 cr.

A term paper with focus on economic, business or management analysis of current issues in agribusiness is required. Prerequisite: Senior standing in Agribusiness.

AGRICULTURAL ECONOMICS

AGECE 213/H Intro. to Agricultural Economics 3 crs.

Students will learn economic concepts, definition and scope of agricultural economics, business organizations in the food and fiber system, factors of production and their

characteristics, market equilibrium analysis, and the role of price elasticities of demand and supply.

AGECE 333/H Agricultural Price Analysis 3 crs.

The course combines economic theory, statistics, and data to describe, understand, and forecast agricultural price relationships and variation in agriculture. Specifically, it covers quantitative techniques developed to determine the factors causing price variation and to measure trend, cyclical, seasonal, and random price variation. Prerequisite: AGECE 213.

AGECE 419 Agricultural Cooperatives 3 crs.

The course reviews basic philosophy, the fundamental principles, objectives, structure, and management of cooperative organizations. It also explains and evaluates the place of cooperatives in the modern economic history and legislations that affect them. Prerequisite: AGECE 213.

AGECE 423/H Marketing Agricultural Products 3 crs.

The course examines the characteristics of the demand for and supply of farm products; alternative marketing channels, services, and costs involved in marketing are explained. The characteristics of cooperatives, what they have tried to do, and what they have done, as well as their special problems in organization, finance and control of their business are also examined. Prerequisite: AGECE 213.

AGECE 433/H International Agricultural Markets, Trade and Development 3 crs.

The course focuses on international trade of agricultural products, including theory trade and monetary flows, national trade policies and world market structures for agricultural products. Impacts of trade on the domestic agricultural sector and the role of trade in agribusiness are also covered. Prerequisite: AGECE 213.

AGECE 443/H Farm Management 3 crs.

Farm management explores farming as a business, including factors affecting profits, size of the business, choice of enterprises, forms of tenure and leases, planning and management of specific farms, and principles and techniques of keeping and interpreting farm records and accounts. Prerequisite: AGECE 213.

AGECE 453/H Agricultural Finance 3 crs.

The course explains agricultural finance in agricultural firms and financial institutions, emphasizing financial reports and analysis, liquidity and risk, use of credit, and other financial alternatives to acquire control of farm resources. The sources of credit and acquisition of capital and decision-making are also explained. Prerequisites: AGECE 213 and ACCT 201.

AGEC 463/H Agricultural Policy 3 crs.
The course explains current policy issues, policy instruments, and choices in U.S. agriculture. Also, it describes the economic characteristics and problems of agriculture, evolution and significance of agricultural policies, the international dimension, and domestic policies that affect agriculture. Prerequisites: AGECE 213 and senior standing.

AGRICULTURE EDUCATION

AGED 313 Supervised Experience Programs 3 crs.
This course is an overview of the job of the agri-science teacher and an examination of agricultural education programs for youth, with special emphasis on supervised experience practicums. Two hours lecture and two hours lab per week.

AGRICULTURAL MECHANIZATION

AGME 283 Engineering Principles Applied to Agriculture 3 crs.
The application of engineering principles to problems in soil and water conservation, agricultural power units, machinery, agricultural electricity, structures, and animal environments will be studied. Material handling and processing of agricultural products will also be covered. Two hours lecture and two hours lab per week.

AGME 313 Agricultural Surveying Technology 4 crs.
In this course engineering principles and theory of surveying, care and use of surveying equipment, measurement of horizontal distances and angles, differential and profile leveling, topographic surveying, mapping, field notes and area measurement computation methods are examined. Two hours lecture and four hours lab per week.

AGME 334 Small Power Equipment Technology 4 crs.
This course examines engineering design and principles of operation, adjustment, maintenance and repair of light horsepower, single cylinder internal combustion engines, with special emphasis on the use of operator's service and repair manuals to determine specifications. Two hours lecture and four hours lab per week.

AGME 344 Agricultural Construction Materials and Procedures 3 crs.
In this course, the selection and use of agricultural building materials, including concrete and masonry, lumber, plywood, finishes, and fasteners and proper safety and use of hand and power tools in agricultural construction will be covered. Two hours lecture and two hours lab per week.

AGME 354 Metal Construction and Maintenance 4 crs.
This course covers the selection and application of ferrous and non-ferrous metals through autogenously welding, cold working and hot working processes in agricultural construction and maintenance. Two hours lecture and four hours lab per week.

AGME 374 Farm Tractor Power 4 crs.
Principles of operation and service and maintenance of spark and compression ignition engines and auxiliary systems including hydraulics, power trains, electrical, and comfort control are covered in this course. Two hours lecture and four hours lab per week.

AGME 384 Agricultural Electrification 4 crs.
The course covers principles of electrical distribution and wiring according to governing codes of single and 3-phase service, and the selection of electrical controls and motors for agricultural application. Two hours lecture and four hours lab per week.

AGME 444 Agricultural Machinery and Power Management 4 crs.
In this course, selection, sizing and operational principles required in the use of agricultural field and farmstead machine systems, cost analysis, and computer techniques are applied to planning and management of agricultural machinery systems. Two hours lecture and four hours lab per week.

AGME 454 Principles of Animal Environment and Structures 4 crs.
Effects of environment on animal production principles of environment control; feed handling systems; waste management alternatives; and planning functional, economical, and environmentally controlled livestock facilities will be explored. Two hours lecture and four hours lab per week.

AGME 490 Pre-Occupational Internship 4 crs.
Students will spend a period of up to 12 weeks with an approved agricultural business firm in their technical specialty, working as directed in management related tasks. Prerequisites: 54 credit hours and permission of instructor.

AGME 499 Special Topics 1-4 crs.
This course requires a written report and an oral presentation of agricultural mechanization related topics. Prerequisite: Permission of instructor.

AGRICULTURE AND NATURAL RESOURCES

AGNR 111 First Year Experience Seminar 1 cr.

This course helps to prepare students for career opportunities, as well as assisting with professional development. It focuses on adjustments needed to succeed in college, study skills and test taking, crisis or stress management, and on understanding the significance of the land-grant system. This course is designed to acquaint students with current trends, pertinent issues, and modern practices associated with the various disciplines in agriculture and natural resources from a global perspective.

Required of all first year students in the Department of Agriculture, this course substitutes for the University-wide 100 level course: First Year Experience Seminar.

AGNR 353 Natural Resources Conservation 3 crs.

Students enrolled in this course are provided the principles of soil, water, sediment, and nutrient conservation and management. Application of the principles of land use, run-off and erosion control, and soil management practices including elements of the universal soil loss equation, are also discussed. Prerequisite: PLSC 184 and PLSC 185 or permission of instructor.

AGNR 483 Principles of Geographic Information Systems 3 crs.

This course is designed to provide students with an overview of the applicability and use of Geographic Information Systems (GIS); students will become competent with ArcView[®], a GIS software package from Environmental Systems Research Institute (ESRI), Inc. Students will also learn the basics of data management, data accuracy, spatial analysis, and data presentation. Prerequisite: Sophomore standing. Two hours lecture and two hours lab per week.

AGRICULTURE

AGRI 301 Agriculture Seminar: Professional Development 1 cr.

This course is an individualized preparation for entry into a professional career in agriculture. The course is to be taken during the spring semester of the junior year. Skills such as resume writing, interviewing for employment, and developing a professional image will be emphasized. The organization of information and the presentation of technical data through oral and written communication skills will be stressed. Prerequisite: ENGL 203 or permission of instructor.

AGRI 483 Recombinant DNA Technology 3 crs.

This is a laboratory course to introduce the basic principles of gene cloning. It gives essential background on working with *E. coli*, utilizes different cloning systems, and employs methods for PCR applications, methods and procedures for DNA sequencing. Prerequisites: Senior standing and permission of instructor.

AGRI 499 Special Topics in Agriculture 3 crs.

Students conduct research with faculty on prearranged topics. Prerequisite: Permission of instructor.

AGRONOMY

AGRN 333 Weed Science 3 crs.

Weed identification, and action of herbicides, physical, biological, chemical and cultural weed control are covered. Safe use, handling and management of pesticides, including preparation for Maryland Certification, will also be emphasized. Two hours lecture and two hours lab per week.

AGRN 413/H Global Agronomic Crops 3 crs.

This course is an in-depth study of major field (cereal, oil and fiber) crops that are grown in temperate, tropical, and sub-tropical environments. Three hours lecture per week.

AGRN 423/H Plant Nutrition and Soil Fertility 3 crs.

This course provides an advanced study of the interrelationships between soil type, mineralogy, pH, soil nutrients, and other nutritional aspects related to plant growth, development and production. The availability and supply of micro and macro nutrients in soil, as affected by the environment, and the use of organic and inorganic fertilizers on plant growth and nutrition will be a major focus. Prerequisites: PLSC 184, PLSC 185 and SOIL 203 or permission of instructor. Cross-listed with AGRN 653.

AGRN 463 Plant Genetics and Breeding 3 crs.

This course deals with principles of plant genetics, cytological and genetic variation in crop plants, production and control of such variation in developing varieties and hybrids, crop improvement using biotechnology, methods of breeding self- and cross pollinated crops, and production and maintenance of high quality seeds. Prerequisite: PLSC 184 or permission of instructor. Three hours lecture per week.

AGRN 499 Independent Study in Plant and Soil Science 1-4 crs.

This course is designed for students with an interest in pursuing independent research topics in the plant and soil sciences. Prerequisite: Permission of instructor.

APPLIED MICROBIOLOGY

AMIC 324 Agricultural Microbiology 4 crs.

Instruction includes lectures and laboratories which apply general principles of microbial ecology, food microbiology, pathogenic microbiology and industrial microbiology as they directly relate to practical applications in the Agricultural Sciences. Prerequisites: BIOL 111, CHEM 111 or permission of instructor. Three hours lecture and three hours lab per week.

ANIMAL AND POULTRY TECHNOLOGY

ANPT 114/H Introduction to Animal Science 4 crs.
This course is an introduction to the interspecies survey of principles through scientific animal production including breeding and genetics, reproduction, nutrition, animal management, and the importance of animal products to consumers. Three hours lecture and three hour lab per week.

ANPT 202 Practicum in Animal and Poultry Science 2 crs.

In this course, students may gain practical management experience by working at the UMES animal facilities through a non-paid contractual agreement. Students may spend time in the aquaculture, swine, poultry and/or ruminant facilities. Prerequisites: Second semester freshman standing and permission of instructor. Course may be repeated, but credit toward graduation will be limited to two credit hours. Two hours lab per week.

ANPT 213/H Introduction to Aquaculture 3 crs.
The course covers an overview of the commercial aquaculture industry including shell and fin fish culture. Basic concepts include water quality management, reproduction, hatchery management, nutrition, disease control, processing, and marketing. Two hours lecture and three hours lab per week.

ANPT 214/H Animal and Avian Physiology 4 crs.
This course involves laboratory and lecture studies of the basic anatomy of mammals and domestic fowl and how this anatomy relates to the physiological functions of tissues, organs and systems. Prerequisite: ANPT 114 or permission of instructor. Three hours lecture and three hours lab per week.

ANPT 223 Introduction to Poultry Technology and Management 3 crs.
The course provides an overview of the poultry industry and how it relates to the human food chain. The basic concepts of poultry breeding, housing, management and production, processing, and marketing will be introduced. Two hours lecture and three hours lab per week.

ANPT 304/H Reproductive Physiology 4 crs.
In this course, students study the fundamental concepts of reproduction, including, comparative physiology, reproductive technologies, and management of domestic animal reproductive performance. Prerequisites: ANPT 114 or permission of instructor. Three hours lecture and two hours lab per week.

ANPT 313/H Introduction to Animal and Avian Nutrition 3 crs.
The fundamental concepts of digestion and metabolism of nutrients by animal and avian species are covered. Nutritional deficiencies and their requirements for various physiological functions are also included. Prerequisites:

ANPT 114, CHEM 111, CHEM 113 or permission of instructor. Three hours lecture per week.

ANPT 399 Internship in the Animal and Poultry Industry 3 crs.

Offered as part of the student's educational training, this course provides practical work experience and familiarizes the student with the operation and management of a commercial animal or poultry business firm. Faculty will aid students in identifying firms; however, placement is not guaranteed. Prerequisite: Permission of instructor. Three hours lab per week.

ANPT 403/NRES 403 Advanced Aquaculture 3 crs.
This course covers the fundamentals of commercial fish and other marine animal production, including basic principles of pond and tank production, management, nutrition and disease control. Two hours lecture and three hours lab per week.

ANPT 413 Advanced Poultry Production and Management 3 crs.

The principles and current practices in hatching egg production, incubation and hatchery management and commercial broiler production are covered in this course. Topics include broiler breeder management, hatching egg incubation, broiler housing systems, ventilation, heating, lighting, feeding, and health care. Practical experience in poultry production practices will be gained by putting classroom instruction into practice through operating the 10,000 bird broiler house on the UMES farm. Prerequisites: ANPT 223 and ANPT 313, or permission of instructor. Two hours lecture and two hours lab per week.

ANPT 423/BIOL 463 Wildlife Management 3 crs.
In this course, students develop an understanding of the principles and practices associated with wildlife management. Emphasis is placed on research design, sampling techniques, and field research. Students practice field techniques, analyze results, and develop management recommendations as part of semester projects. Two hours lecture and three hours lab per week.

ANPT 424/H Animal and Avian Health and Diseases 4 crs.

Students study parasitic, viral, bacterial and protozoal diseases of mammalian and avian species. Methods of disease prevention, control and eradication are also discussed. Prerequisites: ANPT 214/H or permission of instructor. Three hours lecture and three hours lab per week.

ANPT 433 Livestock Production 3 crs.
Ruminant animal production including breeding and selection, reproduction, nutrition, management production systems, herd health, ruminant wildlife and related technologies will be discussed. Two hours lecture and two hours lab per week.

ANPT 443 Horse Production 3 crs.
Principles and applied practices of horse production, with emphasis on management, nutrition, health care, genetics and physiology are emphasized in this course. Prerequisites: ANPT 114 or permission of instructor (offered in odd-numbered years). Two hours lecture and three hours lab per week.

ANPT 463 Dairy Production 3 crs.
Applied dairy science with emphasis on genetics, nutrition and feeding, lactation, physiology and management, and marketing systems for dairy products are topics covered in this course. Prerequisites: ANPT 114 or permission of instructor (offered even-numbered years). Two hours lecture and three hours lab per week.

ANPT 473 Swine Production 3 crs.
Modern, applied aspects of swine production are covered, including breeding and selection, reproduction and artificial insemination, nutrition and feeding, environmental aspects of housing and management, production systems, herd health, and pork products and their value in the human diet. Prerequisites: ANPT 114 or permission of instructor. Two hours lecture and three hours lab per week.

ANPT 499 Special Topics in Animal and Poultry Science 1-5 crs.
This course includes individualized research and study of a problem in the student's area of interest done in cooperation with an ANPT faculty member. Prerequisite: Permission of instructor. Lab.

ECONOMICS

ECON 201/H Principles of Economics I 3 crs.
Students learn the principles of economic analysis, economic institutions, and issues of public policy. The emphasis is on aggregate economics, covering national income analysis, money and banking, business cycles, and economic stabilization. Prerequisite: MATH 102 or higher.

ECON 202/H Principles of Economics II 3 crs.
Students learn the principles of economic analysis and institutions and issues of public policy. Topics covered include production, market models, the allocation of resources, the distribution of income through the price system (micro analysis), and international economics. Prerequisite: MATH 102 or higher.

ECON 300/H Intermediate Micro Economic Theory 3 crs.
Students learn the general principles and analytical tools of price theory. Topics include an analysis of consumer behavior, business firms, and industry and factor markets. Prerequisites: ECON 201 and ECON 202.

ECON 301 Intermediate Macro Economic Theory 3 crs.
This course includes analysis of the determination of national income, employment, and price levels from the viewpoints of classical, Keynesian, neo-classical and neo-Keynesian economists. Key topics include consumption, investment, inflation, and monetary and fiscal policies. Prerequisites: ECON 201 and ECON 202.

ECON 302/H Money and Banking 3 crs.
This course explores the role of money, credit and the banking system in the United States. The growth of the commercial bank is traced from the colonial times to the present. Topics included are demand deposit, bank investments, Federal Reserve System, and monetary and fiscal policies. Prerequisites: ECON 201 and ECON 202.

ECON 303 Labor Economics 3 crs.
This course includes a study of the labor force in the United States with special reference to employment, wage structure, and historical and social background of trade unionism and labor legislature. Prerequisites: ECON 201 and ECON 202.

ECON 304 The Economics of Black America 3 crs.
This course includes survey and analysis of economic conditions of Black people in the United States from 1906 to present. Topics covered include Black land ownership, income, education, wages, mobility, businesses, employment welfare, discrimination, the Civil Rights Act of 1964, the impact of Federal economic policy on Blacks, and the historical factors which shaped them. Prerequisites: ECON 201 and ECON 202.

ECON 401 Interpretative Analysis of Economic Theories 3 crs.
Students do an in-depth study of basic economic concepts and theories which will be applied to understanding current economics policies and issues. Topics in general include monetary policy, fiscal policy, the public debt, income distribution, black economic development, collective bargaining various marketing structures, international trade, alternative economic systems, and the less developed countries. Prerequisites: ECON 201 and ECON 202.

ECON 402 Economics of Development 3 crs.
This course involves a study of the economic factors involved in the development of an economy. Particular emphasis is placed upon the capital accumulation in economies at various stages of economic growth. The economic problems of the developing areas of the world are examined. Prerequisites: ECON 201 and ECON 202.

ECON 403 Economics of Public Finance 3 crs.
The course involves a study of principles and practices of taxation and public expenditure. Topics include economic effects of public spending and debts, taxation, financing social security and other services, fiscal and monetary policies and their relation to inflation and social problems. Prerequisites: ECON 201 and ECON 202.

ECON 404 International Economics 3 crs.
Students study international economic problems, policies and processes. Topics covered include foreign trade, the balance of payments, exchange rate and exchange controls, international economic organization, the relationship between domestic and international economic organization, and the relationship between domestic and international economic policies. Prerequisites: ECON 201 and ECON 202.

ECON 480 Directed Independent Study in Economics 3 crs.

This course is designed to upgrade knowledge in a specialized area of study determined by deficiencies or projected area of growth and plans for further studies. It will be structured to meet the needs of the students taking the course. The enrolled student will be assigned to a faculty member with whom he will work out a specific plan of study. The course will be similar to tutorials in structure. The student will have the primary responsibility of completing the assignments. Credit hours may vary in accordance with the need and amount of work assigned. Prerequisite: Senior standing and permission of instructor.

ECON 490 Senior Seminar in Economics 3 crs.
This course offers students the opportunity for individualized, in-depth study with presentation to and criticism by peers. Topics of current interest will be announced before registration. Prerequisite: Senior standing.

ENTOMOLOGY

ENTO 313 General and Applied Entomology 3 crs.
This course consists of lectures and laboratory exercises that focus on biology, taxonomy, and management of insects. The fundamentals of integrated pest management will also be covered.

FOOD SCIENCE AND TECHNOLOGY

FDST 493 Food Chemistry 3 crs.
This course explores the chemistry of food components including water, carbohydrates, lipids, proteins, vitamins, and minerals, as well as additives, including preservatives, colorants, flavors, antioxidants and sweeteners. Functionality and interaction of components and their importance to quality and wholesomeness of foods will be discussed. Prerequisites: CHEM 212 or permission of instructor.

HORTICULTURE

HORT 203 Intro. to Horticultural Science 3 crs.
This course is designed to introduce the scientific principles and practices of horticulture as a scientific discipline. Plant relationships, structure, growth and development, as well as

the artistic aspects will be discussed. The course is divided into three sections: 1) basic concepts and processes in plant science, 2) general managerial practices of horticultural crops, and 3) discussions of current topics in horticulture.

HORT 313 Floriculture and Ornamental Horticulture 3 crs.

This course is an introduction to the concepts of ornamental plant production and floral design. It includes production, propagation, harvesting and marketing of ornamental plants. Previously listed as HORT 312. Two hours lecture and two hours lab per week.

HORT 333 Landscape Design Theory 3 crs.

Students learn theory and principles of design, role of the environment in selecting plants and landscape materials, and basic graphic elements. Two hours lecture and three hours lab per week.

HORT 353 Turf Mgmt. and Maintenance 3 crs.

In this course, students learn to identify, select, establish and manage turf for commercial, recreational and residential use. Management factors such as renovation, drainage, irrigation, fertility, pest and disease control, as well as mowing and other maintenance procedures will be covered. Prerequisites: PLSC 184, PLSC 185 and SOIL 203 or permission of instructor. Two hours lecture and two hours lab per week.

HORT 383 Horticultural Therapy 3 crs.

This course addresses the therapeutic role and application of horticulture to individuals, it includes therapy and rehabilitation of the physically, emotionally and mentally challenged individuals. Prerequisites: PLSC 184 and PLSC 185 or permission of instructor.

HORT 423 Horticultural Crops 3 crs.

This course presents the scientific aspects of commercial fruit and vegetable production. Principles of economics and practices in the global marketing of vegetables, fruits and nuts are discussed in relation to the maintenance of a safe food supply. General aspects of regional vegetables and fruits are given special emphasis for the Delmarva Peninsula. Prerequisite: HORT 203 or permission of instructor. Two hours lecture and two hours lab per week.

HORT 463 Plant Tissue Culture 3 crs.

This course explores the principles and methods for *in vitro* culture and propagation of important horticultural and agronomic crops. Prerequisites: PLSC 184 and PLSC 185 or permission of instructor. Two hours lecture and two hours lab per week.

NATURAL RESOURCES

NRES 403/ANPT 403 Advanced Aquaculture 3 crs.
This course covers the fundamentals of commercial fish and other marine animal production, including basic principles of pond and tank production, management, nutrition and disease control.

NRES 404 Conservation Biology 3 crs.
The course is an introduction to the principles of conservation biology, with an emphasis on application of ecological principles, management tools and case history studies related to conservation issues. **Prerequisite: BIOL 402 or equivalent. Cross-listed with BIOL 404.**

NRES 473 Ornithology 3 crs.
This course covers general biology, taxonomy, and natural history of birds, with an emphasis on North American families. Cross-listed with NRES 673. Prerequisites: BIOL 402 or equivalent. Cross-listed with BIOL 404.

PLANT AND SOIL SCIENCE

PLSC 184/H Introduction to Plant Science 3 crs.
This course provides an introduction to fundamental biological principles as they relate to plant growth, reproduction and development, interaction of plants with their environment, and importance of plants to society, with specific reference to the role of plants in Maryland's economy. Impact of crop production practices on other natural resources will also be discussed.

PLSC 185 Introduction to Plant Science Lab 1 cr.
This course deals with laboratory and field studies of plants, and related processes, including photosynthesis, nitrogen fixation, reproduction, classification, genetic variability, weed control and tillage practices. Co-requisite: PLSC 184.

PLSC 283 Agriculture and the Environment 3 crs.
This course examines the impact of agricultural practices on humans and our natural resources. Emphasis is placed on providing and maintaining an adequate food supply while protecting the environment.

PLSC 474/H Plant Pathology 4 crs.
This course examines causes of diseases in agronomic and horticultural crops, to include symptom and sign recognition, isolation, and enumeration and management of diseases in the landscape and field crops. Lab exercises include preparation of a journal-type manuscript based on an individual research project. Prerequisites: PLSC 184 and PLSC 185 or permission of instructor. Cross-listed with PLSC 674. Three hours lecture and three hours lab per week.

PLSC 484 Internship in Agriculture and Natural Resources 3-6 crs.
This course involves supervised work experience in an approved setting that is planned with a business, university, or government agency. A faculty advisor must pre-approve the internship opportunity. Prerequisite: Permission of instructor.

SOIL SCIENCE

SOIL 203 Introduction to Soil Science 3 crs.
This course engages students in a study of soil forming minerals, weathering, soil physical properties, organic matter mineralization, and soil chemistry and the impact of these factors on soil fertility, moisture holding ability, and pH. Prerequisites: CHEM 111 and CHEM 113 or permission of instructor. Two hours lecture and two hours lab per week.

SOIL 443 Soil Chemistry 3 crs.
This course provides students with knowledge of the chemical composition and formation of soils, cation and anion exchange, soil acidity, soil alkalinity, soil salinity, soil conditions, and soil fixation of nutrients. Chemical methods of soil analysis are studied with emphasis on *their* relation to fertilizer requirements. Prerequisites: CHEM 112, CHEM 114 and SOIL 203.

Honors Courses: Students will be given more assignments, take home problems, term papers, and exams and quizzes than regular students.

FACULTY

Allen, Arthur L.

Associate Professor, 1890 Associate Research Director
B.S., University of Arkansas at Pine Bluff
M.S., Oklahoma State University
Ph.D., University of Illinois-Urbana

Canter, Earle M.

Farm Manager
B.S., University of Maryland

Cotton, Corrie P.

Research Assistant Professor
B.S., University of Maryland Eastern Shore
BLA, MLA, The Pennsylvania State University

Dadson, Robert B.

Professor
B.S., University of London
M.S., Ph.D., McGill University

Demissie, Ejigou

Professor
B.S., M.S., Ph.D., Oklahoma State University

Handwerker, Thomas

Associate Professor
B.S., University of Tennessee
M.S., Ph.D., Cornell University

Harter-Dennis, Jeannine

Associate Professor
B.S., M.S., Ph.D., University of Illinois

Hashem, Fawzy

Research Associate
B.S., University of Ain Shams
M.S., Ph.D., University of Cairo
Ph.D., University of Maryland College Park

Heath, George

Associate Professor
B.S., Virginia State University
M.S., Ph.D., University of Minnesota
DVM., Tuskegee University
gehealth@umes.edu

Javaid, Iqbal

Research Associate
B.S., M.S., University of Peshawar
M.S., University of Reading
Ph.D., Zambia

Marsh, Lurline E.

Chair and Professor
B.S., University of the West Indies
M.S., Tuskegee University
Ph.D., University of Minnesota

Mollett, Theodore A.

Associate Professor
B.S., Oregon State University
M.S., Ph.D., Purdue University

Nzeogwu, Okeleke

Associate Professor
B.S., M.B.A., M.S., Ph.D., University of Missouri-Columbia

Parveen, Salina

Assistant Professor
B.S., M.S., University of Dhaka
Ph.D., University of Florida

Schwarz, Jurgen

Associate Professor, Departments of Agriculture and Human Ecology
B.S., M.S., University of Hohenheim
Ph.D., Cornell University

Shorter, George

Assistant Professor
B.S., Maryland State College
M.S., Virginia State College
Ph.D., Iowa State University

Suvanich, Voranuch

Assistant Professor
B.S., Mahidol University
M.S., Kasetsart University
Ph.D., Mississippi State University

Whitley, Niki

Associate Professor
B.S., M.S., University of Georgia
Ph.D., Mississippi State University

Yoon, Ki Sun

Research Assistant Professor
B.S., Kyung Hee University
M.S., Ph.D., University of Rhode Island

DEPARTMENT OF HUMAN ECOLOGY

Dean

Carolyn B. Brooks, Ph.D.

Chair and Professor

Shirley Hymon-Parker, Ph.D.

Professor

Anugrah Shaw, Ph.D.

Associate Professors

Jurgen Schwarz, Ph.D.

Missale Kumelachew, Ph.D.

Assistant Professors

Nina Lyon Jenkins, Ph.D.

Salina Parveen, Ph.D.

Voranuch Suvanich, Ph.D.

Lecturers

Donna Long, M.S.

Donna Satterlee, M.Ed.

Research Associate Professor

Kisun Yoon, Ph.D.

DESCRIPTION OF PROGRAMS

The department offers an undergraduate degree in Human Ecology with options in the following areas:

Child Development

Dietetics

Family and Consumer Sciences

Family and Consumer Sciences Education

Fashion Merchandising

- Honors Fashion Merchandising
- Advertising & Marketing Communications (FIT)
- Nutrition

Child Development. The program in Child Development provides a broad interdisciplinary background in the area of children and families. It prepares students to work with and/or teach others to work with children and their families. Emphases are given to development within various family structures and to strategies for facilitating normal development. Students learn basic and applied concepts of human development and acquire skills in working with young children of varying abilities and backgrounds and with their families in a variety of settings. In addition to classroom instruction, the Child Development students spend part of several semesters working in the campus Child and Family Development Center and in off-campus social and human service agencies. Potential employment opportunities include private child care facilities, hospital and clinic settings, recreation programs, health and social service agencies, and businesses. Students choosing this option can broaden their career possibilities by completing courses in cognate areas such as business, recreation, or nutrition that complement the training in Child Development. In addition, successful completion of the Child Development program provides excellent preparation for graduate studies.

The University of Maryland Eastern Shore and Wor-Wic Community College have an articulation agreement that facilitates the transfer of Early Childhood Education students from Wor-Wic Community College to UMES for the purpose of entering the bachelor's degree program in Human Ecology - Child Development.

MISSION

The mission of the Department of Human Ecology is to prepare students for careers, graduate study and leadership roles in Fashion Merchandising, Child Development, Family and Consumer Sciences, and Food and Nutrition. The department challenges faculty and students to make contributions that will enhance the quality of life of individuals and families in diverse societies. Our focus is to empower individuals to cope with change, explore new technologies, and manage resources wisely.

The philosophical tenets and programmatic focus remain central to the mission of the 1890-land grant university. This mission is carried out through teaching, research and community service.

GOALS

- To establish and promote high academic standards and performance.
- To provide career development opportunities for students, faculty and staff.
- To strengthen and expand research and community service programs.
- To increase enrollment and graduation rates.

Dietetics. The curriculum in Dietetics is approved by the Commission on Accreditation for Dietetic Education (CADE) American Dietetic Association. The course offerings are sequenced to provide experiences that become increasingly complex and build upon previous knowledge and experiences. Supporting courses are selected to provide prerequisite knowledge for professional courses. Students combine classroom experience with clinical and field experiences and are required to complete a minimum of 160 clock hours of practicum at approved facilities. Additional related field experience is recommended.

Program graduates are eligible to apply for Dietetic Internship programs and, upon successful completion of the internship, are qualified to write the dietetic registration examination. Registered dietitians are employed by industry, public health services, hospitals, food and health services, and other local, state, national and international agencies in research and educational programs.

Family and Consumer Sciences. The Family and Consumer Sciences program is designed to provide the student with an interdisciplinary perspective for professional work with families and consumers. Students develop a comprehensive educational background while focusing on a specific interest. Graduates of the Family and Consumer Sciences program will be prepared to work in either the public or private sector that serves families and consumers. Students may select a minor or choose free electives to strengthen their general education core and required course work. Early advisement is highly recommended.

Family and Consumer Sciences Education. The Family and Consumer Sciences Education Program provides educational opportunities designed to fulfill the needs of society in general and the State of Maryland in particular for FCS teachers. The program (1) offers a hands-on experience, performance-based program that will prepare prospective FCS teachers with the knowledge and skills needed to address some of life's most difficult tasks; and (2) enhances the quality of life for individuals and families in regard to resource management; living environments; individual, child and family development; nutrition and food; and textiles at the secondary level. The knowledge, skills, and processes acquired through Family and Consumer Sciences Education are applicable to the management of personal and family lives as well as work responsibilities. **Students applying for admission to the Professional Teacher Education Program will be required to meet the following criteria by the time they wish to enroll in the professional education classes:**

- Complete an application for formal admission to the Professional Program during the semester prior to entrance into content methods courses.

- Complete a minimum of 60 credits, including transfer hours, with an overall grade point average of 2.75 or better. The 60 hours must include EDCI 200, EDSP 200, ENGL 101, 102, 203, and 305; PSYC 200; science, social science, and math credits with grades of C or better in each course.
- Complete and pass PRAXIS I tests in Reading, Writing, and Mathematics and PRAXIS II.
- Obtain the signatures of two (2) faculty members, outside of the Department of Education who have instructed them prior to application for admission and can recommend the student for the program.
- Receive approval of the written application by the advisor.

Fashion Merchandising. The Fashion Merchandising program is designed to prepare students for entry level management positions in the broad field of fashion merchandising, with emphasis on the retail products and services. It includes a minor in business administration, as well as an internship in Fashion Merchandising or related areas. In addition, the department participates in the Fashion Institute of Technology Visiting Student Program (located in New York City). Fashion Merchandising majors who meet eligibility requirements may opt to spend one year (junior year) at FIT for an additional degree (A.A.S.) in Advertising and Marketing Communications. Students return to UMES to complete the four-year program and receive both degrees at graduation. To complement their program, students may opt to complete electives that focus on advertising, journalism, communication, or visual presentation. With appropriate courses taken as electives, students can pursue careers in fashion reporting, advertising, or graphic design.

Nutrition. The program allows students to select certain courses in accordance with their interests. Teaching and research efforts are focused on the basic sciences of nutrition and foods and the application of knowledge in these disciplines to the maintenance of health and well being of human beings throughout the lifespan. Potential employment opportunities include research positions in laboratories, hospitals and industry. This program meets the needs of students who want to continue with their graduate work; it provides students a strong foundation for graduate studies in human nutrition and related fields, such as public health.

RESEARCH

Faculty in the Department of Human Ecology are currently involved in the following research activities: 1) Nutrition & health promotion; 2) Protective clothing for pesticide users; 3) Microbiological safety of refrigerated and frozen food; 4) Texture, structure (TEM) and sensory evaluation of food.

PROGRAM REQUIREMENT

Department of Human Ecology programs require that all students maintain a "C" in each course in their Program Core and Program Electives and a "C" average in General Education and Supportive Course Requirements. Individual programs may choose specific courses to fulfill General Education requirements.

ALTERNATIVE CREDITS

Beginning Fall 2005, all students who enroll in degree programs will be required to complete 12 alternative credits before graduating. Alternative credits can be earned by completing internships, summer and winter session courses, on-line courses, and courses completed while studying abroad.

HUMAN ECOLOGY
Required and Recommended Course Sequence

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 41-43 Credits

Students should consult with freshman or departmental advisor when making course selections.

A. Curriculum Area I - (Arts and Humanities)¹ 9 Credits

Course No.	Title	Credits
------------	-------	---------

Students must select ENGL 203 plus two additional courses:

ART:	ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY:	HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360,
LANGUAGES:	FREN 101 or FREN 102, SPAN 101 or SPAN 102,
LITERATURE:	ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 324, ENGL 327, ENGL 328/H, ENGL 329/H, ENGL 401

B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits

Course No.	Title	Credits
PSYC 200	Introduction to Psychology	3
SOCI 101	Introduction to Sociology	3

C. Curriculum Area III - (Biological and Physical Sciences)^{2,3} 7-8 Credits

Course No.	Title	Credits
------------	-------	---------

Students must select two science courses and, if appropriate, the related laboratories:

ANSC 114, BIOL 101, BIOL 103 (Lab.), BIOL 111, BIOL 112, CHEM 101, CHEM 102, CHEM 103 (Lab.), CHEM 104 (Lab.), CHEM 111C, ENVS 101, PHYS 101, PHYS 101, PHYS 103 (Lab.), PHYS 102, PHYS 161, PHYS 181H, PHYS 182H, PHYS 263, PLSC 184

D. Curriculum Area IV - (Mathematics)³ 3-4 Credits

Course No.	Title	Credits
MATH 109	College Algebra <u>or</u>	3
MATH 110	Trigonometry and Analytic Geometry <u>or</u>	3
MATH 111H	Honors Elementary Mathematical Analysis <u>or</u>	4
MATH 112	Calculus I	4

E. Curriculum Area V - (English Composition)¹ 9 Credits

Course No.	Title	Credits
ENGL 101	Basic Composition I	3
ENGL 102	Basic Composition II	3
ENGL 305/W	Technical Writing ⁵	3

¹ Honors students substitute Honors courses

² Consult advisor when selecting these courses; Child Development students take MATH 102 or higher

³ Dietetics and Nutrition students take BIOL 111 and 113 and BIOL 231 and 233; Child Development students take BIOL 101 and BIOL 103

⁴ FIT option students take AC 341 at FIT instead of ENGL 305/305W

⁵ Fashion Merchandising students complete BUAD 304; Dietetics and Nutrition students complete a second math course (MATH 210); Child Development and Family & Consumer Sciences students take HUEC 230.

⁶ Dietetics students substitute NUDT 475 (4 credits); Nutrition students substitute NUDT 484 (5 credits); FIT option students substitute IC 291 for HUEC 399 & 400; Child Development majors complete HUEC 400 for 5 credits for a total of 12 core credits; FCS Education majors complete EDCI 480 and 490 as part of Professional Education courses.

F. Curriculum Area VI (Emerging Issues) 7 Credits

Course No.	Title	Credits
EDHE 111	Personalized Health & Fitness	3
HUEC 100	First Year Experience Seminar	1
	Select one course from: BUAD 304, HUEC 230, MATH 210 ⁵	3

II. Department of Human Ecology - Core Courses 9-12 Credits

Course No.	Title	Credits
HUEC 370	Professional Development	2
HUEC 400	Internship (including HUEC 399 and HUEC 409) ⁷	4-5
HUEC 464	Social Psychology of Food, Clothing and Shelter	3

MAJOR PROGRAMS

CHILD DEVELOPMENT OPTION

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 41^{2,3,5*} Credits

Students should consult with freshman or departmental advisor when making course selections.

II. Core Curriculum **12 Credits**⁶

III. Professional Courses **47 Credits**

Course No.	Title	Credits
CHDE 220	Foundations of Early Childhood Education	3
CHDE 222	Infant/Child Development & Learning	3
CHDE 224	Emerging Language and Literacy	3
CHDE 323	Creative Activities for Young Children	3
CHDE 325	Special Needs in Early Childhood	3
CHDE 327	Curriculum & Instruction for Infants & Toddlers	3
CHDE 330	Observing & Interpreting Behavior of Young Children	3
CHDE 332	Curriculum & Instruction for Preschool Children	3
CHDE 427	Partnerships	3
CHDE 430	Supervision & Administration of Early Childhood Programs	3
CHDE 440	School Age Programming	3
HUEC 203	Human Development: A Lifespan Perspective	3
HUEC 361	Contemporary Family Issues	3
HUEC 450	Human Development Practicum	5
NUDT 214	Infant & Child Nutrition	3

IV. Support Courses **20 Credits**

Course No.	Title	Credits
BUAD 213	Business Software Applications or	3
BUED 212	Computer Concepts and Applications I or	3
HUEC 474	Research Methodology II	2
	Approved Electives**	15

****Consult advisor for approved list of electives**

Note: HUEC 400 (5 credits) and HUEC 450 (5 credits) meet the Out-of-Class Experience. Consult your advisor to select 2 additional credits to meet the 12 credit hour requirement.

TOTAL PROGRAM REQUIREMENTS

120

**CHILD DEVELOPMENT
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	101	Theory & Aps. of Bio Sciences	3
BIOL	103	Biology Lab	1
EDHE	111	Personalized Health & Fitness	3
ENGL	101	Basic Composition I	3
		GER CURR. AREA I	3
HUEC	100	First Year Experience Seminar	1
SOCI	101	Intro. to Sociology	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
ENGL	102	Basic Composition II	3
MATH	102	Applications of College Math or Higher	3
PSYC	200	Introduction to Psychology	3
		GER CURR. AREA I	3
HUEC	230	Multicultural Perspective on Families in the U.S.	<u>3</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
HUEC	203	Human Development: A Lifespan Perspective	3
CHDE	222	Infant/Child Dev. & Learning	3
CHDE	224	Emerging Language & Literacy	3
ENGL	203	Fund. Of Contemporary Speech	3
NUDT	214	Infant & Child Nutrition	3
Semester Total			15

SPRING SEMESTER			HOURS
BUAD	213	Bus. Software Applications or	
BUED	212	Comp. Concepts & Appl. I	3
CHDE	220	Found. of Early Child. Ed.	3
ENGL	305	Technical Writing	3
		GER CURR. AREA III	3
		Elective	<u>3</u>
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
CHDE	323	Creat. Actv. for Young Children	3
CHDE	327	Curr. & Instr. for Inf./Toddler	3
CHDE	330	Observ. & Interpreting Behavior of Young Children	3
HUEC	370	Professional Development	2
		Elective	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
CHDE	325	Special Needs in Early Childhd.	3
CHDE	332	Curr. & Instr. for Presch. Child.	3
HUEC	361	Contemporary Family Issues	3
HUEC	399	Pre-Internship Seminar	1
HUEC	464	Social Psychology of Food, Clothing & Shelter	3
		Elective	3
Semester Total			16

SENIOR YEAR

FALL SEMESTER			HOURS
CHDE	427	Partnerships	3
CHDE	430	Supervision & Adm. of Early Childhood Program	3
CHDE	440	School Age Programming	3
		Elective	6
HUEC	474	Research Methodology	<u>2</u>
Semester Total			17

SPRING SEMESTER			HOURS
HUEC	400	Internship	5
HUEC	409	Post-Internship Seminar	1
HUEC	450	Human Development Practicum	<u>5</u>
Semester Total			11

Total Credits Required 120

CHILD DEVELOPMENT 2+2 OPTION
Articulated Program with Wor-Wic Community College (WWCC)
Required and Recommended Course Sequence

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 42^{2,3,5}(T) Credits

Students should consult with freshman or departmental advisor when making course selections.

II. Core Curriculum 12 Credits⁶

III. Professional Courses 47 Credits

Course No.	Title	Credits
CHDE 220	Foundations of Early Childhood Education	3 (T)
CHDE 222	Infant/Child Development and Learning	3 (T)
CHDE 224	Emerging Language and Literacy	3 (T)
CHDE 323	Creative Activities for Young Children	3
CHDE 325	Special Needs in Early Childhood	3
CHDE 327	Curriculum and Instruction for Infants and Toddlers	3
CHDE 330	Observing and Interpretation Behavior in Young Children	3
CHDE 332	Curriculum and Instruction for Preschool Children	3
CHDE 427	Partnerships	3
CHDE 430	Supervision and Administration of Early Childhood Programs	3
CHDE 440	School Age Programming	3
HUEC 203	Human Development: A Lifespan Perspective	3
HUEC 361	Contemporary Family Issues	3
HUEC 450	Human Development Practicum	5
NUDT 214	Infant and Child Nutrition	3

IV. Support Courses (18 to 20 credits transferred WWCC) 20 Credits

Course No.	Title	Credits
BUAD 213	Business Software Applications or	3
BUED 212	Computer Concepts and Applications I or	3 (T)
HUEC 474	Research Methodology II	2
	Approved Electives**	15 (T)

**Consult advisor for approved list of electives

TOTAL PROGRAM REQUIREMENTS 121

CHILD DEVELOPMENT 2+2
Articulated Program with Wor-Wic Community College
Recommended Course Sequence

FRESHMAN YEAR (AT WOR-WIC)

FALL SEMESTER			HOURS
CMP	101	Intro. to Information Systems	3
EDU	101	Intro. to Early Childhood Educ.	3
EDU	102	Child Development	3
EDU	103	Preschool Child Care	3
ENG	101	Fundamentals of English I	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
CDV	101	Career Development	1
EDU	151	Infant and Toddler Care	3
EDU	152	School-Age Group Child Care	3
EDU	153	Child Health, Safety & Nutrition	3
ENG	151	Fundamentals of English II	3
PSY	101	Introduction to Psychology	<u>3</u>
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIO	101	Fundamentals of Biology	4
EDU	201	Foundations of Reading	3
EDU	260	Related Field Experience	3
PSY	205	Child Guidance and Group Mgt.	3
SPH	101	Fund. of Oral Communication	<u>3</u>
Semester Total			16

SPRING SEMESTER			HOURS
EDU	251	Introduction to Special Education	3
EDU	252	Family and Community Relations	3
EDU	261	Related Field Experience	3
MTH	103	Fundamental Concepts I	3
SCI	ELE	Physical Science Elective	<u>4</u>
Semester Total			16

Total WWCC Credits Hours 63

JUNIOR YEAR (AT UMES)

FALL SEMESTER			HOURS
CHDE	323	Crea. Activ. for Young Children	3
CHDE	327**	Curr. & Instr. for Inf./Todd.	3
CHDE	330	Observ. & Interpreting Behavior of Young Children	3
HUEC	203	Human Development: A Lifespan Perspective	3
SOCI	101#	Introduction to Sociology	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHDE	325	Spcl Needs in Early Childhood	3
CHDE	332**	Curr. & Instr. for Presch. Child.	3
HUEC	230	Multicultural Perspective of Families in the U.S.	3
HUEC	361	Contemporary Family Issues	3
HUEC	399	Pre-Internship Seminar	1
HUEC	464	Social Psychology of Food, Clothing & Shelter	<u>3</u>
Semester Total			16

SENIOR YEAR

FALL SEMESTER			HOURS
CHDE	427**	Partnerships	3
CHDE	430	Supervision & Adm. of Early Childhood Program	3
CHDE	440	School Age Programming	3
ENGL	305	Technical Writing	3
HUEC	370	Professional Development	2
HUEC	474	Research Methodology	<u>2</u>
Semester Total			16

SPRING SEMESTER			HOURS
EDHE	111	Personalized Health & Fitness	3
HUEC	400	Internship	5
HUEC	409	Post-Internship Seminar	1
HUEC	450	Human Development Practicum	<u>5</u>
Semester Total			14

Total UMES Credit Hours 61

Total Credits Required 124

Students enrolled in Wor-Wic Community College Early Childhood Education Associate of Applied Science Program (AAS) can transfer to UMES for completion of the bachelor's degree in Human Ecology - Child Development, following completion of the AAS program. A maximum of 60 credits of successful community college study can be transferred to UMES.

** Wor-Wic transfer students may earn credit for these courses through departmental challenge examination at UMES.

Students are encouraged to take prior to fall enrollment at UMES.

DIETETICS OPTION
Required and Recommended Course Sequence

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 42^{3,5} Credits

Students should consult with freshman or departmental advisor when making course selections.

II. Core Curriculum 9 Credits⁶

III. Professional Courses 36 Credits

Course No.	Title	Credits
NUDT 210	Elements of Nutrition	3
NUDT 211	Scientific Principles of Food I	3
NUDT 212	Scientific Principles of Food II	3
NUDT 300	Essentials of Nutrition Practice	1
NUDT 305	Nutrition in the Life Cycle	3
NUDT 310	Nutrition Education and Counseling	3
NUDT 391	Nutritional Science I	3
NUDT 392	Nutritional Science II	3
NUDT 401	Clinical Nutrition I	3
NUDT 402	Clinical Nutrition II	3
NUDT 471	Foodservice Systems Management	5
NUDT 473	Community Nutrition	3

Chemistry Minor 20 Credits

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry I Lab	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry II Lab	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 213	Fundamentals of Organic Chemistry I Lab	1
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry II Lab	1
CHEM 341	Biochemistry I	3
CHEM 343	Biochemistry I Lab	1

IV. Support Courses 13 Credits

Course No.	Title	Credits
AMIC 324	Agricultural Microbiology	4
BIOL 232	Human Anatomy and Physiology II and	3
BIOL 234	Human Anatomy and Physiology II Lab or	1
BIOL 301	Microbiology and	3
BIOL 303	Microbiology Lab	1
HUEC 474	Research Methodology	2
HUEC 487	Supervisory Management	3

Students who enroll beginning Fall 2005, must include a minimum of 12 credits of Out-of-Class Experiences for credit.

Note: NUDT 471 (2 credits field experience) and NUDT 475 (4 credits) meets the Out-of-Class Experience. Consult your advisor to select 6 additional credits to meet the 12 credit hours requirement.

TOTAL PROGRAM REQUIREMENTS 120

DIETETICS
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
ENGL	101	Basic Composition I	3
MATH	109	College Algebra or higher	3
CHEM	111	Principles of Chemistry I	3
CHEM	112	Principles of Chemistry I Lab	1
SOCI	101	Intro. to Sociology	3
HUEC	100	First Year Experience Seminar	<u>1</u>
Semester Total			14

SPRING SEMESTER			HOURS
BIOL	188A	Intro to Biology-Allied Hlth Majr.	3
BIOL	188	Intro. to Biology Lab -Allied Hlth Major	1
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
EDHE	111	Personalized Health & Fitness	<u>3</u>
ENGL	102	Basic Composition II	3
NUDT	210	Elements of Nutrition	3
Semester Total			17

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL	231	Human Anatomy & Physio. I	3
BIOL	233	Human Anatomy & Physio I Lab	1
CHEM	211	Fund. of Organic Chem. I	3
CHEM	213	Fund of Organic Chem. I Lab	1
ENGL	203	Fundamentals of Speech	3
NUDT	211	Scientific Prin. of Food I	3
		GER CURR. AREA I	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
BIOL	232	Human Anatomy & Physio. II	3
BIOL	234	Human Anatomy & Physio II Lab	1
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund of Organic Chem. II Lab	1
PSYC	200	Intro. to Psychology	3
NUDT	212	Scientific Prin. of Food II	3
NUDT	305	Nutrition in the Life Cycle	<u>3</u>
Semester Total			17

JUNIOR YEAR

FALL SEMESTER			HOURS
CHEM	341	Biochemistry	3
CHEM	343	Biochemistry Lab I	1
HUEC	370	Professional Development	2
NUDT	300	Essentials of Nutrition Prac.	1
NUDT	310	Nutrition Ed. & Counseling	3
NUDT	391	Nutritional Sciences I	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
ENGL	305	Technical Writing	3
MATH	210	Elementary Statistics	3
NUDT	392	Nutritional Sciences II	3
NUDT	401	Clinical Nutrition I	3
		GER CURR. AREA I	<u>3</u>
Semester Total			15

SENIOR YEAR

FALL SEMESTER			HOURS
AMIC	324	Agricultural Microbiology <u>or</u>	
BIOL	301	Microbiology and	3
BIOL	303	Microbiology Lab	1
HUEC	474	Research Methodology	2
NUDT	402	Clinical Nutrition	3
NUDT	471	Foodservice Sys. Mgmt.	3
NUDT	472	Foodservice Mngt. Lab	<u>2</u>
Semester Total			14

SPRING SEMESTER			HOURS
HUEC	464	Social Psychology of Food, Clothing & Shelter	3
HUEC	487	Supervisory Management	3
NUDT	473	Community Nutrition	3
NUDT	475	Senior Practicum	4
Semester Total			13

Total Credits Required 120

**FAMILY AND CONSUMER SCIENCES OPTION
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 41⁵ Credits

Students should consult with freshman or departmental advisor when making course selections.

II. Core Curriculum 10 Credits

III. Professional Courses 45 Credits

Course No.	Title	Credits
CHDE 222	Infant/Child Development and Learning	3
FMCT 201	Clothing and Textiles for Consumers or	
FMCT 381	Textiles I	3
HUEC 101	Principles of Art and Design	2
HUEC 104	Principles of Art and Design Lab	1
HUEC 203	Human Development: A Lifespan Perspective	3
HUEC 243	Housing Design	3
HUEC 310	Resource Management	3
HUEC 361	Contemporary Family Issues	3
HUEC 460	The Family and Aging	3
HUEC 487	Supervisory Management	3
HUEC 490	Consumer Motivation	3
NUDT 210	Elements of Nutrition	3
NUDT 211	Scientific Principles of Food I	3
NUDT 212	Scientific Principles of Food II	3
NUDT 305	Nutrition in the Life Cycle	3
PSYC 303	Adolescent Psychology	3

IV. Support Courses 24 Credits

Course No.	Title	Credits
BUAD 213	Business Software Applications or	
BUED 212	Computer Concepts and Applications I	3
ECON 202	Principles of Economics II	3
	Electives	18

Students selecting a minor must complete a minimum of 18 credit hours.

Students who enroll beginning Fall 2005, must include a minimum of 12 credits of Out-of-Class Experiences for credit.

Note: HUEC 400 (3 credits) meets the Out-of-Class Experience. Consult your advisor to select 9 additional credits to meet the 12 credit hours requirement.

TOTAL PROGRAM REQUIRMENTS 120

FAMILY AND CONSUMER SCIENCES
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
ENGL	101	Basic Composition I	3
SOCI	101	Introduction to Sociology	3
HUEC	100	First Year Experience Seminar	1
HUEC	101	Principles of Art & Design	2
HUEC	104	Principles of Art & Design	1
		GER CURR. AREA III	<u>4</u>
Semester Total			14

SPRING SEMESTER			HOURS
EDHE	111	Personalized Health & Fitness	3
ENGL	102	Basic Composition II	3
		GER CURR. AREA I	3
		GER CURR. AREA III	3
MATH	109	College Algebra or higher	<u>3</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BUAD	213	Bus. Software Aps. <u>or</u>	
BUED	212	Comp. Concepts & Appl. I	3
ECON	202	Principles of Economics II	3
ENGL	203	Fund. of Contemp. Speech	3
PSYC	200	Introduction to Psychology	3
		GER CURR. AREA I	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
		Elective/Minor Course	3
HUEC	243	Housing Design	3
HUEC	203	Human Development: A Lifespan Perspective	3
HUEC	230	Multicultural Perspective on Families in the U.S.	3
NUDT	210	Elements of Nutrition	<u>3</u>
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
CHDE	222	Infant/Child Dev. & Learning	3
HUEC	310	Resource Management	3
HUEC	370	Professional Development	2
NUDT	211	Scientific Prin. of Food I	3
PSYC	303	Adolescent Psychology	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
ENGL	305	Technical Writing	3
HUEC	399	Pre-Internship Seminar	1
HUEC	490	Consumer Motivation	3
NUDT	212	Scientific Prin. of Food II	3
NUDT	305	Nutrition in the Life Cycle	3
		Elective/Minor Course	<u>3</u>
Semester Total			16

SUMMER SEMESTER			HOURS
HUEC	400	Internship	<u>3</u>
Semester Total			3

SENIOR YEAR

FALL SEMESTER			HOURS
FMCT	201	Clothing & Textiles for Cons. <u>or</u>	
FMCT	381	Textiles I	3
HUEC	361	Contemporary Family Issues	3
HUEC	409	Post-Internship Seminar	1
		Electives/Minor Courses	<u>6</u>
Semester Total			13

SPRING SEMESTER			HOURS
HUEC	460	The Family and Aging	3
HUEC	464	Social Psychology of Food, Clothing & Shelter	3
HUEC	487	Supervisory Management	3
		Electives/Minor Courses	<u>6</u>
Semester Total			15

Total Credits Required 120

**FAMILY AND CONSUMER SCIENCES EDUCATION OPTION
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 41⁶ Credits

Students should consult with freshman or departmental advisor when making course selections.

II. Core Curriculum 5 Credits⁷

III. Professional Courses 32 Credits

Course No.	Title	Credits
CHDE 222	Infant/Child Development and Learning	3
CHDE 323	Creativities Activities for Young Children	3
FMCT 361	Apparel Construction & Evaluation	3
FMCT 201	Clothing and Textiles for Consumer <u>or</u>	
FMCT 381	Textiles I	3
HUEC 243	Housing Design	3
HUEC 310	Resource Management	3
HUEC 361	Contemporary Family Issues	3
HUEC 474	Research Methodology II	2
HUEC 490	Consumer Motivation	3
NUDT 210	Elements of Nutrition	3
NUDT 211	Scientific Principles of Food I	3

IV. Professional Education Courses 42 Credits

Course No.	Title	Credits
EDCI 200A	Introduction to Contemporary Education	3
EDCI 288	PRAXIS Preparation	1*
EDCI 311	Comprehensive Assessment in Education	3
EDCI 400	Senior Seminar in Education	3
EDCI 406	Classroom Management	3
EDCI 409	Teaching Reading in the Content Areas I	3
EDCI 410	Teaching Reading in the Content Areas II	3
EDCI 427C	Curriculum & Instruction in Home Economics	3
EDCI 480	Teaching Internship: Secondary Education	6
EDCI 490	Teaching Internship: Secondary Education	6
EDSP 428	Communication and Collaboration in Special Education	3
HUEC 203	Human Development: A Lifespan Perspective	3
PSYC 307	Educational Psychology	3

***Does not count toward credit hours required for graduation.**

V. Support Courses 3 Credits

Course No.	Title	Credits
BUED 212	Computer Concepts and Applications I	3

Students who enroll beginning Fall 2005, must include a minimum of 12 credits of Out-of-Class Experiences for credit.

Note: EDCI 480 (6 credits) and EDCI 490 (6 credits) meet the Out-of-Class Experience.

TOTAL PROGRAM REQUIREMENTS 123

FAMILY AND CONSUMER SCIENCES EDUCATION
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	101	Theo. & App. Bio	3
BIOL	103	Theo. & App. Bio Lab	1
ENGL	101	Basic Composition I	3
HUEC	100	First Year Experience Seminar	1
PSYC	200	Into to Psychology	3
SOCI	101	Intro to Sociology	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
CHEM	101	Gen Chemistry I	3
EDHE	111	Pers. Health & Fitness	3
ENGL	102	Basic Comp. II	3
HUEC	230	Multi. Pers. of Family	3
MATH	102	Appl. of College Mathematics <u>or</u> Higher	<u>3</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BUED	212	Comp. Concepts & Appl. I	3
EDCI	200A	Introduction to Contemporary Ed	3
EDCI	288	PRAXIS Preparation	1
ENGL	203	Fund. of Con. Speech	3
HUEC	203	Hum. Dev. A Lifespan	3
NUDT	211	Scientific Prin. of Food I	<u>3</u>
Semester Total			16

SPRING SEMESTER			HOURS
CHDE	222	Inf./Child Dev. & Lrn	3
ENGL	305	Technical Writing	3
		GEN CURR. AREA I	3
		GEN CURR. AREA I	3
PSYC	307	Educational Psychology	3
NUDT	210	Elements of Nutrition	<u>3</u>
Semester Total			18

JUNIOR YEAR

FALL SEMESTER			HOURS
CHDE	323	Creative Act. & Mat.	3
FMCT	201/381	Clothing & Textiles for Cons. <u>or</u> Textiles I	
FMCT	361	Apparel Const/Eval.	3
HUEC	370	Professional Dev.	2
HUEC	310	Resource Mgmt.	3
HUEC	474	Research Seminar	<u>2</u>
Semester Total			16

SPRING SEMESTER			HOURS
EDCI	406	Classroom Mgmt.	3
EDCI	409	Teach. Reading in Cont. Area I	3
HUEC	464	Social Psychology of Food Clothing & Shelter	3
HUEC	361	Con. Family Issues	3
HUEC	490	Consumer Motivation	<u>3</u>
Semester Total			15

SENIOR YEAR

FALL SEMESTER			HOURS
EDCI	311	Comp. Ass. in ED	3
EDCI	410	Teach. Reading in Cont. Area II	3
EDCI	427D	Curr. & Instr. in Family & Cons. Sciences	3
EDSP	428	Comm. And Coll. In Special Ed.	3
HUEC	243	Housing Design	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
EDCI	400	Senior Seminar in Ed.	3
EDCI	480C	Teaching Intern.: Secondary Ed.	6
EDCI	490C	Teaching Intern.: Secondary Ed.	<u>6</u>
Semester Total			15
Total Credits Required			123

**FASHION MERCHANDISING OPTION
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 41 Credits

Students should consult with freshman or departmental advisor when making course selections.

II. Core Curriculum 10 Credits

III. Professional Courses 36 Credits

Course No.	Title	Credits
FMCT 141	Introduction to Fashion Industry	3
FMCT 300	Historic Costumes	3
FMCT 341	Fashion Buying and Merchandising	3
FMCT 342	Advertising and Promotion	3
FMCT 361	Apparel Construction/Evaluation	3
FMCT 381	Textiles I	3
FMCT 382	Textiles II	3
FMCT 441	Visual Merchandising	3
HUEC 101	Principles of Art and Design	2
HUEC 104	Principles of Art and Design Lab	1
HUEC 310	Resource Management	3
HUEC 487	Supervisory Management	3
HUEC 490	Consumer Motivation	3

Business Administration Minor 18 Credits

Course No.	Title	Credits
ACCT 201	Introductory Financial Accounting	3
BUAD 132	Introduction to Business	3
BUAD 302	Management & Organizational Behavior	3
BUAD 412	Business Law I	3
ECON 202	Principles of Economics II	3
MKTG 308	Principles of Marketing	3

IV. Support Courses 15 Credits

Course No.	Title	Credits
BUAD 213	Business Software Applications <u>or</u>	
BUED 212	Computer Concepts and Applications I	3
	Electives	12

Students who enroll beginning Fall 2005, must include a minimum of 12 credits of Out-of-Class Experiences for credit.

Note: HUEC 400 (3 credits) meets the Out-of-Class Experience. Consult your advisor to select 9 additional credits to meet the 12 credit hours requirement.

TOTAL PROGRAM REQUIREMENTS 120

FASHION MERCHANDISING
Recommended Program Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
ENGL	101	Basic Composition I	3
FMCT	141	Intro. to the Fashion Industry	3
HUEC	101	Principles of Art & Design	2
HUEC	104	Principles of Art & Design Lab	1
HUEC	100	First Year Experience Seminar	1
SOCI	101	Introduction to Sociology	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
BUAD	132	Introduction to Business	3
EDHE	111	Personalized Health & Fitness	3
ENGL	102	Basic Composition II	3
		GER CURR. AREA III	<u>4</u>
MATH	109	College Algebra or higher	3
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BUAD	213	Business Software Apps. <u>or</u>	
BUED	213	Comp. Concepts & Appl. I	3
ENGL	203	Fund. of Contemporary Speech	3
		GER CURR. AREA I	3
		GER CURR. AREA III	3
PSYC	200	Introduction to Psychology	3
Semester Total			15

SPRING SEMESTER			HOURS
ACCT	201	Introductory Financial Acct.	3
ECON	202	Principles of Economics II	3
		Elective	3
ENGL	305/W	Technical Writing	3
		GER CURR. AREA I	<u>3</u>
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
FMCT	341	Fashion Buying & Merch.	3
FMCT	361	Apparel Const./Evaluation	3
FMCT	381	Textiles I	3
HUEC	370	Professional Development	2
MKTG	308	Principles of Marketing	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
FMCT	300	Historic Costumes	3
FMCT	342	Advertising & Promotion	3
FMCT	382	Textiles II	3
HUEC	399	Pre-Internship Seminar	1
		Elective	<u>6</u>
Semester Total			16

SUMMER		HOURS	
HUEC	400	Internship	<u>3</u>
Semester Total		3	

SENIOR YEAR

FALL SEMESTER			HOURS
BUAD	302	Mgmt. & Organizational Behavior	3
BUAD	412	Business Law	3
FMCT	441	Visual Merchandising	3
HUEC	310	Resource Management	3
HUEC	409	Post-Internship Seminar	<u>1</u>
Semester Total			13

SPRING SEMESTER			HOURS
BUAD	304	Small Business & Management	
		Entrepreneurship	3
		Elective	3
HUEC	464	Social Psychology of Food, Clothing & Shelter	3
HUEC	487	Supervisory Management	3
HUEC	490	Consumer Motivation	<u>3</u>
Semester Total			15

Total Credits Required 120

FASHION MERCHANDISING HONORS PROGRAM OPTION

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

II. Core Curriculum 10 Credits

III. Professional Courses 36 Credits

Course No.	Title	Credits
FMCT 141	Introduction to Fashion Industry	3
FMCT 300	Historic Costumes	3
FMCT 341H	Honors Fashion Buying and Merchandising	3
FMCT 342H	Honors Advertising and Promotion	3
FMCT 361	Apparel Construction/Evaluation	3
FMCT 381	Textiles I	3
FMCT 382H	Honors Textiles II	3
FMCT 441	Visual Merchandising	3
HUEC 101	Principles of Art and Design	2
HUEC 104	Principles of Art and Design	1
HUEC 310H	Honors Resource Management	3
HUEC 487H	Honors Supervisory Management	3
HUEC 490H	Honors Consumer Motivation	3

Business Administration Minor 18 credits

Course No.	Title	Credits
ACCT 201	Introductory Financial Accounting	3
BUAD 132	Introduction to Business	3
BUAD 302H	Honors Management & Organizational Behavior	3
BUAD 412	Business Law	3
ECON 202H	Honors Principles of Economics II	3
MKTG 308	Principles of Marketing	3

IV. Support Courses 14 Credits

Course No.	Title	Credits
BUAD 213	Business Software Applications <u>or</u>	
BUED 212	Computer Concepts and Applications I	3
	Electives	8
MATH 210	Elementary Statistics	3

Students who enroll beginning Fall 2005, must include a minimum of 12 credits of Out-of-Class Experiences for credit.

Note: HUEC 400 (3 credits) meets the Out-of-Class Experience. Consult your advisor to select 9 additional credits to meet the 12 credit hours requirement.

TOTAL PROGRAM REQUIREMENTS 120

FASHION MERCHANDISING HONORS PROGRAM
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
ENGL	101H	Honors Basic Composition I	3
FMCT	141	Intro. to Fashion Industry	3
HUEC	100	First Year Experience Seminar	1
HUEC	101	Principles of Art & Design	2
HUEC	104	Principles of Art & Design Lab	1
SOCI	101	Introduction to Sociology	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
BUAD	132	Introduction to Business	3
EDHE	111	Personalized Health & Fitness	3
ENGL	102H	Honors Basic Composition II	3
		GER CURR. AREA III	4
MATH	111H	Honors Elem. Math. Anal.	<u>4</u>
Semester Total			17

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BUED	212	Comp. Concepts & Appl. I <u>or</u>	3
BUED	213	Comp. Concepts & Appl. II	
ENGL	203	Fund. of Contemporary Speech	3
		GER CURR. AREA III	3
		GER CURR. AREA I	3
PSYC	200	Introduction to Psychology I	3
Semester Total			15

SPRING SEMESTER			HOURS
ACCT	201	Introductory Financial Acct.	3
ECON	202H	Honors Prin. of Economics II	3
ENGL	305	Technical Writing	3
MATH	210	Elem. Statistics	3
MUSI	310H	Honors Music Exploration	<u>3</u>
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
FMCT	341H	Honors Fashion Buying & Merchandising	3
FMCT	361	Apparel Const./Evaluation	3
FMCT	381	Textiles I	3
HUEC	370	Professional Development	2
MKTG	308	Principles of Marketing	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
FMCT	300	Historic Costumes	3
FMCT	342H	Honors Advertising & Promotion	3
FMCT	382H	Honors Textiles II	3
HUEC	399	Pre-Internship Seminar	1
		Elective	<u>5</u>
Semester Total			15

SUMMER			HOURS
HUEC	400	Internship	<u>3</u>
Semester Total			3

SENIOR YEAR

FALL SEMESTER			HOURS
BUAD	302H	Honors Mgmt. & Org. Behavior	3
BUAD	412	Business Law	3
FMCT	441	Visual Merchandising	3
HUEC	310H	Honors Resource Management	3
HUEC	409	Post- Internship Seminar	1
		Elective	<u>3</u>
Semester Total			16

SPRING SEMESTER			HOURS
BUAD	304	Small Business & Management Entrepreneurship	3
HUEC	464	Social Psychology of Food, Clothing & Shelter	3
HUEC	487H	Honors Supervisory Management	3
HUEC	490H	Honors Consumer Motivation	<u>3</u>
Semester Total			12

Total Credits Required 120

**FASHION MERCHANDISING - FIT ADVERTISING AND MARKETING
COMMUNICATIONS OPTION**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 41 Credits⁵

Students should consult their freshman or departmental advisor when making course selections.

II. Core Curriculum 10 Credits⁷

III. Professional Courses 33 Credits

Course No.	Title	Credits
FMCT 141	Introduction to Fashion Industry	3
FMCT 300	Historic Costumes	3
FMCT 341	Fashion Buying and Merchandising	3
FMCT 361	Apparel Construction/Evaluation	3
FMCT 381	Textiles I	3
FMCT 382	Textiles II	3
FMCT 441	Visual Merchandising	3
HUEC 101	Principles of Art and Design	2
HUEC 104	Principles of Art and Design Lab	1
HUEC 310	Resource Management	3
HUEC 487	Supervisory Management	3
HUEC 490	Consumer Motivation	3

FIT Professional Courses 29 Credits

Course No.	Title	Credits
AC 111	Advertising & Promotion	3
AC 113	Strategic Planning	3
AC 221	Publicity Workshop (formerly AC 121)	3
AC 141	Journalism	3
AC 171	Mass Communication	3
AC 231	Advertising Copyrighting	3
AC 362	Broadcast Workshop (formerly AC 261)	3
AC 271	Audiences & Media	3
AC 272	Research Methods in IMC	3
AD 101	Advertising Layout Techniques	2

Business Administration Minor 18 Credits

Course No.	Title	Credits
ACCT 201	Introductory Financial Accounting	3
BUAD 132	Introduction to Business	3
BUAD 302	Management & Organizational Behavior	3
BUAD 412	Business Law	3
ECON 202	Principles of Economics II	3
MKTG 308	Principles of Marketing	3

IV. Support Courses 3 Credits

Course No.	Title	Credits
BUAD 213	Business Software Applications or	
BUED 212	Computer Concepts and Applications I or II	3

Note: IC 291 (4 credits) meets the Out-of-Class Experience. Consult your advisor to select 9 additional credits to meet the 12 credit hours requirement.

TOTAL PROGRAM REQUIREMENTS 134

**FIT ADVERTISING AND MARKETING
COMMUNICATIONS OPTION**

FRESHMAN YEAR

FALL SEMESTER			HOURS
ENGL 101	Basic Composition I		3
FMCT 141	Intro. to Fashion Industry		3
HUEC 100	First Year Experience Seminar		1
HUEC 101	Principles of Art & Design		2
HUEC 104	Principles of Art & Design Lab		1
SOCI 101	Introduction to Sociology		<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
BUAD 132	Introduction to Business		3
ENGL 102	Basic Composition II		3
EDHE 111	Personalized Health & Fitness		3
	GER CURR. AREA III		4
MATH 109	College Algebra or higher		<u>3</u>
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BUED 212/213	Comp. Concepts & Appl. I <u>or</u>		
BUED 213	Comp. Concepts & Appl. II		3
ENGL 203	Fund. of Contemporary Speech		3
FMCT 361	Apparel Const./Evaluation		3
	GER CURR. AREA I		3
	GEN CURR. AREA III		3
PSYC 200	Introduction to Psychology I		<u>3</u>
Semester Total			18

SPRING SEMESTER			HOURS
ACCT 201	Introductory Financial Acct.		3
BUAD 302	Mgmt. & Organizational Behavior		3
ECON 202	Principles of Economics II		3
FMCT 300	Historic Costumes		3
	GER CURR AREA I		3
MKTG 308	Principles of Marketing		<u>3</u>
Semester Total			18

JUNIOR YEAR

FALL SEMESTER			HOURS
AC 111	Advertising & Promotion		3
AC 221	Publicity Workshop		3
AC 141	Journalism		3
AC 171	Mass Communication		3
AC 362	Broadcast Workshop (formerly AC 261)		3
AD 101	Advertising Layout Techniques		<u>2</u>
Semester Total			17

SPRING SEMESTER			HOURS
AC 113	Strategic Planning		3
AC 231	Advertising Copywriting		3
AC 271	Audiences & Media		3
AC 272	Research Methods in IMC		3
AC 341	Magazine Journalism (ENGL 305) Formerly AC 241		3
IC 291	Internship (HUEC 399, 400)		4
Semester Total			19

SENIOR YEAR

FALL SEMESTER			HOURS
FMCT 341	Fashion Buying & Merch.		3
FMCT 381	Textiles I		3
FMCT 441	Visual Merchandising		3
HUEC 310	Resource Management		3
HUEC 409	Post-Internship Seminar		1
HUEC 370	Professional Development		<u>2</u>
Semester Total			15

SPRING SEMESTER			HOURS
BUAD 304	Small Business & Management Entrepreneurship		3
BUAD 412	Business Law		3
FMCT 382	Textiles II		3
HUEC 464	Social Psychology of Food, Clothing & Shelter		3
HUEC 487	Supervisory Management		3
HUEC 490	Consumer Motivation		<u>3</u>
Semester Total			18

Total Credits Required 134

NUTRITION OPTION

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 42 Credits^{3,5}

Students should consult with their freshman or departmental advisor when making course selections.

II. Core Curriculum 10 Credits

III. Professional Courses 27 Credits

Course No.	Title	Credits
NUDT 210	Elements of Nutrition	3
NUDT 211	Scientific Principles of Food I	3
NUDT 212	Scientific Principles of Food II	3
NUDT 305	Nutrition in the Life Cycle	3
NUDT 310	Nutrition Education and Counseling	3
NUDT 391	Nutritional Science I	3
NUDT 392	Nutritional Science II	3
NUDT 473	Community Nutrition	3
NUDT	Elective	3

Chemistry Minor 20 Credits

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I and	3
CHEM 113	Principles of Chemistry I Lab	1
CHEM 112	Principles of Chemistry II and	3
CHEM 114	Principles of Chemistry II Lab	1
CHEM 211	Fundamentals of Organic Chemistry I and	3
CHEM 213	Fundamentals of Organic Chemistry I Lab	1
CHEM 212	Fundamentals of Organic Chemistry II and	3
CHEM 214	Fundamentals of Organic Chemistry II Lab	1
CHEM 341	Biochemistry I and	3
CHEM 343	Biochemistry I Lab	1

IV. Support Courses 21 Credits

Course No.	Title	Credits
AMIC 324	Agricultural Microbiology <u>or</u>	4
BIOL 301	Microbiology and	
BIOL 303	Microbiology Lab <u>or</u>	
BIOL 232	Anatomy and Physiology II and	3
BIOL 234	Anatomy and Physiology II Lab	1
CHEM 342	Biochemistry II and	3
CHEM 344	Biochemistry II Lab	1
HUEC 474	Research Methodology	2
	Electives (w/Advisor Consent)	7

Students who enroll beginning Fall 2005, must include a minimum of 12 credits of Out-of-Class Experiences for credit.

Note: NUDT 499I (1-3 credits) and NUDT 484 (5 credits) meet the Out-of-Class Experience. Consult your advisor to select appropriate courses to meet the 12 credit hours requirement.

TOTAL PROGRAM REQUIREMENTS 120

NUTRITION
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
ENGL	101	Basic Composition I	3
HUEC	100	First Year Experience Seminar	1
MATH	109	College Algebra or higher	3
SOCI	101	Intro. to Sociology	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
BIOL	188A	Intro to Bio-Allied Hlth Majr.	3
BIOL	188	Intro. to Bio Lab -Allied Hlth	1
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
EDHE	111	Personalized Health & Fitness	3
ENGL	102	Basic Composition II	3
GER CURR. AREA I			<u>3</u>
Semester Total			17

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL	231	Human Anatomy & Physio. I	3
BIOL	233	Human Anatomy & Physio I Lab	1
CHEM	211	Fund. of Organic Chem. I	3
CHEM	213	Fund. of Organic Chemistry I Lab	1
ENGL	203	Fund. of Contemporary Speech	3
NUDT	211	Scientific Prin. of Food I	3
GER CURR. AREA I			<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
BIOL	232	Human Anatomy & Physio. II	3
BIOL	234	Human Anatomy & Physio II Lab	1
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem II Lab	1
NUDT	210	Elements of Nutrition	3
NUDT	212	Scientific Prin. of Food II	3
NUDT	305	Nutrition in the Life Cycle	<u>3</u>
Semester Total			17

JUNIOR YEAR

FALL SEMESTER			HOURS
CHEM	341	Biochemistry I	3
CHEM	343	Biochemistry I Lab	1
HUEC	370	Professional Development	2
NUDT	310	Nutrition Ed. & Counseling	3
NUDT	391	Nutritional Sciences I	3
PSYC	200	Intro. to Psychology	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHEM	342	Biochemistry II	3
CHEM	344	Biochemistry II Lab	1
ENGL	305	Technical Writing	3
MATH	210	Elementary Statistics	3
NUDT	392	Nutritional Science II	<u>3</u>
Semester Total			13

SENIOR YEAR

FALL SEMESTER			HOURS
AMIC	324	Agricultural Microbiology <u>or</u>	
BIOL	301	Microbiology & and	3
BIOL	303	Microbiology Lab	1
Elective			4
HUEC	474	Research Methodology	2
NUDT		Elective	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
NUDT	473	Community Nutrition	3
NUDT	484	Nutrition Research	5
Elective			3
HUEC	464	Social Psychology of Food, Clothing & Shelter	<u>3</u>
Semester Total			14
Total Credits Required			120

MINOR PROGRAMS

The Department of Human Ecology offers minor programs in Clothing and Textiles, Fashion Merchandising, Gerontology, and Nutrition. The minor program in Nutrition has two Options: Nutritional Science and Food and Nutrition. A minimum of **18** credits is required for each area.

CLOTHING AND TEXTILES

Course No.	Title	Credits
FMCT 300	Historic Costumes	3
FMCT 361	Apparel Construction/Evaluation	3
FMCT 381	Textiles I	3
FMCT 382	Textiles II	3
	Select two from the following courses: FMCT 321, FMCT 422, FMCT 460, HUEC 490	6

FASHION MERCHANDISING

Course No.	Title	Credits
FMCT 141	Introduction to the Fashion Industry	3
FMCT 341	Fashion Buying and Merchandising	3
FMCT 342	Advertising & Promotion	3
FMCT 441	Visual Merchandising	3
	Select two from the following courses: FMCT 361, FMCT 381, FMCT 390, HUEC 487, HUEC 490	6

GERONTOLOGY

Course No.	Title	Credits
HUEC 220	Perspective on Aging	3
HUEC 460	The Family and Aging	3
SOCI 361	Social Gerontology	3
	Select three from the following courses: HUEC 203*, HUEC 450, NUDT 305, REHA 201, REHA 302	9

* This course **cannot** be used to satisfy GE requirement for Gerontology minors

NUTRITION - OPTION 1: NUTRITIONAL SCIENCE

Course No.	Title	Credits
NUDT 210	Elements of Nutrition*	3
NUDT 391	Nutritional Science I	3
NUDT 392	Nutritional Science II	3
NUDT 401	Clinical Nutrition I	3
NUDT 402	Clinical Nutrition II	3
NUDT 473	Community Nutrition	3

* FCS Majors substitute NUDT 214

NUTRITION - OPTION 2: FOOD AND NUTRITION

Course No.	Title	Credits
NUDT 210	Elements of Nutrition	3
NUDT 211	Scientific Principles of Food I	3
NUDT 212	Scientific Principles of Food II	3
NUDT 305	Nutrition in the Life Cycle	3
NUDT 310	Nutrition Education and Counseling	3
NUDT 473	Community Nutrition	3

NOTE: Family & Consumer Sciences majors should consult advisor prior to selecting a minor. Clothing and Textiles, Gerontology, and Nutrition – Option 2 are not available to FCS majors because of course duplication.

FACULTY

Cecil, Malinda

Lecturer
B.S., Hood College
M.S., Virginia Tech

Hymon-Parker, Shirley

Chair and Professor
B.S., North Carolina Central University
M.S., Cornell University
Ph.D., University of Maryland College Park

Jenkins, Nina Lyon

Assistant Professor
B.A., Clark College
M.S., Atlanta University
Ph.D., University of Georgia

Kumelachew, Missale

Associate Professor
B.S., University of Minnesota
M.S., Howard University
Ph.D., University of Maryland College Park

Long, Donna

Lecturer
B.A., Hood College
M.A., Trevecca Nazarene University

Parveen, Salina

Assistant Professor, Departments of Agriculture and
Human Ecology
B.S., University of Dhaka
M.S., University of Dhaka
Ph.D., University of Florida

Satterlee, Donna

Lecturer
B.S., Beaver College
M.Ed., Old Dominion University

Schwarz, Jurgen

Associate Professor, Departments of Agriculture and
Human Ecology
M.S., University of Hohenheim
Ph.D., Cornell University

Shaw, Anugrah

Professor, Department of Human Ecology
B.S., Delhi University
M.S., Maharaja Sayajirao University
Ph.D., Texas Woman's University

Suvanich, Voranuch

Assistant Professor, Departments of Agriculture and
Human Ecology
B.S., Mahido University
M.S., Kasetart University
Ph.D., Mississippi State University

Yoon, Kisun

Research Associate Professor
B.S., Kyung Hee University
M.S., University of Rhode Island
Ph.D., University of Rhode Island

COURSE DESCRIPTIONS

CHILD DEVELOPMENT

CHDE 220 Foundations of Early Childhood 3 crs.

This course provides a conceptual framework for examining roles and services in early childhood education, and includes historical, social, and philosophical influences while emphasizing current trends, issues, and practices. Attention is given to family and professional partnerships. The course introduces basic techniques for observing children. A field experience is required. Prerequisite: PSYC 200.

CHDE 222 Infant/Child Development and Learning 3 crs.

This course is the study of how children develop and learn from conception to middle childhood. Theory and research relating to the physical, social-personal, and cognitive development of children and the role of family are emphasized. Field experience required. Prerequisite: PSYC 200.

CHDE 224 Emerging Language & Literacy 3 crs.

This course examines the theories, processes, and acquisition of language arts, and addresses the cognitive, linguistic, social and physiological factors involved in oral and written language development. Prerequisite: CHDE 222.

CHDE 323 Creative Activities For Young Children 3 crs.

This course is designed to provide many opportunities to gain techniques and resources for art, music, play, and creative dramatics. The students will identify resources and age appropriate activities to develop skills for organizing and presenting creative activities to young children. This course has two-hour lectures and one two-hour laboratory. Prerequisites: CHDE 220, CHDE 222. OPEN TO MAJORS ONLY.

CHDE 325 Special Needs in Early Childhood 3 crs.

This course provides a framework for using principles of developmentally appropriate practice to design effective learning programs for young children with special needs. The focus includes children from birth to age 8 and their families who are in a variety of early childhood settings. Emphasis will be placed on inclusion. Prerequisites: CHDE 220, CHDE 222. OPEN TO MAJORS ONLY.

CHDE 327 Curriculum and Instruction for Infants and Toddlers 3 crs.

This course provides application of theoretical and empirical research for field observations and curriculum projects. Emphasis is on integration of curricula responsive to individual needs in multidisciplinary and inclusive settings, along with the study of parent-child relations and early socialization with significant others and peers in program environments through activities which foster all

areas of development. Prerequisites: CHDE 220, CHDE 222. OPEN TO MAJORS ONLY.

CHDE 330/330W Observing and Interpreting Behavior of Young Children 3 crs.

Approaches will be provided for observing, recording and interpreting the behaviors of children who are developing normally and those with special needs in a variety of early childhood education settings. A child observational study is required. This class has two hours lecture and one two-hour laboratory. Prerequisites: CHDE 220, CHDE 222. OPEN TO MAJORS ONLY.

CHDE 332 Curriculum and Instruction for Preschool Children 3 crs.

This course examines curricula development and implementation of instructional strategies for preschool children in a variety of settings, including nursery schools, childcare and home-care centers, Headstart, hospitals, and community programs. A field experience is required. Prerequisite: CHDE 327. OPEN TO MAJORS ONLY.

CHDE 427/427W Partnerships 3 crs.

The aim of this course is to examine the role of the teacher and parent in the school setting with the goals of maximizing the child's education and developing insights into students' growth. Development of strategies for parent-teacher collaboration that support growth of the child's learning potential in home and school environments are emphasized. Prerequisites: CHDE 330, CHDE 332. Senior Standing. OPEN TO MAJORS ONLY.

CHDE 430 Supervision and Administration of Early Childhood Programs 3 crs.

This course examines the role and function of an early childhood program administrator. Instructional focus includes planning, budgeting, financing, staffing and the facilitation of parent involvement within childhood programs. Students assess educational and professional information needs in terms of the system services available. Materials and experiences in this course are appropriate for the early childhood education student as well as the practicing director. Prerequisites: CHDE 330, CHDE 332, Senior Standing, or Permission of Instructor. OPEN TO MAJORS ONLY.

CHDE 440 School Age Programming 3 crs.

This course will have students examining appropriate principles, materials and methods used with school age children. Emphasis is place on growth and development of children 5 to 12 years of age. Development and implementation of age appropriate activities is considered as well as classroom management, environmental planning, utilization of community resources, and communication with parents. Prerequisites: CHDE 222. OPEN TO MAJORS ONLY.

CHDE 499 Independent Study/Research in Child Development 1-3 crs.

This course provides an intensive study of a specialized topic in Child Development for advanced students. Permission to take an independent study must be obtained from the instructor. OPEN TO MAJORS ONLY.

FASHION MERCHANDISING, CLOTHING & TEXTILES

FMCT 141 Introduction to the Fashion Industry 3 crs.

Introduction to the Fashion Industry provides an overview of the fashion industry, including the organization and operation of the numerous facets of the textile, apparel, home furnishings, and cosmetics industries, product development, the impact of technology, and career opportunities. Forty clock hours of work experience in a retail or related setting is also required. This course consists of three hours of lecture.

FMCT 201 Clothing and Textiles for Consumers 3 crs.

This course focuses on the basic knowledge of fabric characteristics and its application in the selection of products for apparel and home furnishings. The study of social, cultural, economic, and psychological factors that influence choices related to textile products are discussed. *FOR NON-FASHION MERCHANDISING MAJORS ONLY.

FMCT 300/W Historic Costumes 3 crs.

This course is the study of historic costumes and design reflecting the social, economic, and political environment of the past and fashion cycles relating historic costume/designs to current fashions. The course consists of three hours of combined lecture and laboratory.

FMCT 321 Fashion Illustration 3 crs.

Fashion Illustration provides an introduction to drawing fashion figures, rendering various textiles, and illustrating apparel and accessories utilizing an array of media. The course consists of three hours of combined lecture and laboratory.

FMCT 341/341H Fashion Buying & Merchandising/ Honors 3 crs.

This course provides practical application of buying practices and procedures; merchandise planning, controlling, budgeting; merchandise assortment planning; and managing inventory. Prerequisites: FMCT 141, MATH 109 or higher. Co-requisite: MKTG 308. OPEN TO MAJORS AND MINORS ONLY.

FMCT 342/342H Advertising and Promotion/ Honors 3 crs.

Advertising & Promotion introduces students to both the theoretical and practical aspects of the principles and techniques used in promoting fashion goods and services to the consumer. Promotional strategies and creative concepts for promotional campaigns are developed by the students

for local businesses. The course consists of three hours of combined lecture and laboratory. Prerequisites: FMCT 141. Junior Standing. OPEN TO MAJORS AND MINORS ONLY.

FMCT 361 Apparel Construction/Evaluation 3 crs.

The main focus of this course is to provide an introduction to various sewing techniques, and to demonstrate the use of commercial patterns. A variety of garment components, including alterations, is identified and classified. An evaluation of ready-to-wear apparel will be fully conducted. One lecture and two laboratories. OPEN TO MAJORS AND MINORS ONLY.

FMCT 381 Textiles I 3 crs.

This is a fundamental course that covers information on fibers, yarns, fabric construction, dyeing, printing and finishing of textiles. Two lectures and one laboratory. OPEN TO MAJORS AND MINORS ONLY.

FMCT 382/382H Textiles II/ Honors 3 crs.

This course requires an understanding of basic textiles principles. Students enrolled in this course are required to measure the physical properties of fabrics, compile and analyze data, and relate the results to the performance of fabrics and garments. One lecture and two laboratories. Prerequisite: MATH 109, FMCT 381. OPEN TO MAJORS AND MINORS ONLY.

FMCT 390 Product Development 3 crs.

Product Development introduces both theoretical and practical aspects of the principles and techniques used in the creation, production, marketing, and distribution of fashion-related products that meet customer needs in the microeconomic and/or global marketplace. Actual prototypes will be created. The course consists of three hours of combined lecture and laboratory. Prerequisites: BUED 212, MKTG 308, or instructor's permission.

FMCT 422 Apparel Design: Pattern Drafting and Draping 3 crs.

Apparel Design: Pattern Drafting and draping introduces students to basic principles of flat pattern design and draping through the development of the master pattern and its use in the design and production of marketable apparel. The course consists of one hour of lecture and two hours of laboratory. Prerequisite: FMCT 361.

FMCT 441 Visual Merchandising 3 crs.

Visual Merchandising is the study of principles and practices of designing and evaluating the various aspects of visual displays. The course involves the creation of window and interior promotional displays and the development of a visual portfolio. The course consists of three hours of combined lecture and laboratory. Prerequisite: FMCT 342. OPEN TO MAJORS AND MINORS ONLY.

FMCT 460 Clothing For Special Needs 3 crs.
This course emphasizes clothing selection, basic fitting, and sewing techniques to meet needs related to age, figure type, and physical disability. Two lectures and one laboratory. Prerequisite: FMCT 361.

FMCT 463 Tailoring/Alterations 3 crs.
This course is designed to teach the fundamentals of tailoring and alterations. Tailoring techniques include short-cut tailoring methods, as well as samples of custom tailoring techniques. Students learn to apply alteration techniques for various fitting problems. One lecture and two laboratories. OPEN TO MAJORS ONLY. Prerequisite: FMCT 361.

FMCT 497A Fashion Merchandising Study Tour 3 crs.
Fashion Merchandising Study Tour is an organized trip to a designated city or country that allows students to explore the various facets of the fashion industry through visits to manufacturing facilities, designer showrooms, pattern companies, advertising agencies, retailers, colleges, forecasters, publishers, and museums. OPEN TO MAJORS ONLY.

FMCT 497B Textiles Study Tour 1-3 crs.
Textiles Study Tour is an organized trip to a designated city or country that allows student to explore the various facets of the textile manufacturers, converters, testing laboratories, and museums. OPEN TO MAJORS ONLY.

FMCT 499 Independent Study/Research in Fashion/Clothing 1-3 crs.
Independent Study/Research in Fashion allows the student to participate in an intensive study of a specialized topic or existing research project related to fashion or clothing. Permission to take an independent study must be obtained from the instructor. OPEN TO MAJORS AND MINORS ONLY.

HUMAN ECOLOGY

HUEC 100 First Year Experience Seminar 1 cr.
This course provides an opportunity for students to make a seamless transition from high school to college. Essential skills for transition will be explored and discussed. This course assists students in developing cognitive skills and in adjusting personally and socially to the college environment. Additionally this course facilitates self-awareness and interpersonal communication. Required for all first year students. This course is taken by HUMAN ECOLOGY MAJORS in lieu of GNST 100. One lecture.

HUEC 101 Principles of Art and Design 2 crs.
Principles of Art and Design is designed to introduce students to the basic principles and elements of art and design. The course consists of two lecture hours. Students must enroll concurrently in HUEC 104. OPEN TO MAJORS AND MINORS ONLY.

HUEC 104 Principles of Art and Design Lab 1 crs.
Principles of Art and Design Lab is designed to introduce students to the basic principles and elements of art and design through a variety of studio projects. The course consists of one laboratory hour. Students must enroll concurrently in HUEC 101. OPEN TO MAJORS AND MINORS ONLY.

HUEC 203/W Human Development: A Lifespan Perspective 3 crs.
This course is a study of human development from conception to death. It examines the interactions within the family system from a lifespan perspective. MAY NOT RECEIVE CREDIT FOR PSYC 305. Satisfies Gen. Ed. Requirement Area II.

HUEC 220 Perspectives on Aging 3 crs.
This is an interdisciplinary course that examines the phenomenon of aging and its consequences for society from a variety of perspectives. The course is designed to give students a broad overview of the field of gerontology. Satisfies Gen. Ed. Requirement Area II.

HUEC 230/W Multicultural Perspectives on Families in the U.S. 3 crs.
This course is an interdisciplinary introduction to the concepts central to multiculturalism and diversity as they apply to the study of contemporary families in the U.S. Satisfies Gen. Ed. Requirement Area VI.

HUEC 243 Housing Design 3 crs.
This course is a study of the interaction of people and the built environment. It examines ergonomics, anthropometrics, and proxemics in human factors and lifespan issues as they relate to the design of interiors. Prerequisites: PSYC 200, SOCI 101.

HUEC 310/310H Resource Management/Honors 3 crs.
This course focuses on the allocation and management of resources, personal and family financial decision-making, and wise selection and purchase of consumer goods and services. Prerequisites: MATH 102 or MATH 109, SOCI 101, PSYC 200. OPEN TO MAJORS AND MINORS ONLY.

HUEC 343 Dwelling 3 crs.
This course is an examination of contemporary housing issues within the context of the socio-economic, political, and psychological factors that impact the process of housing. Major theories and policies will be discussed.

HUEC 361 Contemporary Family Issues 3 crs.
This course is a study of contemporary issues affecting the family system, such as parenting, divorce, death, drug dependence, non-traditional life styles, mobility, and chronic illness. Prerequisites: SOCI 101, PSYC 200. Satisfies Gen. Ed. Requirement Area II. OPEN TO MAJORS AND MINORS ONLY.

HUEC 370/W Professional Development 2 crs.
This course is designed to prepare students for a professional career in various divisions of Human Ecology. Emphasis is placed on resume writing, interviewing skills, dressing for success, developing a professional image, presentational and oral communication skills, and planning and organizing presentations before small and large audiences. OPEN TO MAJORS ONLY.

HUEC 399/W Pre-Internship Seminar 1 cr.
Pre-internship Seminar is designed to prepare students for internships in the field of family and consumer sciences/human ecology. This course consists of one lecture hour. Prerequisite: Junior Level Standing. OPEN TO MAJORS ONLY.

HUEC 400 Internship 3-5 crs.
Internship is a supervised work experience in an approved work setting planned cooperatively with business establishments, agencies, or centers. Fashion and family and consumer science students take this course during the summer preceding the senior year for three credits. Child development students register for **five** credits during their final semester and register concurrently with HUEC 409 and HUEC 450. Two hundred clock hours of field experience are required. Prerequisite: HUEC 399. OPEN TO MAJORS ONLY.

HUEC 409 Post-Internship Seminar 1 cr.
Post-Internship Seminar provides the opportunity for students to reflect upon and present an overview of their work experience in their discipline. The course is one hour. Prerequisites: Senior Level Standing, HUEC 400, or permission of the instructor. OPEN TO MAJORS ONLY.

HUEC 450 Practicum-Human Development 1-5 crs.
This course is a concentrated, continuous, on the job experience in various aspects of human services under the supervision and guidance of trained personnel. Students with a Child Development concentration will observe and participate with groups of young children in Day Care/Headstart Centers or with older children in shelters and youth programs. Students taking this course for a minor in gerontology will be assigned to an agency/organization or institution that serves the elderly. Students have to have 40 clock hours for each credit hour. OPEN TO MAJORS AND MINORS ONLY.

HUEC 460 The Family and Aging 3 crs.
This course examines the aging process and its impact on the family and explores the characteristics, attitudes, behaviors, and concerns of older people, including their physical, psychological, social, and economic needs. Related legislative and community resources are also examined.

HUEC 464 Social Psychology of Food, Clothing and Shelter 3 crs.
This course includes interdisciplinary examination of the socio-psychological and economic dimensions of choices related to food, clothing, and shelter in multicultural family

and community environments. OPEN TO MAJORS AND MINORS ONLY.

HUEC 474/474H Research Methodology/ Honors 2 crs.
This course covers an overview of research methods commonly used in human ecology related disciplines. Upon completion of the course, the students should be able to read and critique studies. They should also be able to design and conduct experiments related to their field of study. Students should also be able to design and carry out their own research studies. Prerequisite: Senior Level Status. OPEN TO MAJORS ONLY.

HUEC 487/487H Supervisory Management/ Honors 3 crs.
This course is the study of principles and applications of managerial skills required for first-line supervisors. Emphasis is on supervisory functions, decision-making, delegation, motivation is leadership styles, communication, and conflict-resolution. Open to all students. Prerequisite: Senior Standing. OPEN TO MAJORS AND MINORS ONLY.

HUEC 490/490H Consumer Motivation/ Honors 3 crs.
This course offers an interdisciplinary approach to the study of consumer motivation and behavior in the marketplace with emphasis on functioning of the market system and models of consumer behavior. Prerequisites: SOCI 101, PSYC 200. OPEN TO MAJORS AND MINORS ONLY.

HUEC 499 Independent Study/Undergraduate Research 1-3 crs.
Students who wish to get advanced experience in a particular area of their discipline and an opportunity to do supervised, individualized studies may enroll in this course. The maximum number of undergraduate special topics or independent study credits that may be taken with the same prefix and number is determined by the student's major department. Department chair's approval is required. OPEN TO MAJORS ONLY.

NUTRITION AND DIETETICS

NUDT 210 Elements of Nutrition 3 crs.
This is an introductory level nutrition course, which covers the fundamental concepts, nutrient functions, and human nutritional requirements.

NUDT 211 Scientific Principles of Food I 3 crs.
This is a fundamental course in food preparation based on physical, chemical, and nutritional changes occurring in food. Government regulations governing food and food safety are also covered. Product evaluation using sensory techniques is emphasized. One lecture and two laboratories. OPEN TO MAJORS AND MINORS ONLY.

NUDT 212 Scientific Principles of Food II 3 crs.
This is a continuation of NUDT 211. Students are required to carry out individual and group projects to further their understanding of the principles covered. Prerequisite: NUDT 211. One lecture and two laboratories. OPEN TO MAJORS AND MINORS ONLY.

NUDT 214 Infant and Child Nutrition 3 crs.
The course is the study of nutrition from conception through adolescence, including factors affecting nutrient requirements, food choices, and nutritional problems. Special emphasis is placed on managing feeding problems and the relationship between nutrition, and physical and mental development.

NUDT 300 Essentials of Nutrition Practice 1 cr.
This course introduces the student to nutrition/dietetics practice. It includes a review of the history of the profession as well as the educational and experiential requirements for the nutrition practice. Course content includes legislation, standards, and regulations affecting practice; professional and bioethics; career opportunities; and factors which affect the delivery of nutrition services. The course is open to junior or senior level nutrition/dietetics majors.

NUDT 305 Nutrition in the Life Cycle 3 crs.
This course will provide students with an understanding of the nutritional requirements and related health concerns occurring throughout the life cycle. Course covers relevant topics including growth and development, nutrient needs, assessment of nutritional status and special problems associated with stages of the life cycle starting from conception through adulthood and aging. Prerequisite: NUDT 210, or permission of the instructor. OPEN TO MAJORS AND MINORS ONLY.

NUDT 310 Nutrition Education and Counseling 3 crs.
This course includes a study of nutrition education and counseling principles and techniques; students explore counseling strategies used to assess and modify nutrition behaviors. Prerequisite: PSYC 200. This course is cross-listed with NUDT 499F. OPEN TO MAJORS AND MINORS ONLY.

NUDT 391 Nutritional Science I 3 crs.
This course examines the biochemical and physical bases of human nutritional requirements. It covers the digestion and metabolism of carbohydrates, proteins, fats, minerals and vitamins. Prerequisites: CHEM 211+213 and 212+214. This course is cross-listed with NUDT 499C. OPEN TO MAJORS AND MINORS ONLY.

NUDT 392 Nutritional Science II 3 crs.
This course is a continuation of NUDT 391. Survey of current literature and research in nutrition is also included. Prerequisites: NUDT 391 and CHEM 341+343. This course is cross-listed with NUDT 499A. OPEN TO MAJORS AND MINORS ONLY.

NUDT 401 Clinical Nutrition I 3 crs.
This course involves the application of nutritional concepts to the treatment of disease states. Concepts and/or skills acquired include nutrition screening/assessment, food/drug/herbal interaction, and principles of nutrition care management including nutrition support. Prerequisite: NUDT 392. This course is cross-listed with NUDT 499. OPEN TO MAJORS AND MINORS ONLY.

NUDT 402 Clinical Nutrition II 3 crs.
This course is a continuation of NUDT 401; concepts and skills acquired in NUDT 401 are expanded to include nutrition management of diseases affecting organ systems and in-born errors of metabolism. Prerequisite: NUDT 401. This course is cross-listed with NUDT 499D. OPEN TO MAJORS AND MINORS ONLY.

NUDT 471 Foodservice Service Management 3 crs.
This course focuses on foodservice systems organization and management. Students explore concepts and applications of food safety principles, menu planning, purchasing, production, service, and resource management. Content also includes marketing strategies and use of computer technology in foodservice operations. Course combines didactic and laboratory offerings. Open to Juniors and Seniors. Prerequisites: NUDT 211 and NUDT 212. This course is cross-listed with NUDT 499H.

NUDT 472 Foodservice Management Lab 2 crs.
This course focuses on the application of foodservice systems management strategies. Students explore applications of food safety principles, menu planning, purchasing, production, service, and resource management in an actual foodservice setting. Senior level dietetics majors or permission of instructor is required. This course is two credit hours of laboratory field experience. Cross listed with NUDT 499H. Co-requisite: NUDT 471.

NUDT 473 Community Nutrition 3 crs.
This course involves a study of planning, implementation and evaluation of nutrition programs. Strategies and resources for community needs assessment, health promotion and disease prevention; programming and funding are also included. Prerequisites: NUDT 310 or permission of the instructor. This course is cross-listed with NUDT 499E.

NUDT 475 Senior Practicum 4 crs.
This course involves experiential learning designed to allow students to observe and practice the role of a nutrition practitioner in a health care setting. Students will have experiences in community, clinical and food service domains. Prerequisite: NUDT 471. Senior level status. OPEN TO MAJORS ONLY. This course is cross-listed with NUDT 499B.

NUDT 484 Nutrition Research 3-5 crs.
This course requires students to understand the principles of basic experimental design and plan and carry out a specific project in their area of interest. Prerequisites: Senior level status and permission of the instructor. This course is cross-listed with 499G.

NUDT 485 International Nutrition 3 crs.
This course will explore international aspects of nutrition, including global nutrition concerns, world hunger and malnutrition. Local, national, and international programs involved in program planning and improvement will be investigated.

NUDT 499 Independent Study/Undergraduate Research 1-5 crs.
This course is designed for nutrition and dietetics majors wishing to explore topics of special interest through an independent study. Students must obtain prior approval of the independent project from the course instructor, and permission of the department chair. This course is limited to nutrition and dietetics majors only.

NUDT 499A Nutritional Science II 3 crs.
NUDT 499B Senior Practicum 4 crs.
NUDT 499C Nutritional Science I 3 crs.
NUDT 499D Clinical Nutritional II 3 crs.
NUDT499E Community Nutrition 3 crs.
NUDT 499F Nutrition Education & Counseling 3 crs.
NUDT499G Nutrition Research 3-5 crs.
NUDT499H Food Service System Management 5 crs.
NUDT 499I Independent Research 1-5 crs.

DEPARTMENT OF NATURAL SCIENCES

Dean

Carolyn B. Brooks, Ph.D.

Chair and Professor

Joseph Okoh, Ph.D.

Professors (Biology)

Eugene Bass, Ph.D.

Kelly Mack, Ph.D.

Associate Professors (Biology)

Douglas Ruby, Ph.D.

Linda Johnson, Ph.D.

Assistant Professors (Biology)

Dwayne Boucaud, Ph.D.

Mitra Madhumi, Ph.D.

Joseph Pitula, Ph.D.

Lecturers (Biology)

Angela Hebel, M.S.

Quintece McCrary, M.S.

Mobolaji Okulate, Ph.D.

Jeurel Singleton, Ph.D.

Associate Professor (Chemistry)

Yan Waguespack, Ph.D.

Assistant Professors (Chemistry)

Gerald Kananen, Ph.D.

Ghislain Mandouma, Ph.D.

Visiting Professor (Chemistry)

Anthony Nyame, Ph.D.

Lecturer (Chemistry)

Amelia Potter, M.S.

Shawn White, Ph.D.

Professor (Environmental Science)

Gian Gupta, Ph.D.

Distinguished Research Scientist (Environmental Science)

Eric May, Ph.D.

Ali Ishaque, Ph.D.

Assistant Professors (Environmental Science)

Clement Counts, Ph.D.

Research Assistant Professor (Environmental Science)

Andrea Johnson, Ph.D.

Post Doctoral Fellow (Environmental Science)

Joseph Love, Ph.D.

Lecturer (Environmental Science)

Isoken Tito Aighewi, Ph.D.

Professor (Physics)

Gurbax Singh, Ph.D.

Lecturer (Physics)

Joseph Doodoo, Ph.D.

MISSION

The mission of the Department of Natural Sciences (DNS) is to prepare students for employment in the diversified fields in biological, physical and environmental sciences and health related occupations. Our programs prepare students for entry into graduate or professional schools.

PROGRAM DESCRIPTION

The Department of Natural Sciences offers programs for students majoring in Biology, Chemistry, and Environmental Science and minors in Biology, Chemistry and Physics. The Chemistry Program at UMES is certified by the American Chemical Society. Also offered are teaching programs in Biology and Chemistry.

Included in the Department's offerings are programs of lower division courses for those desiring a degree in Dental Hygiene, Nursing, Pharmacy or Radiation Therapy.

The Department offers courses leading to M.S. and Ph.D. degrees in the University-wide graduate programs in Marine-Estuarine-Environmental Sciences and Toxicology. In cooperation with The University of Maryland Center for Environmental and Estuarine Studies, combined 4-year B.S./5-year M.S. programs in Marine Sciences and Environmental Chemistry are available.

The Department also provides courses which satisfy the general education requirements in the biological and physical sciences and supporting courses for students in other departments. Included in the latter groups are courses in Biology, Chemistry and Physics required for majors in Agriculture, Human Ecology, Industrial Arts Education, Construction Management/Technology and Physical Education.

GOALS

The aims of the programs in DNS are to: expose students to the breadth and depth of knowledge necessary to fulfill requirements of specific scientific fields and careers; have students acquire mastery of skills and techniques used to obtain, analyze and interpret scientific information; provide experiences appropriate for students considering careers or graduate studies in the sciences; develop in students the ability to think clearly, independently, and critically; prepare students for better citizenry and for the preservation and conservation of the environment and natural resources.

OBJECTIVES

The objectives of the programs in DNS are to

- Provide students with academic curricula to develop a strong understanding of basic science;
- Prepare students to be adaptable to new developments in science;
- Train students to conduct scientific research through example, mentoring and personal experience;
- Prepare students for employment in newly evolving and conventional scientific fields related to their majors;
- Expose students to social, historical, and ethical issues through the science curricula;
- Promote interaction between the University and the community through faculty and students in the department;
- Promote faculty development to accomplish the objectives of the department.

PROGRAM REQUIREMENTS

Department of Natural Sciences programs require that all students maintain a "C" in each course in their Program Core and Program Electives and a C average in General Education and Supportive Course Requirements. Students must earn twelve (12) semester hours of out-of-classroom experience in partial fulfillment of curriculum requirements from the B.S. degree.

Individual programs may choose specific courses to fulfill General Education requirements.

A maximum of six (6) semester hours in Independent Study and Undergraduate Research (i.e., BIOL, CHEM, ENVS 498, 499) will be credited toward Program Electives.

FINANCIAL AID

Honors Program Scholarship: The UMES Honors Program provides high quality undergraduate programs in the natural sciences for academically talented students. Incoming freshmen with SAT scores of at least 1100 and GPA of 3.3 are eligible to apply for this scholarship.

MARC Program Fellowship: The UMES MARC Program is designed to promote matriculation of underrepresented minority groups into doctoral degree programs in the biomedical sciences. The program offers competitive scholarships to high achieving juniors and seniors.

National Oceanic and Atmospheric Administration Scholarship: Through the Living Marine Resources Cooperative Science Center funded by NOAA, scholarships and fellowships are offered to undergraduate and graduate students respectively who major in the Marine Sciences.

MBRS Program Fellowship: The mission of the UMES MBRS Program is to enhance the skills and competitiveness of under represented minority students and faculty in biomedical research. The program provides stipends and opportunities for professional development.

ALTERNATIVE CREDITS

Beginning Fall 2005, all students who enroll in degree programs will be required to complete 12 alternative credits before graduating. Alternative credits can be earned by completing internships, summer and winter session courses, on-line courses, and courses completed while studying abroad.

BIOLOGY (NON-TEACHING)
Required and Recommended Course Sequence

The Biology Program offers degrees leading to the Bachelor of Science with concentrations in Teaching, Non-Teaching and Pre-Medicine career paths. The teaching degree prepares students for teaching at the middle and secondary school levels. The Non-Teaching degree prepares students for careers in Biology and entrance to graduate or professional schools. The student's knowledge of biological principles and concepts is broadened by offering courses at the molecular, cellular, organism, population and community levels. Students are given opportunities to experience hands-on investigation to enhance their skills in observation and critical thinking. These programs of study are designed to improve the competency and literacy of students in the biological sciences.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts and Humanities) 9 Credits

Course No. Title

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: AGECE 213 or AGECE 213 H, ECON 201 or ECON 201H, ECON 202 or ECON 202H, GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342, SOCI 101 or SOCI 111H

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course No.	Title	Credits
PHYS 121	General College Physics I or HIGHER	3
PHYS 123	General College Physics I Laboratory or HIGHER	1
PHYS 122	General College Physics II or HIGHER	3
PHYS 124	General College Physics II Laboratory or HIGHER	1

D. Curriculum Area IV – (Mathematics) 6 Credits

Course No.	Title	Credits
MATH 110	Trigonometry & Analytical Geometry or HIGHER	3
MATH 210	Elementary Statistics	3

E. Curriculum Area V – (English Composition) 9 Credits

Course No.	Title	Credits
ENGL 101	Basic Composition I	3
ENGL 102	Basic Composition II	3
ENGL 305/W	Technical Writing <u>or</u>	
ENGL 310/W	Advanced Composition	3

F. Curriculum Area VI - Emerging Issues **4 Credits**

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
EDHE	111	Personalized Health Fitness	3

II. Program Core Requirements **24 Credits**

Course No.	Title	Credits
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Laboratory	1
BIOL 112	Principles of Biology II	3
BIOL 114	Principles of Biology II Laboratory	1
BIOL 222	Genetics	3
BIOL 223	Genetics Laboratory	1
BIOL 301	Microbiology	3
BIOL 303	Microbiology Laboratory	1
BIOL 497/497M	Biology Seminar	1
*BIOL 498	Independent Study	3
*BIOL 499	Undergraduate Research	4

*A maximum of seven (7) semester hours will be credited toward Program Core Requirements in Biology 498 and 499.

A grade of "C" or better is required in each of the Program Core Requirements.

III. Program Electives **20 Credit Minimum**

A minimum of 20 credits must be selected. A grade of "C" or better is required in each of these courses. Students with interest in pursuing medicine and/or professional and graduate degrees in the biomedical sciences are encouraged to take General Biology Electives. Likewise, students with interests in Ecology are encouraged to take Ecology Electives. Students are encouraged to take only one course in an area not related to his/her career interest.

General Biology Electives

Course No.	Title	Credit
BIOL 211	Principles of Biology III	3
BIOL 213	Principles of Biology III Laboratory	1
BIOL 311	Vertebrate Embryology	4
BIOL 322	Comparative Vertebrate Anatomy	4
BIOL 326	Cell Biology	4
BIOL 330	Evolution	3
BIOL 341	Introductory Physiology	4
BIOL 420	Animal Histology	4
BIOL 426M	Biotechnology	4
BIOL 436	General Endocrinology	3
BIOL 466	Medical Parasitology	3
*BIOL 498	Independent Study	1-3
*BIOL 499	Undergraduate Research	1-4
CHEM 422M	Bio-Inorganic Chemistry	3

Ecology Electives

Course No.	Title	Credits
BIOL 201	Marine Zoology	4
BIOL 202	Marine Botany	3
BIOL 203	Marine Botany Lab	1
BIOL 261	Invertebrate Zoology	4
BIOL 311	Vertebrate Embryology	4
BIOL 330	Evolution	3
BIOL 335	Biogeography	3
BIOL 361	Animal Behavior	4
BIOL 402	Ecology	4
BIOL 404	Conservation Biology	3

Course No.	Title	Credits
BIOL 431	Mammalogy	4
BIOL 432	Herpetology	3
BIOL 440	Biology of Insects	4
BIOL 441	Comparative Physiology	4
BIOL 462	General Parasitology	4
BIOL 463	Wildlife Management	4
BIOL 464	Medical & Veterinary Entomology	4
*BIOL 498	Independent Study	1-3
*BIOL 499	Undergraduate Research	1-4

*A maximum of six (6) semester hours will be credited toward Program Electives in Biology 498 and 499.

IV. Supportive Course Requirements 31 Credits

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry I Laboratory	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry II Laboratory	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 213	Fundamentals of Organic Chemistry I Laboratory	1
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry II Laboratory	1
CHEM 341	Biochemistry I	3
CHEM 343	Biochemistry I Laboratory	1
CHEM 342	Biochemistry II	3
CHEM 344	Biochemistry II Laboratory	1
BUED 212	Computer Concepts, Applications I <u>or</u>	3
CSDP 121	Microcomputer Applications <u>or</u>	3
CSDP 220	Introduction to Computer Programming	4
MATH 112	Calculus I*	4

*MATH 112 may not be used to satisfy Curriculum Requirements for Area IV once used for Supportive courses.

An overall grade point average of "C" or better is required for the group of courses representing the Supportive Course Requirements.

V. Free Electives 3 Credits

TOTAL PROGRAM REQUIREMENTS 120

BIOLOGY (TEACHING)
Required and Recommended Course Sequence

The Biology Teaching Program prepares students for teaching at the middle and secondary school levels. Education majors enrolled in this Program are enrolled in the Department of Education as well as the Department of Natural Sciences. Therefore, students must complete the curriculum that is required by the Teacher/Counselor Education Program. Successful completion of the prescribed course of study will prepare the student to teach at the middle and/or high school level.

Requirements for entrance into the Biology Teacher Education Program include a minimum of 45 earned credit hours and a 2.75 overall grade point average. Any courses transferred into the University of Maryland Eastern Shore will be included as part of the cumulative grade point average. In addition, a grade of C or better in all prerequisite courses is required. These courses include: Introduction to Contemporary Education, Introduction to Special Education, Basic Composition I, Basic Composition II, Fundamentals of Contemporary Speech, Advanced Composition or Technical Writing, Introduction to Psychology and any Biology Program Elective. Successful completion of the English Proficiency Examination (EPE) is also required along with an accompanying official letter that must be presented at the time of application.

To gain admission into the Biology Teaching Program, completion of the Application for Admission to Teacher Education, including two essays, is required, along with the signatures of two faculty members who are familiar with the student's academic performance.

Successful completion of the PRAXIS I (Reading, Writing, Mathematics) Examination is required. Students are encouraged to register for the pre-professional skills test or computer-based test as early as possible, but no later than the second semester of the sophomore year. Applicants must earn minimum scores as follows:

Reading	177
Mathematics	177
Writing	173

NOTE: STUDENTS WHO ARE NOT FORMALLY ADMITTED TO THE PROFESSIONAL TEACHER EDUCATION PROGRAM ARE NOT PERMITTED TO ENROLL IN ANY PROFESSIONAL PROGRAM COURSES.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts and Humanities)

9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences)

6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: AGECE 213 or AGECE 213 H, ECON 201 or ECON 201H, ECON 202 or ECON 202H, GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342, SOCI 101 or SOCI 111H

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
PHYS	121	General College Physics I or HIGHER	3
PHYS	123	General College Physics I Laboratory or HIGHER	1
PHYS	122	General College Physics II or HIGHER	3
PHYS	124	General College Physics II Laboratory or HIGHER	1

D. Curriculum Area IV – (Mathematics) 6 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry or HIGHER	3
MATH	210	Elementary Statistics	3

E. Curriculum Area V – (English Composition) 9 credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I	3
ENGL	102	Basic Composition II	3
ENGL	305/W	Technical Writing <u>or</u>	
ENGL	310/W	Advanced Composition	3

F. Curriculum Area VI - Emerging Issues 4 Credits

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
EDHE	111	Health and Wellness	3

II. Program Core Requirements 17 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Laboratory	1
BIOL 112	Principles of Biology II	3
BIOL 114	Principles of Biology II Laboratory	1
BIOL 222	Genetics	3
BIOL 223	Genetics Laboratory	1
BIOL 301	Microbiology	3
BIOL 303	Microbiology Laboratory	1
BIOL 497	Biology Seminar	1

A grade of “C” or better is required in each of the Program Core Requirements

III. Professional Education Requirements 42 Credits

Course No.	Title	Credits
EDCI 200	Introduction to Contemporary Education	3
EDSP 428	Communication and Collaboration in Special Education	3
EDCI 288	PRAXIS Preparation	1+
EDCI 311	Comprehensive Assessment in Education	3
EDCI 400	Senior Seminar in Education	3
EDCI 406	Classroom Management	3
EDCI 409	Teaching Reading in the Content Areas: Part I	3
EDCI 410	Teaching Reading in the Content Areas: Part II	3
EDCI 425A	Curriculum & Instructional Methods in Biology	3
EDCI 480/490	Teaching Internship: Biology	12
PSYC 305	Developmental Psychology	3
PSYC 307	Educational Psychology	3

+Credit is not counted toward graduation.

IV. Supportive Course Requirements 16 Credits

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry I Laboratory	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry II Laboratory	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 213	Fundamentals of Organic Chemistry I Laboratory	1
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry II Laboratory	1

A grade of “C” or better is required in each of the Supportive Course Requirements.

V. Program Electives 3 credits

One course must be selected. A grade of “C” or better is required in each of these courses.

General Biology Electives

Course No.	Title	Credit
BIOL 211	Principles of Biology III	3
BIOL 213	Principles of Biology III Laboratory	1
BIOL 311	Vertebrate Embryology	4
BIOL 322	Comparative Vertebrate Anatomy	4
BIOL 326	Cell Biology	4
BIOL 330	Evolution	3
BIOL 341	Introductory Physiology	4
BIOL 420	Animal Histology	4
BIOL 426M	Biotechnology	4
BIOL 436	General Endocrinology	3
BIOL 466	Medical Parasitology	3
*BIOL 498	Independent Study	1-3
*BIOL 499	Undergraduate Research	1-4
CHEM 422M	Bio-Inorganic Chemistry	3

Ecology Electives

Course No.	Title	Credits
BIOL 201	Marine Zoology	4
BIOL 202	Marine Botany	3
BIOL 203	Marine Botany Lab	1
BIOL 261	Invertebrate Zoology	4
BIOL 311	Vertebrate Embryology	4
BIOL 330	Evolution	3
BIOL 335	Biogeography	3
BIOL 361	Animal Behavior	4
BIOL 402	Ecology	4
BIOL 404	Conservation Biology	3
BIOL 431	Mammalogy	4
BIOL 432	Herpetology	3
BIOL 440	Biology of Insects	4
BIOL 441	Comparative Physiology	4
BIOL 462	General Parasitology	4
BIOL 463	Wildlife Management	4
BIOL 464	Medical & Veterinary Entomology	4
*BIOL 498	Independent Study	1-3
*BIOL 499	Undergraduate Research	1-4

***A maximum of six (6) semester hours will be credited toward Program Electives in Biology 498 and 499.**

TOTAL MINIMUM PROGRAM REQUIREMENTS 120

BIOLOGY (HONORS)
Required and Recommended Course Sequence

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts and Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: AGECE 213 or AGECE 213 H, ECON 201 or ECON 201H, H, ECON 202 or ECON 202, GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342, SOCI 101 or SOCI 111H

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
PHYS	181H	Honors Introductory Physics I or HIGHER	3
PHYS	183H	Honors Introductory Physics I Laboratory	1
PHYS	182H	Honors Introductory Physics II or HIGHER	3
PHYS	184H	Honors Introductory Physics II Laboratory	1

D. Curriculum Area IV – (Mathematics) 6 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry or HIGHER	3
MATH	210	Elementary Statistics	3

E. Curriculum Area V – (English Composition) 9 Credits

Course	No.	Title	Credits
ENGL	101H	Honors English Composition I	3
ENGL	102H	Honors English Composition II	3
ENGL	305H	Honors Technical Writing <u>or</u>	
ENGL	310H	Honors Advanced Composition	3

F. Curriculum Area VI – (Emerging Issues) 4 Credits

Course	No.	Title	Credits
DNCS	100	Freshman Seminar	1
EDHE	111	Personalized Health Fitness	3

II. Program Core Requirements 17 Credits

Course No.	Title	Credits
BIOL 111H	Honors Principles of Biology I	3
BIOL 113H	Honors Principles of Biology I Laboratory	1
BIOL 112H	Honors Principles of Biology II	3
BIOL 114H	Honors Principles of Biology II Laboratory	1
BIOL 222	Genetics	3
BIOL 223	Genetics Laboratory	1
BIOL 301	Microbiology	3
BIOL 303	Microbiology Laboratory	1
BIOL 497H	Honors Biology Seminar	1
*BIOL 498	Independent Study	1-3
*BIOL 499	Undergraduate Research	1-4

*A maximum of six (6) semester hours will be credited toward Program Electives in Biology 498 and 499.

III. Program Electives 20 Credit Minimum

A minimum of 20 credits must be selected. A grade of “C” or better is required in each of these courses. Students with interest in pursuing medicine and/or professional and graduate degrees in the biomedical sciences are encouraged to take Biology Electives. Likewise, students with interests in Ecology are encouraged to take Ecology Electives. Students may take only one course in an area not related to his/her career interest.

General Biology Electives

Course No.	Title	Credit
BIOL 211	Principles of Biology III	3
BIOL 213	Principles of Biology III Laboratory	1
BIOL 311	Vertebrate Embryology	4
BIOL 322	Comparative Vertebrate Anatomy	4
BIOL 326	Cell Biology	4
BIOL 330	Evolution	3
BIOL 341	Introductory Physiology	4
BIOL 420	Animal Histology	4
BIOL 426M	Biotechnology	4
BIOL 436	General Endocrinology	3
BIOL 466	Medical Parasitology	3
CHEM 422M	Bio-Inorganic Chemistry	3

Ecology Electives

Course No.	Title	Credits
BIOL 201	Marine Zoology	4
BIOL 202	Marine Botany	3
BIOL 203	Marine Botany Lab	1
BIOL 261	Invertebrate Zoology	4
BIOL 311	Vertebrate Embryology	4
BIOL 330	Evolution	3
BIOL 335	Biogeography	3
BIOL 361	Animal Behavior	4
BIOL 402	Ecology	4
BIOL 404	Conservation Biology	3
BIOL 431	Mammalogy	4
BIOL 432	Herpetology	3
BIOL 440	Biology of Insects	4
BIOL 441	Comparative Physiology	4
BIOL 462	General Parasitology	4
BIOL 463	Wildlife Management	4
BIOL 464	Medical & Veterinary Entomology	4

IV. Supportive Course Requirements**32 Credits**

Course No.	Title	Credits
CHEM 111H	Honors Principles of Chemistry I and	3
CHEM 113H	Honors Principles of Chemistry I Laboratory	1
CHEM 112H	Honors Principles of Chemistry II	3
CHEM 114H	Honors Principles of Chemistry II Laboratory	1
CHEM 211H	Honors Fundamentals of Organic Chemistry I	3
CHEM 213H	Honors Fundamentals of Organic Chemistry I Laboratory	1
CHEM 212H	Honors Fundamentals of Organic Chemistry II	3
CHEM 214H	Honors Fundamentals of Organic Chemistry II Laboratory	1
CHEM 341H	Honors Biochemistry I	3
CHEM 343H	Honors Biochemistry I Laboratory	1
CHEM 342H	Honors Biochemistry II	3
CHEM 344H	Honors Biochemistry II Laboratory	1
BUED 212	Computer Concepts or	3
CSDP 121	Microcomputer Applications or	3
CSDP 220	Introduction to Computer Programming	4
MATH 112	Calculus I*	4

***An overall grade point average of "C" or better is required for the group of courses representing the Supportive Course Requirements.**

*** MATH 112 may not be used to satisfy curriculum requirements for Area IV once used for Supportive courses.**

TOTAL PROGRAM REQUIREMENTS**120**

BIOLOGY (PRE-MEDICINE)
Required and Recommended Course Sequence

For individual medical school requirements, students should consult the Medical School Admissions Requirements publication by the Association of American Medical Colleges. This book is available for purchase at the UMES bookstore, on reserve at the UMES library, and in the office of the Pre-Medical advisor in the Department of Natural Sciences.

Generally, most medical schools require one year of general biology, general chemistry, organic chemistry and physics. These courses should have laboratory components. Some schools also require or recommend college mathematics through Calculus and a year of English composition. At UMES, the following courses will satisfy the above requirements in the natural sciences: BIOL 111/113, BIOL 112/114, CHEM 111/113, CHEM 112/114, CHEM 211/213, CHEM 212/214, PHYS 121/123 and PHYS 122/124.

The MCAT (Medical College Admission Test), an evaluating instrument typically used for the Medical School admissions process, is administered twice a year, April and August. Students are required to take the MCAT during the Spring semester of the academic year preceding the year in which admission to medical school is sought. Students are advised to complete the courses listed above by the end of the spring semester of their junior year.

Pre-medical students at UMES will be prepared for the MCAT and the rigors of Medical School if they follow the recommended Biology (Pre-Medicine) course sequence.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts and Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses:

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109

HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310

LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102

LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: AGECE 213 or AGECE 213 H, ECON 201 or ECON 201H, ,
 ECON 202 or ECON 202H, GEOG 201 or GEOG 202, HIST 101 or HIST 111H,
 HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342
 SOCI 101 or SOCI 111H

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200,
 SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
PHYS	121	General College Physics I or HIGHER	3
PHYS	123	General College Physics I Laboratory or HIGHER	1
PHYS	122	General College Physics II or HIGHER	3
PHYS	124	General College Physics II Laboratory or HIGHER	1

D. Curriculum Area IV – (Mathematics) 6 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry or HIGHER	3
MATH	210	Elementary Statistics	3

E. Curriculum Area V – (English Composition) 9 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I	3
ENGL	102	Basic Composition II	3
ENGL	305/W	Technical Writing <u>or</u>	
ENGL	310/W	Advanced Composition	3

F. Curriculum Area VI - Emerging Issues 4 Credits

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
EDHE	111	Health and Wellness	3

III. Program Core Requirements 22 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Laboratory	1
BIOL 112	Principles of Biology II	3
BIOL 114	Principles of Biology II Laboratory	1
BIOL 222	Genetics	3
BIOL 223	Genetics Laboratory	1
BIOL 301	Microbiology	3
BIOL 303	Microbiology Laboratory	1
BIOL 497	Biology Seminar	1
*BIOL 498	Independent Study	1-3
*BIOL 499	Undergraduate Research	1-4

*A maximum of six (6) semester hours will be credited toward Program Electives in Biology 498 and 499.

A grade of “C” or better is required in each of the Program Core Requirements.

IV. Program Electives 19 Credit Minimum

A minimum of 19 credits must be selected. A grade of “C” or better is required in each of these courses. Students with interest in pursuing medicine and/or professional and graduate degrees in the biomedical sciences are encouraged to take Biology Electives. Likewise, students with interests in Ecology are encouraged to take Ecology Electives. Students may take only one course in an area not related to his/her career interest.

General Biology Electives

Course No.	Title	Credit
BIOL 211	Principles of Biology III	3
BIOL 213	Principles of Biology III Laboratory	1
BIOL 311	Vertebrate Embryology	4
BIOL 322	Comparative Vertebrate Anatomy	4
BIOL 326	Cell Biology	4
BIOL 330	Evolution	3
BIOL 341	Introductory Physiology	4
BIOL 420	Animal Histology	4
BIOL 426M	Biotechnology	4
BIOL 436	General Endocrinology	3
BIOL 466	Medical Parasitology	3
CHEM 422M	Bio-Inorganic Chemistry	3

Ecology Electives

Course No.	Title	Credits
BIOL 201	Marine Zoology	4
BIOL 202	Marine Botany	3
BIOL 203	Marine Botany Lab	1
BIOL 261	Invertebrate Zoology	4
BIOL 311	Vertebrate Embryology	4
BIOL 330	Evolution	3
BIOL 335	Biogeography	3
BIOL 361	Animal Behavior	4
BIOL 402	Ecology	4
BIOL 404	Conservation Biology	3
BIOL 431	Mammalogy	4
BIOL 432	Herpetology	3
BIOL 440	Biology of Insects	4
BIOL 441	Comparative Physiology	4
BIOL 462	General Parasitology	4
BIOL 463	Wildlife Management	4
BIOL 464	Medical & Veterinary Entomology	4

V. Supportive Course Requirements 36 Credits

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry I Laboratory	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry II Laboratory	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 213	Fundamentals of Organic Chemistry I Laboratory	1
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry II Laboratory	1
CHEM 341	Biochemistry I	3
CHEM 343	Biochemistry I Laboratory	1
CHEM 324	Biochemistry II	3
CHEM 344	Biochemistry II Laboratory	1
BUED 212	Computer Concepts or	3
CSDP 220	Introduction to Computer Programming or	4
CSDP 121	Microcomputer Applications	3
DNCS 388	Critical Thinking	1
ENGL 218	Approaches to Grammar	3
MATH 112	Calculus I*	4

An overall grade point average of "C" or better is required for the group of courses representing the Supportive Course Requirements.

***MATH 112 may not be used to satisfy curriculum requirements for Area IV once used for Supportive courses.**

TOTAL PROGRAM REQUIREMENTS

120

BIOLOGY (PHYSICAL THERAPY)

Students in this program complete the Biology (Non-Teaching) curriculum, after which, they apply for admission into the Physical Therapy program at UMES or any other institution offering the same program. Students are also required to complete the yearlong sequence of Human Anatomy and Physiology – BIOL 231/233 and BIOL 232/234 even though both courses are not acceptable program electives for the biology degree.

MINOR PROGRAM

BIOLOGY

Courses in Biology that are used to satisfy requirements for science majors may not count towards the minor curriculum.

Curriculum for Non-Science majors:

20 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Laboratory	1
BIOL 112	Principles of Biology II	3
BIOL 114	Principles of Biology II Laboratory	1
BIOL	Any three additional courses from Biology Program Electives	12

CHEMISTRY (NON-TEACHING)
Required and Recommended Course Sequence

The chemistry programs in the Department of Natural Sciences are certified by the American Chemical Society. The bachelor's degree graduates who have majored in chemistry and fulfilled the minimum requirements as adopted by the Society are eligible for admission as members. Certification of these graduates as members of the Society will take place in the spring after graduation, per the instructions that will be sent to the department every year. Not all chemistry graduates are necessarily expected to meet certification requirements or need to be certified. For instance, there may be students whose major study in chemistry serves as a means to achieve entrance to other fields or for graduate study in an interdisciplinary field. Such graduates may elect to substitute, for certain of the required upper level courses in chemistry, other courses more appropriate to their goals, and these graduates would thus not qualify for certification.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 43 credits

Students should consult with their freshman or departmental advisor when making course selections

***Chemistry majors must take a sequence of two courses in a foreign language**

A. Curriculum Area I – (Arts and Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: AGECE 213 or AGECE 213H, ECON 201 or ECON 201H, ECON 202 or ECON 202H, GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342, SOCI 101 or SOCI 111H

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

*Students may enroll in either the General Physics sequence or the Introductory Physics sequence.

Course*	No.	Title	Credits
PHYS	161	General Physics I	3
PHYS	163	General Physics Lab I <u>or</u>	1
PHYS	181H	Introductory Physics I (Honors)	3
PHYS	183H	Introductory Physics (Honors) Lab II	1
PHYS	182H	Introductory of Physics II (Honors)	3
PHYS	184H	Introductory of Physics II (Honors) Lab <u>or</u>	1
PHYS	262	General Physics II	3
PHYS	264	General Physics II Lab	1

D. Curriculum Area IV – (Mathematics) 7 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry	3
MATH	112	Calculus I	4

E. Curriculum Area V – (English Composition) 9 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I <u>or</u>	
ENGL	101H	Honors Basic Composition I	3
ENGL	102	Basic Composition II <u>or</u>	
ENGL	102H	Honors Basic Composition II	3
ENGL	305/W	Technical Writing <u>or</u>	
ENGL	310/W	Advanced Composition	3

F. Curriculum Area VI – (Emerging Issues) 4 Credits

Course	No.	Title	Credits
DNSC	100	First Year Freshman Experience	1
EDHE	111	Health and Wellness	3

II. Program Core Requirements 48 Credits

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry Lab I	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry Lab II	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 213	Fundamentals of Organic Chemistry Lab I	1
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry Lab II	1
CHEM 311	Analytical Chemistry I	4
CHEM 312	Analytical Chemistry II	4
CHEM 341	Biochemistry I	3
CHEM 343	Biochemistry Lab I	1
CHEM 401	Principles of Physical Chemistry I	4
CHEM 402	Principles of Physical Chemistry II	4
CHEM 497/497M	Chemistry Seminar	1
CHEM 420	Advanced Inorganic Chemistry	4
CHEM 421	Instrumental Analysis	4
CHEM 499	Undergraduate Research	3

III. Supportive Course Requirements 19 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I	3
BIOL 113	Principles of Biology I Laboratory	1
BIOL 112	Principles of Biology II	3
BIOL 114	Principles of Biology II Laboratory	1
*CSDP 220	Intro. to Computers Programming	4
MATH 211	Calculus II	4
CHEM 498	Independent Study	3

*CSDP 220 may be substituted with either CSDP 121 or BUED 212, 3 credits each and make up 1 credit somewhere else.

IV. Program Electives 7-8 Credits

Course No.	Title	Credits
CHEM 342	Biochemistry II	3
CHEM 344	Biochemistry Laboratory II	1
CHEM 422M	Bio-Inorganic Chemistry	3
CHEM 432	Advanced Organic Chemistry	3

	Course No.	Title	Credits
	CHEM 621	Advanced Environmental Chemistry	4
	Two courses with one laboratory component must be selected		
V.	Free Electives		3 Credits
	TOTAL PROGRAM REQUIRMENTS		120

CHEMISTRY (TEACHING)

The Chemistry Teaching Program prepares students for teaching at the secondary school levels. Education majors enrolled in this Program are enrolled in the Department of Education as well as the Department of Natural Sciences. Therefore, students must complete the curriculum that is required by the Teacher/Counselor Education Program. Successful completion of the prescribed course of study will prepare the student to teach at the middle and/or high school level.

Requirements for entrance into the Chemistry Teacher Education Program include a minimum of 45 earned credit hours and a 2.75 overall grade point average. Any courses transferred into to the University of Maryland Eastern Shore will be included as part of the cumulative grade point average. In addition, a grade of C or better in all prerequisite courses is required. These courses include: Introduction to Contemporary Education, Introduction to Special Education, Basic Composition I, Basic Composition II, Fundamentals of Contemporary Speech, Advanced Composition or Technical Writing, Introduction to Psychology and any Biology Program Elective. Successful completion of the English Proficiency Examination (EPE) is also required along with an accompanying official letter that must be presented at the time of application.

To gain admission into the Chemistry Teaching Program, completion of the Application for Admission to Teacher Education, including two essays, is required, along with the signatures of two faculty members who are familiar with the student's academic performance.

Successful completion of the PRAXIS I (Reading, Writing, Mathematics) Examination is required. Students are encouraged to register for the pre-professional skills test or computer-based test as early as possible, but no later than the second semester of the sophomore year. Applicants must earn minimum scores as follows:

Reading	177
Mathematics	177
Writing	173

NOTE: STUDENTS WHO ARE NOT FORMALLY ADMITTED TO THE PROFESSIONAL TEACHER EDUCATION PROGRAM ARE NOT PERMITTED TO ENROLL IN ANY PROFESSIONAL PROGRAM COURSES.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 43 Credits

Students should consult with their freshman or departmental advisor when making course selections.

II. Program Core Requirements

26 Credits

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry Laboratory I	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry Laboratory II	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 213	Fundamentals of Organic Chemistry Laboratory I	1
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry Laboratory II	1
CHEM 311	Analytical Chemistry I	4
CHEM 401	Principles of Physical Chemistry I	4
CHEM 497/497M	Seminar	1
CHEM 499	Undergraduate Research	1

III. Supportive Course Requirements 12 credits

Course No.	Title	Credits
CSDP 220*	Intro. to Computer Programming	4
MATH 211	Calculus II	4
BIOL 111	Principles of Biology	3
BIOL 113	Principles of Biology I Laboratory	1

*CSDP 220 may be substituted with either CSDP 121 or BUED 212--3 credits each, and make up 1 credit somewhere else.

IV. Professional Education Requirements 39 Credits

Course No.	Title	Credits
EDCI 200	Introduction to Contemporary Education	3
EDCI 288	PRAXIS Preparation	1*
PSYC 305	Development Psychology	3
PSYC 307	Educational Psychology	3
EDCI 311	Comprehensive Assessment in Education	3
EDCI 400	Senior Seminar	3
EDCI 409	Teaching Reading in the Content Areas: Part I	3
EDCI 406	Classroom Management	3
EDCI 425A	Curriculum & Instructional Methods in Natural Sciences	3
EDSP 428	Communication and Collaboration in Special Education	3
EDCI 480/490	Teaching Internship: Secondary Education Chemistry	12

+Credit does not count toward graduation credit.

TOTAL PROGRAM REQUIREMENTS 120

MINOR PROGRAMS

CHEMISTRY

The minor program in Chemistry is designed to provide supportive instruction for biology and mathematics majors. Courses in Chemistry that are used to satisfy requirements for science majors may not be used for the minor curriculum. Courses for a minor in chemistry for Non-Science majors include:

Course No.	Title	Credits
CHEM 111	Principles of Chemistry I	3
CHEM 113	Principles of Chemistry Laboratory I	1
CHEM 112	Principles of Chemistry II	3
CHEM 114	Principles of Chemistry Laboratory II	1
CHEM 211	Fundamentals of Organic Chemistry I	3
CHEM 213	Fundamentals of Organic Chemistry Laboratory I	1
CHEM 212	Fundamentals of Organic Chemistry II	3
CHEM 214	Fundamentals of Organic Chemistry Laboratory II	1
CHEM	Select one additional course at or above 300 level in Chemistry	4

PHYSICS

The minor program in Physics is designed to provide supportive instruction for Biology, Chemistry, Environmental Science, Mathematics and Computer Science majors. The program also provides courses for preparing students for secondary school science teaching. Courses in Physics that are used to satisfy requirements for science majors may not be reused for the minor curriculum. Courses for a minor in physics include:

Course No.	Title	Credits
PHYS 161	General Physics I/Introductory Physics I and	3
PHYS 163	General Physics Lab I or	1
PHYS 181H	Introductory Physics I (Honors) and	3
PHYS 183H	Introductory Physics I (Honors) Lab	1
PHYS 182H	Introductory Physics II (Honors) and	3
PHYS 184H	Introductory Physics II (Honors) Lab or	1
PHYS 262	General Physics II and	3
PHYS 264	General Physics II Lab	1
PHYS 263	General College Physics III and	3
PHYS 265	General College Physics Laboratory III	1
PHYS 283	Modern Optics	3
PHYS 423	Modern Physics	3
PHYS	Any other physics courses above 200 level (PHYS 498, 499 are recommended)	2

CHEMISTRY – HONORS (PRE-MEDICINE/PRE-DENTISTRY)
Required and Recommended Course Sequence

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 43 Credits

Courses in Honors section must be used. Students should consult with their advisors when making course selections.

II. Program Core Requirements 48 Credits

Course No.	Title	Credits
CHEM 111H	Honors Principles of Chemistry I	3
CHEM 113H	Honors Principles of Chemistry Laboratory I	1
CHEM 112H	Honors Principles of Chemistry II	3
CHEM 114H	Honors Principles of Chemistry Laboratory II	1
CHEM 211H	Honors Fundamentals of Organic Chemistry I	3
CHEM 213H	Honors Fundamentals of Organic Chemistry Laboratory I	1
CHEM 212H	Honors Fundamentals of Organic Chemistry II	3
CHEM 214H	Honors Fundamentals of Organic Chemistry Laboratory II	1
CHEM 311	Analytical Chemistry I	4
CHEM 312	Analytical Chemistry II	4
CHEM 341H	Honors Biochemistry I	3
CHEM 343H	Honors Biochemistry Laboratory I	1
CHEM 401	Principles of Physical Chemistry I	4
CHEM 402	Principles of Physical Chemistry II	4
CHEM 420	Advanced Inorganic Chemistry	4
CHEM 421	Instrumental Analysis	4
CHEM 497H/497M	Honors/MARC Chemistry Seminar	1
CHEM 499	Undergraduate Research	3

III. Supportive Course Requirements 19 Credits

Course No.	Title	Credits
BIOL 111H	Principles of Biology I	3
BIOL 113H	Principles of Biology I Lab	1
BIOL 112H	Principles of Biology II	3
BIOL 114H	Principles of Biology II Lab	1
CHEM 498	Independent Study	3
*CSDP 220	Introduction to Computer Programming	4
MATH 211	Calculus II	4

*CSDP 220 may be substituted with either CSDP 121 or BUED 212, 3 credits each and make up 1 credit somewhere else.

IV. Program Electives 7-8 Credits

Two courses must be selected and one must have a lab

Course No.	Title	Credits
CHEM 342H	Honors Biochemistry II	3
CHEM 344H	Honors Biochemistry Lab II	1
CHEM 422M	Bio-Inorganic Chemistry	3
CHEM 432	Advanced Organic Chemistry	3
CHEM 621	Advanced Environmental Chemistry	4

V. Free Electives 3 Credits

TOTAL PROGRAM REQUIREMENT 120

ENVIRONMENTAL SCIENCES

The program in Environmental Sciences has been developed to create in the student abilities of critical and reflective thought relating to the many aspects of environmental concerns. The Environmental Science Program employs an interdisciplinary approach involving the areas of Biology, Chemistry, Physics, Computer Sciences, and Economics.

PROGRAM OBJECTIVES

- To survey the scope and extent of problems and solutions to population, energy, transportation, housing, air and water supply, sewage disposal, solid waste management, noise, outdoor recreation, wildlife, natural area, urbanization and agriculture, food and fiber supply, pest control, ocean resources, and related environmental concerns.
- To develop abilities in critical and reflective thought about the scientific, technological, political, economic and sociological and psychological aspects of environmental concerns.
- To explore environmental careers and practice environmental planning and decision-making through applied use of tools and techniques of environmental scientists and natural resource managers to actual Eastern Shore environmental concerns.

This major offers students a choice of 2 study options: i) Environmental Chemistry and ii) Marine Science.

ENVIRONMENTAL CHEMISTRY OPTION

Required and Recommended Course Sequence

The purpose of this program is to train students in the environmental pollution from man-made sources. The demand for trained professionals in this discipline has increased as the nation becomes more concerned with pollutants. The curriculum offers strong academic background in the basic sciences, energy and pollution. Students are well trained both for career opportunities and graduate studies.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I - Arts and Humanities

9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109

HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310

LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102

LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences)

6 Credits

Students must select ECON 201 and one course in the Behavioral Sciences

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences)

8 Credits

Course	No.	Title	Credits
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Laboratory	1
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Laboratory	1

D. Curriculum Area IV – (Mathematics) 3 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry or higher	3

E. Curriculum Area V - English Composition 9 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I or	
ENGL	101H	Honors Basic Composition I	3
ENGL	102	Basic Composition II or	
ENGL	102H	Honors Basic Composition II	3
ENGL	305	Technical Writing or	
ENGL	310	Advanced Composition	3

F. Curriculum Area VI – (Emerging Issues) 7 Credits

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
EDHE	111	Personalized Health Fitness	3
HUEC	230	Multicultural Perspectives on Families in the US	3

II. Program Core Requirements 30 Credits

Course No.	Title	Credits
CHEM 311	Analytical Chemistry I	4
CHEM 312	Analytical Chemistry II	4
CHEM 488A	Environmental Chemistry	3
ENVS 221	Principles of Environmental Science	3
ENVS 222	Principles of Environmental Science Lab	1
ENVS 411	Water Pollution & Purification	3
ENVS 413	Water Pollution and Purification Lab	1
ENVS 434	Air Pollution & Control	4
ENVS 497	Senior Seminar	1
ENVS 498	Independent Study or	3
ENVS 499	Undergraduate Research	3

III. Supportive Course Requirements* 45 Credits

Course No.	Title	Credits
BIOL 301	Microbiology and	3
BIOL 303	Microbiology Lab	1
CHEM 111	Principles of Chemistry I and	3
CHEM 113	Principles of Chemistry Laboratory I	1
CHEM 112	Principles of Chemistry II and	3
CHEM 114	Principles of Chemistry Laboratory I	1
CHEM 211	Fundamentals of Organic Chemistry I and	3
CHEM 213	Fundamentals of Organic Chemistry Laboratory I	1
CHEM 212	Fundamentals of Organic Chemistry II and	3
CHEM 214	Fundamentals of Organic Chemistry Laboratory II	1
CHEM 341	Biochemistry I and	3
CHEM 343	Biochemistry Laboratory I	1
CHEM 488A	Advanced Environmental Chemistry	4
CSDP 220	Introduction to Computer Programming or	4
CSDP 121	Microcomputer Applications or	3
BUED 212	Computer Concepts and Applications, I	3
ECON 202	Principles of Economics II	3
MATH 112	Calculus I**	4
MATH 210	Elementary Statistics**	3

Course No.	Title	Credits
PHYS 121	General College Physics I and	3
PHYS 123	General College Physics I Lab or	1
PHYS 181H	Introductory Physics I (Honors) and	3
PHYS 183H	Introductory Physics I (Honors) Lab or	1
PHYS 122	General College Physics II and	3
PHYS 124	General College Physics II Lab or	1
PHYS 182H	Introductory Physics II (Honors) and	3
PHYS 184H	Introductory Physics II (Honors) Lab	1

Students who take BUED 212 must take 12 credit hours in program electives.

*Students must receive a grade of "C" or better in both lecture and lab component to progress to the next sequence course.

**MATH 112 and MATH 210 may not be used to satisfy curriculum requirements for Area IV once used for Supportive courses.

IV. Program Electives 3 Credits

Course No.	Title	Credits
BIOL 402	Ecology	4
BIOL 426M	Biotechnology	4
CHEM 342	Biochemistry II and	3
CHEM 344	Biochemistry Lab II	1
CHEM 401	Physical Chemistry I	4
CHEM 402	Physical Chemistry II	4
CHEM 422M	Bio-Inorganic Chemistry	3
ENVS 202	General Oceanography	3
ENVS 204	General Oceanography Lab	1
ENVS 333	Energy, Environment & Economics	3
ENVS 456	Future Sources of Energy	3
ENVS 460	Earth Science	3
ENVS 498	Independent Study	1-3
MATH 211	Calculus II	4

TOTAL PROGRAM REQUIREMENTS 120

**MARINE SCIENCE OPTION
Required and Recommended Course Sequence**

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 42 Credits

Students should consult with their freshman and departmental advisors when making course selections.

A. Curriculum Area I - Arts and Humanities 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: AGECE 213 or AGECE 213H, ECON 201 or ECON 201H, ECON 202 or ECON 202H, GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342
SOCI 101 or SOCI 111H

BEHAVIORAL SCIENCES: CRJS 101, HUECE 203, HUEDC 220, HUECE 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
PHYS	121	General College Physics I	3
PHYS	123	General College Physics Lab I	1
PHYS	122	General College Physics II	3
PHYS	124	General College Physics Lab II	1

D. Curriculum Area IV – (Mathematics) 3 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry or HIGHER	3

E. Curriculum Area V - English Composition 9 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I <u>or</u>	
ENGL	101H	Honors Basic Composition I	3
ENGL	102	Basic Composition II <u>or</u>	
ENGL	102H	Honors Basic Composition II	3
ENGL	305	Technical Writing <u>or</u>	
ENGL	310	Advanced Composition	3

F. Curriculum Area VI - Emerging Issues 7 Credits

Course	No.	Title	Credits
DNCS	100	Freshman Seminar	1
EDHE	111	Personalized Health Fitness	3
HUECE	230	Multicultural Perspectives on Families in the US	3

II. Program Core Requirements 32 Credits

Course No.	Title	Credits
BIOL 201	Marine Zoology	4
BIOL 202	Marine Botany and	3
BIOL 203	Marine Botany Lab	1
BIOL 301	Microbiology	4
BIOL 402	Ecology	4
ENVS 202	General Oceanography and	3
ENVS 204	General Oceanography Lab	1
ENVS 221	Principles of Environmental Science I and	3
ENVS 222	Principles of Environmental Science Lab I	1
ENVS 411	Water Pollution and Purifi.	3
ENVS 413	Water Pollution and Purifi. Lab	1
ENVS 497	Senior Seminar	1
ENVS 498	Independent Study or	1-3
ENVS 499	Undergraduate Research	1-3

III. Supportive Course Requirements* 35 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I and	3
BIOL 113	Principles of Biology Laboratory I	1
BIOL 112	Principles of Biology II and	3
BIOL 114	Principles of Biology Laboratory II	1
CHEM 111	Principles of Chemistry I and	3
CHEM 113	Principles of Chemistry Laboratory I	1
CHEM 112	Principles of Chemistry II and	3
CHEM 114	Principles of chemistry Laboratory II	1
CHEM 211	Fundamentals of Organic Chemistry I and	3
CHEM 213	Fundamentals of Organic Chemistry Laboratory I	1
CHEM 212	Fundamentals of Organic Chemistry II and	3
CHEM 214	Fundamentals of Organic Chemistry Laboratory II	1
MATH 112	Calculus I**	4
MATH 210	Elementary Statistics**	3
CSDP 220	Introduction to Computer Programming or	4
BUED 212	Computer Concepts and Applications, I	3***

*Students must receive a grade of “C” or better in both lecture and lab component to progress to the next sequence course.

**MATH 112 and MATH 210 may not be used to satisfy curriculum requirements for Area IV once used for Supportive courses.

***Students who select BUED 212 must select another credit from somewhere else.

IV. Program Electives* 8 Credits

Course No.	Title	Credits
BIOL 261	Invertebrate Zoology	4
BIOL 311	Vertebrate Embryology	4
BIOL 322	Comparative Vertebrate Anatomy	4
BIOL 326	Cell Biology	3
BIOL 327	Cell Biology Lab	1
BIOL 330	Evolution	3
BIOL 335	Biogeography	3
BIOL 341	Introductory Physiology	4
BIOL 361	Animal Behavior	4
BIOL 420	Animal Histology	3
BIOL 421	Animal Histology Lab	1
BIOL 426M	Biotechnology	4
BIOL 436	General Endocrinology	3

Course No.	Title	Credits
BIOL 441	Comparative Physiology	4
BIOL 463	Wildlife Management	4
CHEM 311	Analytical Chemistry I	4
CHEM 312	Analytical Chemistry II	4
CHEM 341	Biochemistry I and	3
CHEM 343	Biochemistry Lab I	1
CHEM 342	Biochemistry II and	3
CHEM 344	Biochemistry Laboratory II	1
CHEM 401	Principles of Physical Chemistry I	4
CHEM 402	Principles of Physical Chemistry II	4
CHEM 421	Instrumental Analysis	4
CHEM 422M	Bio-Inorganic Chemistry	3
MATH 211	Calculus II	4

*Students must receive a grade of "C" or better in both lecture and lab component to progress to the next sequence course.

TOTAL PROGRAM REQUIREMENTS

120

ENVIRONMENTAL SCIENCES COMBINED B.S./M.S. PROGRAM

The combined 4-year/5 year B.S./M.S. degree program offers two options: Environmental Chemistry and Marine Sciences. The for the two options are administered under the auspices of the undergraduate Environmental Science and the graduate Marine-Estuarine-Environmental Science (MEES) programs. The student receives the B.S. and M.S. degrees after completing the requirements for the two programs. A student wishing to pursue the 5-year M.S. program must make a formal application to the MEES program in the first semester of the Junior year. Students must take the GRE (General Test) during their junior year.

ENVIRONMENTAL CHEMISTRY OPTION

This program is designed to enable students to earn both the B.S. and M.S. degrees in five years. The curriculum is more advanced in the traditional B.S. degree program, and students become involved in directed research earlier. The curriculum for the two degrees is administered under the auspices of the undergraduate Environmental Science and the graduate Marine-Estuarine-Environmental-Science (MEES) programs. Two tracks are available, Environmental Chemistry and the Marine Science. The Environmental Chemistry track provides students with training in environmental contamination and toxicology, air and water pollution, waste treatment and disposal, and energy resources.

Students in the first two years of the program take courses to satisfy the General Education requirements, along with courses in Biology, Chemistry, Math, & Computer Sciences, and Physics. The Junior year provides training in topics specific to the field and prepares students who seek to pursue the M.S. program with prerequisites for the graduate level courses.

During the fourth year, additional courses providing advanced training in pollution and energy are offered. Majors who choose the B.S. program will graduate at the end of the fourth year with the requisite 120 credits. The 12-month period (5th year) subsequent to satisfying requirements for the B.S. degree are spent completing the M.S. requirements, including research work during the summer. For additional information, contact Chairman, Department of Natural Sciences or Director, B.S./M.S. Program in Environmental Chemistry or Marine Science.

ENVIRONMENTAL CHEMISTRY OPTION Required and Recommended Course Sequence

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I - Arts and Humanities 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II - Social and Behavioral Sciences 6 Credits

Students must select ECON 201 and one course in the Behavioral Sciences

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology Lab I	1
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology Lab II	1

D. Curriculum Area IV – (Mathematics) 3 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry or Higher	3

E. Curriculum Area V – (English Composition)	9 Credits
Course No. Title	Credits
ENGL 101 Basic Composition I or	
ENGL 101H Honors Basic Composition I	3
ENGL 102 Basic Composition II or	
ENGL 102H Basic Composition II	3
ENGL 305/W Technical Writing or	
ENGL 310/W Advanced Composition	3
F. (Curriculum Area VI - Emerging Issues)	7 Credits
Course No. Title	Credits
DNSC 100 Freshman Seminar	1
EDHE 111 Personalized Health Fitness	3
HUEC 230 Multicultural Perspectives on Families in the US	3
II. Program Core Requirements	32 Credits
A. Undergraduate Core Requirements*	31 Credits
Course No. Title	Credits
CHEM 311 Analytical Chemistry I	4
CHEM 312 Analytical Chemistry II	4
CHEM 488A Environmental Chemistry I and	3
CHEM 489 Environmental Chemistry I Lab	1
ENVS 221 Principles of Environmental Science and	3
ENVS 222 Principles of Environmental Science Laboratory	1
ENVS 411 Water Pollution & Purification and	3
ENVS 413 Water Pollution and Purification Lab	1
ENVS 434 Air Pollution & Control	4
ENVS 460 Earth Science	3
ENVS 497 Senior Seminar	1
ENVS 498 Independent Study or	3
ENVS 499 Undergraduate Research	3
B. Graduate Core Requirements*	1 Credits
Course No. Title	Credits
MEES 608A Envir. Chem Graduate Seminar	1
III. Supportive Course Requirements*	51 Credits
A. Undergraduate Supportive Course Requirements*	45 Credits
Course No. Title	Credits
BIOL 301 Microbiology and	3
BIOL 303 Microbiology Lab	1
CHEM 111 Principles of Chemistry I and	3
CHEM 113 Principles of Chemistry Laboratory I	1
CHEM 112 Principles of Chemistry II and	3
CHEM 114 Principles of Chemistry Laboratory II	1
CHEM 211 Fundamentals of Organic Chemistry I and	3
CHEM 213 Fundamentals of Organic Chemistry Laboratory I	1
CHEM 212 Fundamentals of Organic Chemistry II and	3
CHEM 214 Fundamentals of Organic Chemistry Laboratory II	1
CHEM 341 Biochemistry I and	3
CHEM 343 Biochemistry Laboratory I	1

Course No.	Title	Credits
CSDP 220	Introduction to Computer Programming <u>or</u>	4
BUED 212	Computer Concepts and Applications	3
ECON 202	Principles of Economics II	3
MATH 112	Calculus I**	4
MATH 210	Elementary Statistics**	3
PHYS 121	General College Physics I and	3
PHYS 123	General College Physics Lab I and	1
PHYS 122	General College Physics II and	3
PHYS 124	General College Physics Lab II	1
	or	
PHYS 181H	Introductory Physics I (Honors) and	3
PHYS 183H	Introductory Physics I (Honors) Lab	1
PHYS 182H	Introductory Physics II (Honors) and	3
PHYS 184H	Introductory Physics II (Honors) Lab	1

*Students must receive a grade of "C" or better in both lecture and lab component to progress to the next sequence course.

**MATH 112, and MATH 210 may not be used to satisfy curriculum requirements for Area IV once used for Supportive courses.

B. Graduate Supportive Course Requirements* 6 Credits

Course No.	Title	Credits
ENVS 639	Sources & Effects of Pollutants	3
CHEM 632	Applied Water Chemistry	3

IV. Program Electives 13 Credits

A. Undergraduate Supportive Course Requirements* 6 Credits

Course No.	Title	Credits
BIOL 402	Ecology	4
BIOL 426M	Biotechnology	4
CHEM 342	Biochemistry II and	3
CHEM 344	Biochemistry Lab. II	1
CHEM 401	Physical Chemistry I	4
CHEM 402	Physical Chemistry II	4
CHEM 422M	Bio-Inorganic Chemistry	3
ENVS 202	General Oceanography	3
ENVS 204	General Oceanography Lab	1
ENVS 333	Energy, Environment & Economics	4
ENVS 456	Future Sources of Energy	3
ENVS 460	Earth Science	3
ENVS 498	Independent Study	1-3
MATH 211	Calculus II	4

B. Graduate Supportive Course Requirements* 7 Credits

Course No.	Title	Credits
ENVS 641	Environmental Toxicology or	3
ENVS 601	Marine Ecotoxicology	4
BIOL 601	Environmental Microbiology	4

V.	Statistics Elective		3 Credits
	Course No.	Title	Credits
	MATH 410	Mathematical Statistics II <u>or</u>	
	CSDP 604	Computer Methods in Statistics	3
VI.	Management Elective		3 Credits
	Course No.	Title	Credits
	ENVS 684	Natural Resource Management	3
VII.	Thesis Research		6 Credits
	Course No.	Title	Credits
	MEES 799	Thesis Research	6
TOTAL PROGRAM REQUIREMENTS			150
(124 hours for B.S., plus 26 hours for M.S.)			

COMBINED B.S./M.S.MARINE SCIENCE OPTION
Required and Recommended Course Sequence

This program is designed to enable students to attain both the B.S. degree and M.S. degree in five years. Students who successfully complete this program receive a B.S. degree in Environmental Science (Marine Science Track) and an M.S. degree in Marine-Estuarine-Environmental-Science (MEES).

This program is offered in conjunction with the University of Maryland Center for Estuarine and Environmental Studies (CEES). Students are able to attain these degrees in five years by substituting MEES graduate courses for free electives, and taking courses and conducting research during summers. Only nine credit hours are allowed to overlap and be credited towards both the BS and MS degrees.

Students who wish to pursue the M.S. option must formally apply to the MEES program in the first semester of their junior year. If accepted, they may attend a summer-in-residence program at the Horn Point Environmental Laboratories in the summer following their junior year during which time they begin directed research and take a graduate level course.

In their senior year students complete their B.S. degree requirements by taking upper level undergraduate courses and also graduate level courses towards their M.S. degree. They have the option of being in residence at UMES or at a participating CEES laboratory during their senior and fifth years.

Majors may select any of the specialization areas offered in the MEES program. To receive the M.S. degree, students must satisfy degree requirements which include a total of 30 course credits: course work (24 credits) and Master's Thesis research (6 credits).

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 42 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts and Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 Credits

Students must select one course in each of two disciplines

SOCIAL SCIENCES: AGECE 213 or AGECE 213H, ECON 201 or ECON 201H, ECON 202 or ECON 202H, GEOG 201 or GEOG 202, HIST 101 or HIST 111H, HIST 102 or HIST 112H, POLI 200 or POLI 200H, POLI 342, SOCI 101 or SOCI 111H

BEHAVIORAL SCIENCES: CRJS 101, HUEC 203, HUEDC 220, HUEC 361, PSYC 200, SOCI 201, SOWK 200 or SOWK 200H

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
PHYS	121	General College Physics I or HIGHER	3
PHYS	123	General College Physics Lab I or HIGHER	1
PHYS	122	General College Physics II or HIGHER	3
PHYS	124	General College Physics Lab II or HIGHER	1

D. Curriculum Area IV – (Mathematics) 3 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry or HIGHER	3

E. Curriculum Area V – (English Composition) 9 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I or	
ENGL	101H	Honors Basic Composition I	3
ENGL	102	Basic Composition II or	
ENGL	102H	Honors Basic Composition II	3
ENGL	305	Technical Writing or	
ENGL	310	Advanced Composition	3

F. Curriculum Area VI – (Emerging Issues) 7 Credits

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
EDHE	111	Personalized Health Fitness	3
HUEC	230	Multicultural Perspectives on Families in the US	3

II. Program Core Requirements 36 Credits

Course No.	Title	Credits
ENVS 202	General Oceanography	3
ENVS 204	General Oceanography Lab	1
ENVS 221	Principles of Environmental Science and	3
ENVS 222	Principles of Environmental Science Laboratory	1
ENVS 497	Senior Seminar	1
ENVS 498	Independent Study or	1-3
ENVS 499	Independent Research	1-4
BIOL 201	Marine Zoology	4
BIOL 202	Marine Botany and	3
BIOL 203	Marine Botany Lab	1
BIOL 301	Microbiology and	3
BIOL 303	Microbiology Lab	1
BIOL 402	Ecology	4
ENVS 411/611	Water Pollution & Purification	4

III. Supportive Course Requirements* 39 Credits

Course No.	Title	Credits
BIOL 111	Principles of Biology I and	3
BIOL 113	Principles of Biology I Laboratory	1
BIOL 112	Principles of Biology II and	3
BIOL 114	Principles of Biology II Laboratory	1
CHEM 111	Principles of Chemistry I and	3
CHEM 113	Principles of Chemistry Laboratory I	1
CHEM 112	Principles of Chemistry II and	3
CHEM 114	Principles of Chemistry Laboratory II	1
CHEM 211	Fundamentals of Organic Chemistry I and	3
CHEM 213	Fundamentals of Organic Chemistry Laboratory I	1

Course No.	Title	Credits
CHEM 212	Fundamentals of Organic Chemistry II and	3
CHEM 214	Fundamentals of Organic Chemistry Laboratory II	1
MATH 112	Calculus I	4
MATH 211	Calculus II	4
CSDP 220	Introduction to Computer Programming or	4
BUED 212	Computer Concepts and Applications	4
MATH 210	Elementary Statistics	3

*Students must receive a grade of "C" or better in both lecture and lab component to progress to the next sequence course.

IV. Program Electives 12 Credits

Students must select four courses

Course No.	Title	Credits
BIOL 341	Introductory Physiology	4
BIOL 311	Vertebrate Embryology	4
BIOL 322	Comparative Vertebrate Anatomy	4
BIOL 326	Cell Biology	3
BIOL 327	Cell Biology Lab	1
BIOL 330	Evolution	3
BIOL 335	Biogeography	3
BIOL 361	Animal Behavior	4
BIOL 420	Animal Histology	4
BIOL 426M	Biotechnology	4
BIOL 436	General Endocrinology	3
BIOL 441	Comparative Physiology	4
BIOL 461	Invertebrate Zoology	4
CHEM 312	Analytical Chemistry II	4
CHEM 341	Biochemistry I	3
CHEM 343	Biochemistry Laboratory I	1
CHEM 342	Biochemistry II	3
CHEM 344	Biochemistry Laboratory II	1
CHEM 401	Physical Chemistry I	4
CHEM 402	Physical Chemistry II	4
CHEM 421	Instrumental Analysis	4
CHEM 422M	Bio-Inorganic Chemistry	3

V. MEES Electives 15 Credits

General

4 Credits

Course No.	Title	Credits
MATH 410	Mathematical Statistics II or	
CSDP 604	Computer Methods in Statistics	3
MEES 608	Seminar	1

Students must choose an Area of Specialization (AOS) in the MEES Program: Ecology, Environmental Chemistry, Environmental Molecular Biology/Biotechnology, Oceanography, Fisheries Science, or Environmental Science. UMES has its greatest strengths in Ecology and Environmental Chemistry. Students must meet the requirements of their AOS. Specific information can be found in the MEES Student Guide or from the MEES Office.

BIOL 683	Wildlife Management	4
BIOL 688A	Population Ecology	4

<u>Ecology AOS</u>		11 Credits
Course No.	Title	Credits
BIOL 600	Marine and Estuarine Ecology	4
BIOL 601	Environmental Microbiology	4
BIOL 633	Adaptation to Marine Environment	3
BIOL 681	Barrier Island Management	4
BIOL 688B	Community Ecology	4
ENVS 660	Earth Science	4

<u>Environmental Chemistry AOS</u>		11 Credits
Course No.	Title	Credits
CHEM 621	Advanced Environmental Chemistry	4
CHEM 632	Applied Water Chemistry	3
CHEM 670	Advanced Biochemistry	3
ENVS 611	Water Pollution	4
ENVS 634	Air Pollution and Control	4
ENVS 639	Sources and Effects of Pollutants	3
Course No.	Title	Credits
ENVS 641	Environmental Toxicology	3
ENVS 660	Earth Science	4
ENVS 684	Natural Resource Management	3

VI. Thesis Research **6 Credits**

TOTAL PROGRAM REQUIREMENTS **150**
(129 hours for B.S., plus 21 hours for M.S.)

**UMES - SU DUAL DEGREE PROGRAM
ENVIRONMENTAL SCIENCES MARINE SCIENCE OPTION**

The students enrolled at Salisbury University in the Biology Program may earn a degree in Environmental Sciences from UMES by taking 30 hours of prescribed coursework in Environmental Science at UMES. The required courses are listed below.

30 Credits

Course No.	Title	Credits
BIOL 201	Marine Zoology	4
BIOL 202	Marine Botany	4
ENVS 202	General Oceanography	3
ENVS 204	General Oceanography Lab	1
ENVS 221	Principles of Environmental Science	3
ENVS 222	Principles of Environmental Science Laboratory	1
ENVS 411	Water Pollution & Purification	3
ENVS 413	Water Pollution & Purification Lab	1
ENVS 434	Air Pollution <u>or</u>	
ENVS 460	Earth Science	3
Electives	7 hours of approved courses from SU	7

For additional information students are encouraged to contact Dr. Judy Stribling, Department of Biology, Salisbury University, Salisbury, Maryland 21801-6862/410-548-4767 or Dr. Joseph Okoh, Chairman, Department of Natural Sciences, University of Maryland Eastern Shore, Princess Anne, Maryland 21853/410-651-6013/6015.

MINOR PROGRAM

ENVIRONMENTAL SCIENCES

Courses that are used to satisfy requirements for science majors may not count towards the minor curriculum.

20 Credits

Course No.	Title	Credits
BIOL 402	Ecology	4
ENVS 202	General Oceanography and	3
ENVS 204	General Oceanography Lab	1
ENVS 221	Principles of Environmental Science and	3
ENVS 222	Principles of Environmental Science Laboratory	1
	Select any two additional sciences courses	8

**DENTAL HYGIENE
Required and Recommended Course Sequence**

This program offers the two years of lower division studies (pre-professional) required of a student desiring a career in Dental Hygiene. Upon completion of the pre-professional courses, the student transfers to a Dental Hygiene Program outside of UMES, for two years of upper division courses and clinical experience.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 33 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts & Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS:	ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY:	HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE:	FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE:	ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits

Course	No.	Title	Credits
PSYC	200	Introduction to Psychology I	3
SOCI	101	Introduction to Sociology	3

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
CHEM	101	General Chemistry	3
CHEM	103	General Chemistry Lab	1
CHEM	102	General Chemistry II	3
CHEM	104	General Chemistry II Lab	1

D. Curriculum Area IV – (Mathematics) 3 Credits

Course	No.	Title	Credits
MATH	109	College Algebra	3

E. Curriculum Area V – (English Composition) 6 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I	3
ENGL	102	Basic Composition II	3

F. Curriculum Area VI – (Emerging Issues) 1 credit

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1

II. Program Hygiene Core Requirements 16 Credits

Course	No.	Title	Credits
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Laboratory	1
BIOL	231	Human Anatomy & Physiology I	3
BIOL	233	Human Anatomy & Physiology I Lab	1

	Course No.	Title	Credits
	BIOL 232	Human Anatomy & Physiology II	4
	BIOL 234	Human Anatomy & Physiology II Lab	1
	BIOL 301	Microbiology	3
	BIOL 303	Microbiology Lab	1
III.	Supportive Core Requirements		10 Credits
	Course No.	Title	Credits
	CHEM 331	Elementary Organic Chemistry	4
	NUDT 210	Elements of Nutrition <u>or</u>	
	HUEC 331	Human Nutrition	3
	MATH 210	Elementary Statistics	3
IV.	Electives		6 Credits
	Course No.	Title	Credits
		Select from: Psychology, Economics, Political Science, Computer Science/Data Processing	6
		TOTAL PROGRAM REQUIREMENTS	65

**PRE-NURSING
Required and Recommended Course Sequence**

This program offers the academic courses required for lower division study in the undergraduate program of the University of Maryland School of Nursing. High School graduates accepted as freshmen at UMES may enroll for the freshman and sophomore years of study for the Pre-Nursing Program. Following two years of successful study at UMES with a cumulative grade point average of "C" or better, students may make application to transfer to the University of Maryland School of Nursing in Baltimore for completion of the remaining two years required for the B.S. degree. Students not aspiring to attend the University of Maryland School of Nursing should consult with their School of Nursing of choice to determine any additional courses that may be required for admission and tailor their curriculum accordingly.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 43 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I - Arts & Humanities 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218,
 ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits

Course	No.	Title	Credits
SOCI	101	Introduction to Sociology	3
PSYC	200	Introduction to Psychology I	3

C. (Curriculum Area III - Biological and Physical Sciences) 12 Credits

Course	No.	Title	Credits
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	101	General Chemistry I	3
CHEM	103	General Chemistry I Lab	1
CHEM	102	General Chemistry II	3
CHEM	104	General Chemistry II Lab	1

D. Curriculum Area IV – (Mathematics) 3 Credits

Course	No.	Title	Credits
MATH	109	College Algebra <u>or</u>	3
MATH	102	Survey of College Mathematics	3

E. Curriculum Area V – (English Composition) 6 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I	3
ENGL	102	Basic Composition II	3

F. Curriculum Area VI – (Emerging Issues) 4 Credits

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
		Select from: Sociology, Anthropology, Economics, Psychology, Political Science, Geography, History	3

II. Program Core Requirements 12 Credits

Course No.	Title	Credits
BIOL 231	Human Anatomy & Physiology I	3
BIOL 233	Human Anatomy and Physiology I Lab	1
BIOL 232	Human Anatomy & Physiology II	3
BIOL 234	Human Anatomy & Physiology II Lab	1
BIOL 301	Microbiology	3
BIOL 303	Microbiology Lab	1

A grade of "C" or better is required in each of the Program Core Requirements.

III. Supportive Course Requirements 14-15 Credits

Course No.	Title	Credits
NUDT 210	Elements of Nutrition	3
PSYC 305	Developmental Psychology <u>or</u>	
HUEC 203	Human Development: A Lifespan Perspective	3
ELECTIVES	Select from: Sociology, Anthropology, Economics, Psychology, Political Science, Geography, History	6
	FREE Electives	2-3

An overall grade point average of "C" or better is required for the group of courses representing the Supportive Course Requirements.

TOTAL PROGRAM REQUIREMENT 66

HONORS PRE-NURSING

Required and Recommended Course Sequence

Beginning Fall 2005, students who enroll in degree programs will be required to complete 12 alternative credits before graduating.

This program offers the academic courses required for lower division study in the undergraduate program of the University of Maryland School of Nursing. High School graduates accepted as freshmen at UMES may enroll for the freshman and sophomore years of study for the Pre-Nursing Program. Following two years of successful study at UMES with a cumulative grade point average of "C" or better, students may make application to transfer to the University of Maryland School of Nursing in Baltimore for completion of the remaining two years required for the B.S. degree. Students not aspiring to attend the University of Maryland School of Nursing should consult with their School of Nursing of choice to determine any additional courses that may be required for admission and tailor their curriculum accordingly.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 40 credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts & Humanities) 9 Credits

Students must select ENGL 203H plus two additional courses

ARTS:	ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109
HISTORY:	HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE:	FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE:	ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II - (Social and Behavioral Sciences) 6 Credits

Course	No.	Title	Credits
PSYC	200	Introduction to Psychology	3
SOCI	101	Introduction to Sociology	3

C. Curriculum Area III – (Biological and Physical Sciences) 12 Credits

Course	No.	Title	Credits
BIOL	111H	Honors Principles of Biology I	3
BIOL	113H	Honors Principles of Biology I Lab	1
CHEM	111H	Honors Principles of Chemistry I	3
CHEM	113H	Honors Principles of Chemistry I Lab	1
CHEM	112H	Honors Principles of Chemistry II	3
CHEM	114H	Honors Principles of Chemistry II Lab	1

D. Curriculum Area IV – (Mathematics) 3-4 credits

Course	No.	Title	Credits
MATH	110	Trigonometry and Analytic Geometry <u>or</u>	3
MATH	112	Calculus I	4

E. Curriculum Area V – (English Composition) 6 Credits

Course	No.	Title	Credits
ENGL	101H	Honors Basic Composition I	3
ENGL	102H	Honors Basic Composition II	3

F. Curriculum Area VI – (Emerging Issues) 4 Credits

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
		Select from: Sociology, Anthropology, Economics, Psychology, Political Science, Geography, History	3

II. Program Core Requirements 12 Credits

Course No.	Title	Credits
BIOL 231	Human Anatomy & Physiology I	3
BIOL 233	Human Anatomy & Physiology I Lab	1
BIOL 232	Human Anatomy & Physiology II	3
BIOL 234	Human Anatomy & Physiology II Lab	1
BIOL 301	Microbiology	3
BIOL 303	Microbiology Lab	1

A grade of “C” or better is required in each of the Program Core Requirements.

III. Supportive Course Requirements 14-15 Credits

Course No.	Title	Credits
NUDT 210	Elements of Nutrition	3
PSYC 307	Human Growth and Development <u>or</u>	
HUEC 203	Human Development: A Lifespan Perspective	3
ELECTIVE	Select from Sociology, Anthropology, Economics, Psychology, Political Science, Geography, History	6
	FREE Electives	2-3

An overall grade point average of “C” or better is required for the group of courses representing the Supportive Course Requirements.

TOTAL PROGRAM REQUIREMENTS 66

PHARMACY PRE-PROFESSIONAL PROGRAM
Required and Recommended Course Sequence

This program prepares students for transfer to the UMB School of Pharmacy or any other school of their choice for the 4-year entry-level Pharmacy program. Freshman and sophomore years are taken at the UMES campus. Students with a minimum cumulative average of 2.5 or better may apply to transfer to Baltimore for completion of the four-year program leading to the Pharmacy degree. Students are encouraged to take the Pharmacy College Admission Test (PCAT) in October or February of the year in which admission is sought and forward their scores and official transcripts to the School of Pharmacy's Office of Student Affairs. Applicants must present evidence of having successfully completed the required 62 semester hours of pre-pharmacy course work, or of being able to complete the pre-pharmacy course work before the start of classes in the fall.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 40 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts & Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses:

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109, MUSI 301H

HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310

LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102

LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 Credits

Course	No.	Title	Credits
PSYC	200	Introduction to Psychology	3
SOCI	101	Introduction to Sociology	3

C. Curriculum Area III – (Biological and Physical Sciences) 11 Credits

Course	No.	Title	Credits
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology Lab I	1
BIOL	301	Microbiology	3
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry Lab I	1

D. Curriculum Area IV – (Mathematics) 7 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry and Analytical Geometry	3
MATH	112	Calculus I	4

E. Curriculum Area V – (English Composition) 6 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I	3
ENGL	102	Basic Composition II	3

F. Curriculum Area VI – (Emerging Issues) 1 Credit

Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1

II.	Pharmacy Core Courses		20 Credits
	Course No.	Title	Credits
	CHEM 112	Principles of Chemistry II and	3
	CHEM 114	Principles of Chemistry Laboratory II	1
	CHEM 211	Fundamentals of Organic Chemistry I and	3
	CHEM 213	Fundamentals of Organic Chemistry Laboratory I	1
	CHEM 212	Fundamentals of Organic Chemistry II and	3
	CHEM 214	Fundamentals of Organic Chemistry Laboratory II	1
	PHYS 161	General Physics I and	3
	PHYS 163	General Physics Lab I	1
	PHYS 262	General Physics II and	3
	PHYS 264	General College Physics Lab II	1
		Take PHYS 121 - 124 or PHYS 181H – 184H series.	
III.	Supportive Course Requirements		9 Credits
	Course No.	Title	Credits
	ECON 201	Principles of Economics I	3
	MATH 210	Elementary Statistics	3
	SOCI	Elective	3
		TOTAL PROGRAM REQUIREMENTS	69

**HONORS PHARMACY PRE-PROFESSIONAL PROGRAM
Required and Recommended Course Sequence**

This program prepares students for transfer to the UMAB school of pharmacy or any other school of their choice for the 4-year entry-level Pharm D program. Freshman and sophomore years are taken at the UMES campus. Students with a minimum cumulative average of 2.5 or better may apply to transfer to Baltimore for completion of the four-year program leading to the Pharmacy degree. Students are encouraged to take the Pharmacy College Admission Test (PCAT) in October or February of the year in which admission is sought, and forward their scores and official transcripts to the School of Pharmacy's Office of Student Affairs. Applicants must present evidence of having successfully completed the required 62 semester hours of pre-pharmacy course work, or of being able to complete the pre-pharmacy course work before the start of classes in the fall.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION - 40 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts & Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109, MUSI 310H
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Social and Behavioral Sciences) 6 Credits

Course	No.	Title	Credits
PSYC	200	Introduction to Psychology	3
SOCI	101	Introduction to Sociology	3

C. Curriculum Area III – (Biological and Physical Sciences)			11 Credits
Course	No.	Title	Credits
BIOL	111H	Honors General Zoology	3
BIOL	113H	Honors General Zoology Lab	1
CHEM	111H	Honors Principles of Chemistry I	3
CHEM	113H	Honors Principles of Chemistry Lab	1
BIOL	301	Microbiology	3
D. Curriculum Area IV – (Mathematics)			7 Credits
Course	No.	Title	Credits
MATH	110H	Trigonometry and Analytical Geometry	3
MATH	112	Calculus I	4
E. Curriculum Area V – (English Composition)			6 Credits
Course	No.	Title	Credits
ENGL	101H	Honors Basic Composition I	3
ENGL	102H	Honors Basic Composition II	3
F. Curriculum Area VI – (Emerging Issues)			1 Credit
Course	No.	Title	Credits
DNSC	100	Freshman Seminar	1
II. Pharmacy Core Courses			20 Credits
Course No.		Title	Credits
CHEM 112H		Honors Principles of Chemistry II and	3
CHEM 114H		Honors Principles of Chemistry II Lab	1
CHEM 211H		Honors Fundamentals of Organic Chemistry I and	3
CHEM 213H		Honors Fundamentals of Organic Chemistry I Lab	1
CHEM 212H		Honors Fundamentals of Organic Chemistry II and	3
CHEM 214H		Honors Fundamentals of Organic Chemistry II Lab	1
PHYS 181H		Honors Introductory Physics I and	3
PHYS 183H		Honors Introductory Physics Lab I	1
PHYS 182H		Honors Introductory Physics II and	3
PHYS 184H		Honors Introductory Physics II Lab	1
III. Supportive Course Requirements			9 Credits
Course No.		Title	Credits
ECON 201		Principles of Economics I	3
MATH 210		Elementary Statistics	3
SOCI		Elective	3
TOTAL PROGRAM REQUIREMENTS			65

RADIATION THERAPY
Required and Recommended Course Sequence

This program offers the two years of lower division studies (pre-professional) required of a student desiring a career in Radiation Therapy. Upon completion of the pre-professional courses, the student transfers to a Department of Radiation Therapy for two years of upper division courses and clinical experience.

Programs in Radiation Therapy at the University of Alabama in Birmingham and the Medical University of South Carolina are available. UMES students may get information on how to complete their Bachelor of Science program and earn a degree in Radiation Therapy by applying to the Program Director at one of the schools above.

I. General Education Requirements

TOTAL REQUIRED FOR GENERAL EDUCATION – 36 Credits

Students should consult with their freshman or departmental advisor when making course selections.

A. Curriculum Area I – (Arts & Humanities) 9 Credits

Students must select ENGL 203 plus two additional courses

ARTS: ARTS 101, ARTS 310, MUSI 100, MUSI 101, MUSI 109, MUSI 310H
HISTORY: HIST 201, HIST 202, HIST 333, HIST 334, HIST 341, HIST 360, ARTS 310
LANGUAGE: FREN 101, FREN 102, SPAN 101, SPAN 102
LITERATURE: ENGL 204, ENGL 205, ENGL 206, ENGL 207, ENGL 215, ENGL 218, ENGL 327, ENGL 328, ENGL 329, ENGL 401

B. Curriculum Area II – (Behavioral Sciences) 6 Credits

Course	No.	Title	Credits
PSYC	200	Introduction to Psychology	3
SOCI	101	Introduction to Sociology	3

C. Curriculum Area III – (Biological and Physical Sciences) 8 Credits

Course	No.	Title	Credits
CHEM	111	Principles of Chemistry I and	3
CHEM	113	Principles of Chemistry Lab I	1
CHEM	112	Principles of Chemistry II and	3
CHEM	114	Principles of Chemistry Lab II	1

D. Curriculum Area IV – (Mathematics) 3 Credits

Course	No.	Title	Credits
MATH	110	Trigonometry & Analytical Geometry	3

E. Curriculum Area V – (English Composition) 6 Credits

Course	No.	Title	Credits
ENGL	101	Basic Composition I	3
ENGL	102	Basic Composition II	3

F. Curriculum Area VI – (Emerging Issues) 4 Credits

Course	No.	Title	Credits
EDHE	111	Personalized Health Fitness	3
DNCS	100	Freshman Seminar	1

II.	Program Core Courses Required		20 Credits
	Course No.	Title	Credits
	BIOL 111	Principles of Biology I and	3
	BIOL 113	Principles of Biology I Lab	1
	Course No.	Title	Credits
	BIOL 231	Human Anatomy & Physiology I and	3
	BIOL 233	Human Anatomy & Physiology I Lab	1
	BIOL 232	Human Anatomy & Physiology II and	3
	BIOL 234	Human Anatomy & Physiology II Lab	1
	PHYS 121	General College Physics I or Higher	3
	PHYS 123	General College Physics Lab I or HIGHER	1
	PHYS 122	General College Physics II	3
	PHYS 124	General College Physics Lab II or HIGHER	1
III.	Supportive Course Requirements		3 Credits
	Course No.	Title	Credits
	MATH 210	Elementary Statistics	3
	NUDT 210	Elements of Nutrition	3
IV.	Free Elective		3 Credits
		TOTAL PROGRAM REQUIREMENTS	65

**BIOLOGY NON-TEACHING/
PRE-PHYSICAL THERAPY
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry Lab I	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	110	Trig. & Analytical Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Lab	1
CHEM	112	Principles of Chemistry I	3
CHEM	114	Principles of Chemistry. I Lab	1
ENGL	102	Basic Composition II	3
MATH	112	Calculus I	<u>4</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL		Elective	4
CHEM	211	Fund. of Organic Chemistry I	3
CHEM	213	Fund. of Organic Chem. Lab I	1
EDHE	111	Personalized Health Fitness	3
ENGL	203	Fund. of Contemporary Speech	3
		GER CURR. AREA II	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
BIOL	222	Genetics	3
BIOL	223	Genetics Lab	1
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem. II Lab	1
CSDP	220	Intro to Computer Program or	4
CSDP	121	Microcomputer Applic. or	
BUED	212	Computer Concepts	3
ENGL	305	Technical Writing or	
ENGL	310	Advanced Composition	<u>3</u>
Semester Total			14/15

JUNIOR YEAR

FALL SEMESTER			HOURS
BIOL		Elective	4
BIOL	301	Microbiology and	3
BIOL	303	Microbiology Lab	1
		GER CURR. AREA I	3
PHYS	121	General College Physics I and	
PHYS	123	General College Physics I Lab or	
PHYS	181H	Intro. Physics I (Honors) and	3
PHYS	183H	Intro. Physics I (Honors) Lab	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL		Elective	4
PHYS	122	Gen. College Physics II and	
PHYS	124	Gen. College Physics II Lab or	
PHYS	182H	Honors Intro. Physics II and	3
PHYS	184H	Honors Intro. Physics II Lab	1
		GER CURR. AREA I	3
		GER CURR. AREA II	<u>3</u>
Semester Total			14

SENIOR YEAR

FALL SEMESTER			HOURS
BIOL		Elective	4
BIOL	497	Seminar	1
BIOL	498	Independent Study	3
CHEM	341	Biochemistry I	3
CHEM	343	Biochemistry I Lab I	1
		*FREE Elective	3
Semester Total			15

SPRING SEMESTER			HOURS
BIOL		Elective	4
BIOL	499	Undergraduate Research	4
CHEM	342	Biochemistry II	3
CHEM	344	Biochemistry II Lab	1
MATH	210	Elementary Statistics	<u>3</u>
Semester Total			15

Total Credits Required 119

Pre-dental, Pre-medical, and Pre-physical therapy students follow the recommended course sequence for non-teaching majors in Biology or Chemistry.

*Only 3 credits of Free Electives Required

BIOLOGY TEACHING
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology Lab I	1
ENGL	101	Basic Composition	3
		GER CURR. AREA II	3
DNSC	100	Freshman Seminar	1
MATH	110	Trig & Analytical Geometry	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Lab	1
ENGL	102	Basic Composition II	3
EDHE	111	Personalized Health Fitness	3
		GER CURR. AREA I	3
		GER CURR. AREA II	<u>3</u>
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL		Elective	3
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
EDCI	288	PRAXIS Preparation	1+
EDCI	200	Intro. to Contemporary Ed	3
ENGL	203	Fund. of Contemporary Speech	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
BIOL	222	Genetics and	3
BIOL	223	Genetics Lab	1
CHEM	112	Principles of Chemistry II and	3
CHEM	114	Principles of Chemistry II Lab	1
ENGL	305/W	Technical Writing or	
ENGL	310/W	Advanced Composition	3
MATH	210	Elementary Statistics	3
PSYC	305	Development Psychology	<u>3</u>
Semester Total			17

JUNIOR YEAR

FALL SEMESTER			HOURS
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
CHEM	211	Fund. of Organic Chem. I	3
CHEM	213	Fund. of Organic Chem. I Lab	1
EDCI	311	Comprehensive Assessment	3
PHYS	121	General College Physics I	3
PHYS	123	General College Physics I Lab	1
PSYC	307	Education Psychology	<u>3</u>
Semester Total			18

SPRING SEMESTER			HOURS
PHYS	122	General College Physics II	3
PHYS	124	General College Physics II Lab	1
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem. II Lab	1
EDCI	406	Classroom Management	3
EDCI	409	Teaching. Reading in the	
		Content Areas: Part I	<u>3</u>
Semester Total			14

SENIOR YEAR

FALL SEMESTER			HOURS
BIOL	497	Seminar	1
EDCI	410	Teaching Reading in the	
		Content Area: Part II	3
EDCI	425A	Curr. & Instru. in Nat. Sci.	3
EDSP	428	Comm. & Collab. In Special Ed	3
		GER CURR. AREA I	<u>3</u>
Semester Total			13

SPRING SEMESTER			HOURS
EDCI	400	Senior Seminar in Education	3
EDCI	480	Teaching Internship: Mid. Sch.	6
EDCI	490	Teaching Internship: High Sch.	<u>6</u>
Semester Total			15

Total Credits Required 120

+Credit does not count toward graduation.

**HONORS BIOLOGY
(PRE-MEDICINE/PRE-DENTISTRY)
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111H	Hon. Principles of Biology I	3
BIOL	113H	Hon. Principles of Biology I Lab	1
CHEM	111H	Hon. Principles of Chemistry I	3
CHEM	113H	Hon. Prin. of Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101/H	Basic Composition/Honors	3
MATH	110/H	Trig & Analytical Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	112H	Hon. Principles of Biology II	3
BIOL	114H	Hon. Principles of Biology II Lab	1
CHEM	112H	Hon. Principles of Chemistry II	3
CHEM	114H	Hon. Principles of Chem. II Lab	1
ENGL	102H	Hon. Basic Composition II	3
MATH	112H	Calculus	<u>4</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL		Elective	4
CHEM	211H	Hon. Fund. of Org. Chem. I	3
CHEM	213H	Hon. Fund. of Org. Chem. I Lab	1
EDHE	111	Personal Health Fitness	3
ENGL	203H	Fund. of Contemporary Speech	3
		GER CURR. AREA II (Honors)	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
BIOL	222	Genetics	3
BIOL	223	Genetics Lab	1
BUED	212	Computer Concepts	3
CHEM	212H	Hnrs. Fund. of Organ. Chem. II	3
CHEM	214H	Hnrs. Fund. of Organ. Chem. II Lab	1
ENGL	305H	Technical Writing <u>or</u>	
ENGL	310H	Advanced Composition	<u>3</u>
Semester Total			14

*Only 3 credits of Free Electives required.

JUNIOR YEAR

FALL SEMESTER			HOURS
BIOL		Elective	4
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
		GER CURR. AREA I (Honors)	3
PHYS	181H	Honors Intro. Physics I	3
PHYS	183H	Honors Intro. Physics I Lab	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL		Elective	4
		GER CURR. AREA I (Honors)	<u>3</u>
		GER CURR AREA II	3
PHYS	182H	Honors Intro. Physics II	3
PHYS	184H	Honors Intro Physics II Lab	<u>1</u>
Semester Total			14

SENIOR YEAR

FALL SEMESTER			HOURS
BIOL	498H	Honors Independent Study	3
BIOL		Elective	4
BIOL	497H	Seminar	1
CHEM	341H	Honors Biochemistry I	3
CHEM	343H	Honors Biochemistry I Lab	1
		*FREE Elective	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL		Elective (Honors)	4
BIOL	499H	Honors Undergraduate Research	4
CHEM	342H	Honors Biochemistry II	3
CHEM	343H	Honors Biochemistry II Lab	1
MATH	210	Elementary Statistics I	<u>3</u>
Semester Total			15

Total Credits Required 119

Students in the Honors, Premedicine/Pre dentistry programs are required to enroll in all sections designated "H". They are required to take the Medical College Admission Test (MCAT) during the Spring semester of the academic year preceding the year in which admission to the UMB School of Medicine is sought. Applications to medical school(s) should be made no later than the fall semester of the senior year.

Cell Biology, Histology and a course in Anatomy or Embryology are strongly recommended.

BIOLOGY PRE-MED
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNCS	100	Freshman Seminar	1
ENGL	101	English Composition I	3
MATH	110	Trig and Analytical Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Lab	1
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
ENGL	001	Proficiency Exam	0
ENGL	102	English Composition	3
MATH	112	Calculus I	<u>4</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
CHEM	211	Organic Chemistry I	3
CHEM	213	Organic Chemistry I Lab	1
MATH	210	Elementary Statistics	3
PSYC	200	Introduction to Psychology	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
BIOL	222	Genetics	3
BIOL	223	Genetics Lab	1
CHEM	212	Organic Chemistry II	3
CHEM	214	Organic Chemistry II Lab	1
CSDP	220	Computer Programming	<u>4</u>
ENGL	203	Fund. of Contemporary Speech	3
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
BIOL	311	Vertebrate Embryology	4
BIOL	322	Comparative Vertebrate Anat.	4
EDHE	111	Personalized Health Fitness	3
PHYS	121	General College Physics I	3
PHYS	123	General College Physics I Lab	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
BIOL	341	Introductory Physiology	4
ENGL	305/W	Technical Writing	<u>3</u>
PHYS	122	General College Physics II	3
PHYS	124	General College Physics II Lab	1
Semester Total			15

SENIOR YEAR

FALL SEMESTER			HOURS
BIOL	326	Cell Biology	3
BIOL	327	Cell Biology Lab	1
BIOL	420	Animal Histology	3
BIOL	421	Animal Histology Lab	1
BIOL	497	Senior Seminar	1
CHEM	341	Biochemistry I	3
CHEM	343	Biochemistry I Lab	1
ENGL	218	Approaches to Grammar	<u>3</u>
Semester Total			16

SPRING SEMESTER			HOURS
BIOL	436	General Endocrinology	3
BIOL	498	Independent Study	
CHEM	342	Biochemistry II	3
CHEM	344	Biochemistry II Lab	1
HIST	334	African American History II	3
SOCI	101	Introduction to Sociology	3
Semester Total			15

Total Credits Required 120

**CHEMISTRY NON-TEACHING
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	110	Trig. & Analytical Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
ENGL	102	Basic Composition II	3
		GER CURR. AREA I: Foreign Language I	3
MATH	112	Calculus I	<u>4</u>
Semester Total			14

SOPHOMORE YEAR

FALL SEMESTER			HOURS
CHEM	211	Fund. of Organic Chem. I	3
CHEM	213	Fund. of Organic Chem. I Lab	1
ENGL	203	Fund. of Contemporary Speech	3
		GER CURR. AREA I: Foreign Language II	3
MATH	211	Calculus II	<u>4</u>
Semester Total			14

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Lab	1
ENGL	305	Technical Writing or	
ENGL	310	Advanced Composition	3
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem. II Lab	1
PHYS	161	General Physics I and	
PHYS	163	General Physics Lab or	
PHYS	181H	Honors Intro. Physics I and	3
PHYS	183H	Honors Intro. Physics I Lab	<u>1</u>
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
CHEM	311	Analytical Chemistry I	4
CSDP	121	Microcomputer Applications and	3
		Elective or	
BUED	212	Comp. Concepts./Aps. I and	
		Elective or	
*CSDP	220	Intro. to Computer Program.	4
PHYS	182H	Honors Intro. Physics II and	
PHYS	184H	Honors Intro. Physics II Lab or	
PHYS	262	General Physics II and	3
PHYS	264	General Physics II Lab	1
EDHE	111	Personalized Health Fitness	<u>3</u>
Semester Total			14/15

SPRING SEMESTER			HOURS
CHEM	312	Analytical Chemistry II	4
CHEM	341	Biochemistry I	3
CHEM	343	Biochemistry I Laboratory	1
CHEM	497	Seminar	1
CHEM	498	Independent Study	3
		GER CURR. AREA II	<u>3</u>
Semester Total			15

SENIOR YEAR

FALL SEMESTER			HOURS
CHEM	401	Principles of Physical Chem. I	4
CHEM	420	Advanced Inorganic Chemistry	4
CHEM	421	Instrumental Analysis	4
		GER CURR. AREA II	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOUR
CHEM		Elective with lab component	4
CHEM		Elective	3~4
CHEM	402	Principles of Physical Chem. II	4
CHEM	499	Undergraduate Research	3
		FREE Elective	<u>3</u>
Semester Total			18

Total Credits Required 120

Two semesters of foreign language highly recommended to fulfill free elective or general education requirement.

CHEMISTRY TEACHING
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	110	Trig. & Analytical Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
ENGL	102	Basic Composition I	3
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chem. II Lab	1
EDHE	111	Personalized Health Fitness	3
		GER CURR. AREA II	3
MATH	112	Calculus I	<u>4</u>
Semester Total			17

SOPHOMORE YEAR

FALL SEMESTER			HOURS
CSDP*	220	Intro. to Computer Program.	4
CHEM	211	Fund. of Organic Chem. I	3
CHEM	213	Fund. of Organic Chem. I Lab	1
EDCI	200	Intro. to Contemporary Ed.	3
EDCI	288	PRAXIS Preparation	1+
MATH	211	Calculus II	<u>4</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem. II Lab	1
		GER CURR. AREA I	3
PSYC	305	Development Psychology	3
PSYC	307	Educational Psychology	<u>3</u>
Semester Total			13

JUNIOR YEAR

FALL SEMESTER			HOURS
CHEM	311	Analytical Chemistry I	4
CHEM	497	Seminar	1
EDCI	311	Comprehensive Assessment	3
ENGL	203	Fund. of Contemporary Speech	3
		GER CURR. AREA I	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
CHEM	499	Undergraduate Research	1
EDCI	406	Classroom Management	3
ENGL	305	Technical Writing <u>or</u>	
ENGL	310	Advanced Composition	3
		GER CURR. AREA II	3
PHYS	161	General Physics I and	3
PHYS	163	General Physics I Lab	<u>1</u>
Semester Total			14

SENIOR YEAR

FALL SEMESTER			HOURS
CHEM	401	Principals of Physical Chem. I	4
EDCI	425A	Curri. & Instr. Mthds Nat. Sci.	3
EDCI	409	Teaching Reading in the	
		Content Areas: Part I	3
EDSP	428	Comm. and Collab. In Spec. Ed.	3
PHYS	262	Introductory Physics II	3
PHYS	264	Introductory Physics II Lab	<u>1</u>
Semester Total			17

SPRING SEMESTER			HOURS
EDCI	400	Senior Seminar	3
EDCI	480	Teach. Internship: Mid. Sch.	6
EDCI	490	Teach. Internship: High Sch.	<u>6</u>
Semester Total			15

Total Credits Required 120

Two semesters of foreign language highly recommended to fulfill free elective or general education requirement.

+Credit does not count toward graduation.

HONORS CHEMISTRY (PRE-MEDICINE)
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111H	Honors Prin. of Biology I	3
BIOL	113H	Honors Prin. of Biology I Lab	1
CHEM	111H	Hnrs. Prin. of Inorgan. Chem. I	3
CHEM	113H	Hnrs. Prin. of Inorgan. Chem. I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101H	Honors English Composition	3
MATH	110	Trig. & Analytical Geometry <u>or</u>	3
MATH	111H	Honors Elem. Math Analysis	<u>4</u>
Semester Total			15-16

SPRING SEMESTER			HOURS
CHEM	112H	Honors Prin. of Chem. II	3
CHEM	114H	Honors Prin. of Chem. II Lab	1
ENGL	102H	Honors English Composition II	3
		GER CURR. AREA I	3
MATH	112	Calculus I	<u>4</u>
Semester Total			14

SOPHOMORE YEAR

FALL SEMESTER			HOURS
CHEM	211H	Hnrs. Fund. of Organ. Chem I	3
CHEM	213H	Hnrs. Fund. of Organ. Chem I Lab	1
ENGL	203	Fund. of Contemporary Speech	3
		GER CUR. AREA I	3
MATH	211	Calculus II	<u>4</u>
Semester Total			14

SPRING SEMESTER			HOURS
BIOL	112H	Hnrs. Prin. of Biology II	3
BIOL	114H	Hnrs. Prin. of Biology II Lab	1
CHEM	212H	Hnrs. Fund. of Organ. Chem. II	3
CHEM	214H	Hnrs. Fund. of Organ. Chem II Lab	1
ENGL	305H	Honors Technical Writing <u>or</u>	
ENGL	310H	Honors Advanced Composition	3
		GER CURR AREA	<u>3</u>
Semester Total			14

JUNIOR YEAR

FALL SEMESTER			HOURS
CHEM	311	Analytical Chemistry I	4
CHEM	341H	Honors Biochemistry I	3
CHEM	343H	Honors Biochemistry I Lab	1
CSDP	220	Intro to Computer Program.	4
		GER CURR. AREA II	3
PHYS	181H	Honors Intro. Physics I	3
PHYS	183H	Honors Intro. Physics Lab I	<u>1</u>
Semester Total			19

SPRING SEMESTER			HOURS
CHEM	312	Analytical Chemistry II	4
CHEM	497H/M	Chemistry Seminar	1
CHEM	498H	Independent Study	3
		FREE Elective	3
PHYS	182H	Honors Intro. Physics II	3
PHYS	184H	Honors Intro. Physics Lab II	<u>1</u>
Semester Total			15

SENIOR YEAR

FALL SEMESTER			HOURS
CHEM	421	Instrument Analysis	4
CHEM	420	Advanced Inorganic Chemistry	4
CHEM	401	Prin. of Physical Chemistry I	4
EDHE	111	Personalized Health Fitness	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHEM		Elective	3
CHEM		Elective with lab component	4
CHEM	402	Prin. of Physical Chemistry II	4
CHEM	499H	Honors Undergraduate Research	<u>3</u>
Semester Total			14

Total Credits Required 120

Students in the Honors, Premedicine/Pre dentistry programs are required to enroll in all sections designated "H". They are required to take the Medical College Admission Test (MCAT) during the Spring Semester of the academic year preceding the year in which admission to medical school is sought. Applications to medical school(s) should be made no later than the fall semester of the senior year. Courses in Genetics, Cell Biology, Histology and Microbiology are strongly recommended.

ENVIRONMENTAL CHEMISTRY OPTION
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	110	Trig. & Analytical Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Lab	1
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
EDHE	111	Personalized Health Fitness	3
ENGL	102	Basic Composition II	3
MATH	112	Calculus I	<u>4</u>
Semester Total			18

SOPHOMORE YEAR

FALL SEMESTER			HOURS
CHEM	211	Fund. of Organic Chem. I	3
CHEM	214	Fund. of Organic Chem. I Lab	1
CSDP	220	Intro to Computer Science	4
ECON	201	Principles of Economics I	3
PHYS	121	General College Physics I and	3
PHYS	123	General College Physics I lab or	1
PHYS	181H	Introductory Physics I	3
PHYS	183H	Introductory Physics I Lab	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem. II Lab I	1
ECON	202	Principles of Economics II	3
MATH	210	Elementary Statistics	3
PHYS	122	General College Physics II and	3
PHYS	124	General College Physics II Lab or	1
PHYS	182H	Honors Intro. Physics II and	3
PHYS	184H	Honors Intro. Physics Lab II	<u>1</u>
Semester Total			14

JUNIOR YEAR

FALL SEMESTER			HOURS
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
CHEM	311	Analytical Chemistry	4
CHEM	341	Biochemistry I	3
CHEM	343	Biochemistry I Laboratory	<u>1</u>
Semester Total			12

SPRING SEMESTER			HOURS
CHEM	312	Analytical Chemistry II	3
ENGL	203	Fund. of Contemporary Speech	3
ENGL	305/W	Technical Writing or	
ENGL	310/W	Advanced Composition	3
ENVS	221	Principles of Environ. Sci.	3
ENVS	222	Principles of Environ. Sci. Lab	1
		GER. CURR. AREA VI	<u>3</u>
Semester Total			16

SENIOR YEAR

FALL SEMESTER			HOURS
ENVS	411	Water Pollution	3
ENVS	413	Water Pollution Lab	1
ENVS	497	Seminar	1
		GER CURR. AREA I	3
		GER. CURR. AREA V	3
		Program Area Elective	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
CHEM	488	Environmental Chemistry	3
CHEM	489	Environmental Chemistry Lab	1
ENVS	434	Air Pollution	4
ENVS	498	Independent Study or	
ENVS	499	Undergraduate Research	5
		GER CURR. AREA II: Discipline B	<u>3</u>
Semester Total			16
Total Credits Required			120

**MARINE SCIENCE OPTION
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	110	Trig. & Anal Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Lab	1
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
ENGL	102	Basic Composition II	3
MATH	112	Calculus I	<u>4</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL	202	Marine Botany	3
BIOL	203	Marine Botany Lab	1
CHEM	211	Fund. of Organ. Chem. I	3
CHEM	213	Fund. of Organ. Chem. I Lab	1
ENVS	202	General Oceanography	3
ENVS	204	General Oceanography Lab	1
		Program Elective	<u>4</u>
Semester Total			16

SPRING SEMESTER			HOURS
CHEM	212	Fund. of Organ. Chem. II	3
CHEM	214	Fund. of Organ. Chem. II Lab	1
BIOL	201	Marine Zoology	4
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	<u>4</u>
EDHE	111	Personalized Health Fitness	3
Semester Total			15

JUNIOR YEAR

FALL SEMESTER			HOURS
CSDP	220	Intro to Computer Program.	4
ENGL	203	Fund. of Contemporary Speech	3
ENVS	221	Prin. of Environ. Science	3
ENVS	222	Prin. of Environ. Science Lab	1
PHYS	121	General College Physics I	3
PHYS	123	General College Physics Lab I	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
ENGL	305/W	Technical Writing <u>or</u>	
ENGL	310/W	Advanced Composition	3
		GER CURR. AREA II	3
PHYS	122	General College Physics II	3
PHYS	124	General College Physics Lab II	<u>1</u>
Semester Total			10

SENIOR YEAR

FALL SEMESTER			HOURS
BIOL	402	Ecology	4
ENVS	411	Water Pollution and Purifi.	3
ENVS	413	Water Pollution and Purifi. Lab	1
ENVS	497	Environmental Science Seminar	1
		GER CURR. AREA I	3
		GER CURR. AREA II	3
MATH	210	Elementary Statistics	<u>3</u>
Semester Total			18

SPRING SEMESTER			HOURS
ENVS	498	Independent Study <u>or</u>	
ENVS	499	Undergraduate Research	3
		FREE Elective	3
		GER CURR. AREA I	3
		Program Elective	3
		Program Elective	<u>4</u>
Semester Total			16

Total Credits Required 120

BS/MS ENVIRONMENTAL CHEMISTRY OPTION
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	110	Principles of Biology I	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
BIOL	112	Principles of Biology II	3
BIOL	114	Principles of Biology II Lab	1
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
EDHE	111	Personalized Health Fitness	3
ENGL	102	Basic Composition II	3
MATH	112	Calculus I	<u>4</u>
Semester Total			18

SOPHOMORE YEAR

FALL SEMESTER			HOURS
CHEM	211	Fund. of Organic Chem. I	3
CHEM	213	Fund. of Organic Chem. I Lab	1
CSDP	220	Intro to Computer Program.	4
MATH	211	Calculus II	4
PHYS	121	General College Physics I and	
PHYS	123	General College Physics I Lab or	
PHYS	181H	Honors Intro. Physics I and	3
PHYS	183H	Honors Intro. Physics I Lab	<u>1</u>
Semester Total			16

SPRING SEMESTER			HOURS
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem. II Lab	1
ENGL	305	Technical Writing or	
ENGL	310	Advanced Composition	3
MATH	210	Elementary Statistics	3
PHYS	122	General College Physics II and	
PHYS	124	General College Physics II Lab or	
PHYS	182H	Introductory Physics II and	
PHYS	184H	Introductory Physics Lab II	<u>4</u>
Semester Total			14

JUNIOR YEAR

FALL SEMESTER			HOURS
CHEM	311	Analytical Chemistry I	4
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
ECON	201	Principles of Economics I	3
FREE Elective			1-3
GER CURR. AREA I			<u>3</u>
Semester Total			15-16

SPRING SEMESTER			HOURS
CHEM	312	Analytical Chemistry II	4
ENGL	203	Fund. of Contemporary Speech	3
ECON	202	Principles of Economics II	3
ENVS	221	Principles of Environ. Sci.	3
ENVS	222	Principles of Environ. Sci. Lab	1
GER CURR. AREA I			<u>3</u>
Semester Total			17

SENIOR YEAR

FALL SEMESTER			HOURS
CHEM	341	Biochemistry I	3
CHEM	343	Biochemistry I Laboratory	1
CHEM	621	Environmental Chemistry	4
ENVS	411/611	Water Pollution	4
ENVS	497	Seminar	<u>1</u>
Semester Total			13

SPRING SEMESTER			HOURS
ENVS	434/634	Air Pollution	4
ENVS	460/660	Earth Science	4
ENVS	498	Independent Study or	
ENVS	499	Undergraduate Research	3
GER CURR. AREA II: Behavioral Science			3
Program Electives Area IV			<u>3-4</u>
Semester Total			17-18

SUMMER AFTER SENIOR YEAR			HOURS
MEES	799	Thesis Research	3

FIFTH YEAR

FALL SEMESTER			HOURS	SPRING SEMESTER			HOURS
CHEM	632	Applied Water Chemistry	3	BIOL	601	Environmental Microbiology	4
ENVS	601	Marine Ecotoxicology or		ENVS	684	Natural Resource Management	3
ENVS	641	Environmental Toxicology	3	MEES	799	Research	3
ENVS	639	Sources of Pollutant	3	Semester Total			10
CSDP	604	Computer Mthds in Statistics or		Total Credits Required			150
MATH	410	Advanced Statistics	3				
MEES	608	Seminar	<u>1</u>				
Semester Total			13				

**BS/MS MARINE SCIENCE OPTION
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOUR
ENGL	101	Basic Composition I	3
MATH	110	Trig. & Analytical Geometry	3
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNSC	100	Freshman Seminar	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
ENGL	102	Basic Composition II	3
MATH	112	Calculus I	4
BIOL	112	Principles of Biology 1	3
BIOL	114	Principles of Biology I Lab	1
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
EDHE	111	Personalized Health Fitness	<u>3</u>
Semester Total			18

SOPHOMORE YEAR

FALL SEMESTER			HOURS
ENGL	203	Fund. of Contemporary Speech	3
MATH	211	Calculus	4
CHEM	211	Fund. of Organ. Chem. I	3
CHEM	213	Fund. of Organ. Chem. I Lab	1
ENVS	202	General Oceanography	3
ENVS	204	General Oceanography Lab	<u>1</u>
Semester Total			15

SPRING SEMESTER			HOURS
ENGL	305	Technical Writing	3
		GER CURR. AREA II	3
CHEM	212	Fund. of Organ. Chem. II	3
CHEM	214	Fund. of Organ. Chem. II Lab	1
		GER CURR. AREA I	3
BIOL	201	Marine Zoology	<u>4</u>
Semester Total			17

JUNIOR YEAR

FALL SEMESTER			HOURS
PHYS	121	General College Physics I	3
PHYS	123	General College Physics Lab I	1
BIOL	202	Marine Biology	3
BIOL	203	Marine Biology Lab	1
BIOL	402	Ecology	4
CSDP	220	Intro to Comp. Programming	<u>4</u>
Semester Total			16

SPRING SEMESTER			HOURS
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
ENVS	221	Prin. of Environmental Sci.	3
ENVS	222	Prin. of Environmental Sci. Lab	1
MATH	210	Elementary Statistics	3
PHYS	122	General College Physics II	3
PHYS	124	General College Physics Lab II I	1
		GER CURR. AREA II	<u>3</u>
Semester Total			18

SUMMER SESSION			HOURS
ENVS	498	Independent Study <u>or</u>	
ENVS	499	Undergraduate Research	<u>4</u>
		Program Elective	4
Semester Total			8

SENIOR YEAR

FALL SEMESTER			HOURS
ENVS	411/611	Water Pollution and Purification	4
ENVS	497	Senior Seminar	1
MATH	210	Elementary Statistics	3
		Program Elective	3
		Program Elective	<u>3</u>
Semester Total			14

SPRING SEMESTER			HOURS
		GER CURR. AREA I	3
CSDP	604	Computer Methods in Statistics <u>or</u>	
MATH	410	Math Statistics	3
MEES		Elective	4
MEES	608	MEES Seminar	1
		Program Elective	<u>3</u>
Semester Total			14

SUMMER SESSION			HOURS
MEES	799	Research	3
MEES		Elective	<u>3</u>
Semester Total			6

FIFTH YEAR

FALL SEMESTER			HOURS	SPRING SEMESTER			HOURS
MEES		Elective	3	MEES 799	Research		3
MEES	608	MEES Seminar	<u>1</u>	MEES	Elective		<u>3</u>
		Semester Total	4		Semester Total		6
					Total Credits Required		150

DENTAL HYGIENE
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	101	General Chemistry I	3
CHEM	103	General Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	109	College Algebra	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHEM	102	General Chemistry II	3
CHEM	104	General Chemistry II Lab	1
ENGL	102	Basic Composition II	3
		GER CURR. AREA I	3
MATH	210	Elementary Statistics	3
SOCI	101	Introduction to Sociology	<u>3</u>
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL	231	Human Anat. and Physi. I	3
BIOL	233	Human Anat. And Physi. I Lab	1
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
		GER CURR. AREA I	3
PSYC	200	Introduction to Psychology	3
SOCI		Elective	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
BIOL	232	Human Anat. & Physi. II	3
BIOL	234	Human Anat. & Physi. II Lab	1
CHEM	331	Elementary Organic Chemistry	4
ENGL	203	Fund. of Contemporary Speech	3
NUDT	391	Nutritional Science I <u>or</u>	
NUDT	210	Elements of Nutrition	3
SOCI		Elective	<u>3</u>
Semester Total			17

Total Credits Required 65

NURSING PRE-PROFESSIONAL PROGRAM
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	101	General Chemistry I	3
CHEM	103	General Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
MATH	109	College Algebra	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
CHEM	102	General Chemistry II	3
CHEM	104	General Chemistry II Lab	1
ENGL	102	Basic Composition II	3
		FREE Elective	2
SOCI	101	Introduction to Sociology	3
		GER CURR. AREA I	<u>3</u>
Semester Total			15

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL	231	Human Anat. & Physi. I	3
BIOL	233	Human Anat. & Physi. I Lab	1
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
ENGL	203	Fund. of Contemporary Speech	3
		GER CURR. AREAVI	3
PSYC	200	Introduction to Psychology	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
BIOL	232	Human Anat. & Physi. II	3
BIOL	234	Human Anat. & Physi. II Lab	1
		Electives	6
		GER CURR. AREA VI	3
NUDT	210	Elements of Nutrition	3
PSYC	305	Developmental Psychology	<u>3</u>
Semester Total			19

Total Credits Required 66

PHARMACY PRE-PROFESSIONAL PROGRAM
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
BIOL	113	Principles of Biology I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition I	3
		GER CURR. AREA I	3
MATH	110	Trig. & Analytical Geometry	<u>3</u>
Semester Total			18

SPRING SEMESTER			HOURS
ENGL	102	Basic Composition	3
MATH	112	Calculus I	4
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
SOCI	101	Introduction to Sociology	3
		GER CURR. AREA I	<u>3</u>
Semester Total			17

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
CHEM	211	Fund. of Organic Chem. I	3
CHEM	213	Fund. of Organic Chem. I Lab	1
ECON	101	Interpretive Analysis	3
ENGL	203	Fund. of Contemporary Speech	3
PHYS	161	General College Physics I and	
PHYS	163	General College Physics I Lab or	
PHYS	181H	Honors Intro. Physics I and	3
PHYS	183H	Honors Intro. Physics I Lab	<u>1</u>
Semester Total			18

SPRING SEMESTER			HOURS
CHEM	212	Fund. of Organic Chem. II	3
CHEM	214	Fund. of Organic Chem. II Lab	1
PHYS	182H	Hnrs. Gen. Col. Physics I and	
PHYS	184H	Hnrs. Gen. Col. Physics I Lab or	
PHYS	262	Introductory Physics I and	3
PHYS	264	Introductory Physics Lab I	1
PSYC	200	Introduction to Psychology	3
SOCI		Elective	3
MATH	210	Elementary Statistics	<u>3</u>
Semester Total			17

Total Credits Required 69

RADIATION THERAPY
PRE-PROFESSIONAL PROGRAM
Recommended Course Sequence

FRESHMAN YEAR

FALL SEMESTER			HOURS
BIOL	111	Principles of Biology I	3
BIOL	113	Principles of Biology I Lab	1
CHEM	111	Principles of Chemistry I	3
CHEM	113	Principles of Chemistry I Lab	1
DNSC	100	Freshman Seminar	1
ENGL	101	Basic Composition	3
MATH	110	Trig. & Analytical Geometry	<u>3</u>
Semester Total			15

SPRING SEMESTER			HOURS
ENGL	102	Basic Composition II	3
CHEM	112	Principles of Chemistry II	3
CHEM	114	Principles of Chemistry II Lab	1
MATH	210	Elementary Statistics	3
PSYC	200	Introduction to Psychology	3
		GER CURR. AREA I	<u>3</u>
Semester Total			16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
ENGL	203	Fund. of Contemporary Speech	3
BIOL	231	Human Anat. & Physi. I	3
BIOL	233	Human Anat. & Physi. I Lab	1
SOCI	101	Intro to Sociology	3
PHYS	121	General College Physics I	3
PHYS	123	General College Physics Lab I	1
		GER CURR AREA I	<u>3</u>
Semester Total			17

SPRING SEMESTER			HOURS
NUDT	210	Elements of Nutrition	3
BIOL	232	Human Anat. & Physi. II	3
BIOL	234	Human Anat. & Physi II Lab	1
		FREE Elective	3
PHYS	122	General College Physics II	3
PHYS	124	General College Physics Lab II	1
EDHE	111	Personalized Health Fitness	<u>3</u>
Semester Total			17

Total Credits Required 65

**HONORS PRE-NURSING
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
ENGL	101H	Honors Basic Composition I	3
BIOL	111H	Honors Prin. of Biology I	3
BIOL	113H	Honors Prin. of Biology I Lab	1
CHEM	111H	Honors Prin. of Chemistry I	3
CHEM	113H	Honors Prin. of Chemistry I Lab	1
MATH	109	College Algebra	3
		GER CURR. AREA I	3
DNSC	100	Freshman Seminar	<u>1</u>
		Semester Total	18

SPRING SEMESTER			HOURS
SOCI	101H	Intro to Sociology	3
CHEM	112H	Honors Prin. of Chemistry II	3
CHEM	114H	Honors Prin. of Chemistry II Lab	1
ENGL	102H	Honors Basic Composition II	3
		Elective	3
		GER CURR. AREA I	<u>3</u>
		Semester Total	16

SOPHOMORE YEAR

FALL SEMESTER			HOURS
BIOL	231	Human Anatomy & Physi.	3
BIOL	233	Human Anatomy & Physi. I Lab	1
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
ENGL	203	Fund. of Contemporary Speech	3
		FREE Elective	2
PSYC	200	Introduction to Psychology	<u>3</u>
		Semester Total	16

SPRING SEMESTER			HOURS
BIOL	232	Human Anat. & Physi. II	3
BIOL	234	Human Anat. & Physi. II Lab	1
		Elective	3
HUEC	203	Human Dev: Life Span Perspec.	3
NUDT	210	Elements of Nutrition	3
PSYC	307	Developmental Psychology <u>or</u>	
		GER CURR. AREA	<u>3</u>
		Semester Total	16
		Total Credits Required	66

**HONORS PRE-PHARMACY
Recommended Course Sequence**

FRESHMAN YEAR

FALL SEMESTER			HOURS
ENGL	101H	Basic Composition I	3
MATH	111H	Elementary Math Analysis	3
CHEM	111H	Honors Principles of Chemistry I	3
CHEM	113H	Hon. Principles of Chem. I Lab	1
BIOL	111H	Honors Principles of Biology I	3
BIOL	113H	Hon. Principles of Biology I Lab	1
		GER CURR. AREA I	3
DNSC	100	Freshman Seminar	<u>1</u>
		Semester Total	18

SPRING SEMESTER			HOURS
ENGL	102H	Basic Composition II	3
MATH	112	Calculus I	4
CHEM	112H	Honors Prin. of Chem. II	3
CHEM	114H	Hon. Prin. of Chem. II Lab	1
		GER CURR. AREA II: Social Sciences	3
		GER CURR. AREA I	<u>3</u>
		Semester Total	17

SOPHOMORE YEAR

FALL SEMESTER			HOURS
CHEM	211H	Hon. Fund. of Org. Chem. I	3
CHEM	213H	Hon. Fund. of Org. Chem. I Lab	1
BIOL	301	Microbiology	3
BIOL	303	Microbiology Lab	1
ECON	101	Interpretive Analysis	3
ENGL	203	Fund. of Contemporary Speech	3
PHYS	181H	Introductory Physics I	3
PHYS	183H	Introductory Physics Lab I	<u>1</u>
		Semester Total	18

SPRING SEMESTER			HOURS
CHEM	212H	Hon. Fund. of Organ. Chem. II	3
CHEM	214H	Hon. Fund. of Organ. Chem. II Lab	1
PHYS	182H	Introductory Physics II	3
PHYS	184H	Introductory Physics Lab II	1
PSYC	200	Introduction to Psychology	3
MATH	210	Elementary Statistics	<u>3</u>
SOCI		Elective (Honors)	3
		Semester Total	17

Total Credits Required 69

COURSE DESCRIPTION

BIOLOGY

BIOL 101/W Theories and Applications of Biological Sciences/WEB 3 cr.

This course provides an introduction to Biological principles as they apply to our daily lives. The course is designed to partially meet general education requirements in the Natural Sciences. Consideration is given to organisms, their components and activities. Emphasis is on the development and use of knowledge, skills and attitudes expected to be of value in future decision-making as it relates to Biology, our present environmental conditions, and problems facing each of us today. This course is comprised of three hours lecture per week.

BIOL 103 Biological Science Laboratory 1 cr.

This course emphasizes student involvement in investigations related to Biology. Emphasis is placed on the scientific method, biological molecules, cellular respiration and dissection. Laboratory is designed to partially meet general education requirements in Natural Sciences. Prerequisite: One year of high school biology. The laboratory fee is \$25.

BIOL 111/H Principles of Biology I/ Honors 3 cr.

This course is an introduction to the basic concepts of biology, with emphasis on molecular, cellular and genetic concepts related to living organisms. Basic concepts are considered, and major topics deal with (1) organization of cells and the molecular basis of life, (2) energetics and metabolism, (3) cell growth and reproduction, and (4) genetics. This course is for Natural Sciences majors and others in the related sciences. Co-requisite: BIOL 113/113H. This course is comprised of three hours per week and one-hour discussion for the Honors section only.

BIOL 112/H Principles of Biology II/ Honors 3 cr.

This course is an introduction to the basic concepts of biology with emphasis on structure and function, focusing on adaptations of plants and animals. Representative animal systems are discussed and contrasted with representative plant systems. Included in the course is the study of the animal physiology and plant physiology. Prerequisites: BIOL 111/111H (grade of C or better). This course is comprised of three hours of lecture per week.

BIOL 113/H Principles of Biology I Lab/Honors 1 cr.

This laboratory course is designed to accompany BIOL 111/111H and to reinforce the basic biological concepts of cellular biology, molecular biology, and Mendelian and molecular genetics discussed in the corresponding lecture. Supervised laboratory sessions enhance the student's skills in experimental manipulation, data collection, data

interpretation and analysis, and data presentation in an effort to stimulate logical thinking and scientific reasoning. Co-requisites: BIOL 111/111H (grade of C or better). The laboratory fee associated with this course is \$25.00.

BIOL 114/H Principles of Biology II Lab/ Honors 1 cr.

This laboratory course is designed to accompany BIOL 112/112H. Laboratory gives consideration to biological concepts related to the physiological mechanisms of living organisms both plants and animals. Selected systems are studied in a functional perspective. Emphasis is placed on experimental manipulation, data collection, data interpretation and analysis, and data presentation. Co-requisites: BIOL 112/112H (grade of C or higher). The laboratory fee associated with this course is \$25.00.

BIOL 201 Marine Zoology 4 cr.

This course is a study of the nature of life in the sea, adaptations, patterns of distribution and production of plankton, nekton and benthos, and their interrelationships. The course is comprised of two hours of lecture and a three-hour laboratory per week. Prerequisite: BIOL 111/111H. Laboratory Fee: \$25.00

BIOL 202 Marine Botany 3 cr.

This course is designed for both environmental science and biology majors. The course focuses on the environmental and ecological aspects of marine and estuarine plants and includes discussions of systematics and the ecology of micro and macro algae, marine fungi, and vascular plants. The various aspects of the Chesapeake Bay watershed are discussed. Field trips to various marine environments are conducted during the semester for which attendance is mandatory. Prerequisite for this course includes: BIOL 112/112H (grade of C or higher). Co-requisite: BIOL 203. Students must be enrolled in BIOL 202 and BIOL 203 during the same semester. This course is comprised of three hours of lecture per week.

BIOL 203 Marine Botany Laboratory 1 cr.

This four-hour/week laboratory course is designed to introduce the student to marine plants in the pelagic open-ocean and coastal environments. This class focuses on both phytoplankton and benthic marine plant communities and introduces field and laboratory techniques for research on the biology and ecology of marine plants. These include micro- and macro-algal identification, the determination of algal primary productivity and growth rates, and field sampling techniques in marine plant ecology. A service

learning project is required as part of the laboratory grade. Co-requisite: BIOL 202. Students must be enrolled in BIOL 202 and BIOL 203 during the same semester. This course is comprised of four hours of laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 211 Principles of Biology III 3 crs.

This course is an introduction to the principles of Biology with emphasis on biodiversity, evolution, and ecology. The course focuses on (1) biodiversity within five kingdom systems, (2) principles of evolution, and (3) population and community ecology with applications to environmental issues. Principles of Biology I is intended for the Biology major and persons in the related sciences. Prerequisite: BIOL 111/111H (grade of C or higher). The course is comprised of three hours of lecture per week.

BIOL 213 Principles of Biology III Laboratory 1 cr.

The laboratory activities of this course are related to principles of Biology with emphasis on biodiversity, evolution, and ecology. Topics of discussion include a survey of the five kingdoms, experimental tests of evolution and ecological concepts. This course is intended for the Biology major and persons in the related sciences. Prerequisite: BIOL 111/111H (grade of C or higher). Co-requisite: BIOL 211. This course is comprised of one three-hour laboratory per week. The Laboratory fee associated with this course is \$25.00.

BIOL 222 Genetics 3 crs.

Basic principles governing transmission of traits from generation to generation in humans are covered in this course. Course material focuses on the structure and functions of DNA, RNA, proteins and chromosomes in eukaryotes, the mode of transmission of genes to the next generation, how genes are damaged and repaired, use of recombinant DNA technology as a treatment option, and the consequences of mutations and chromosomal abnormalities in producing human disorders. Lectures also include discussions on determinations of gene and allele frequencies in populations and how they affect evolution. Prerequisite: BIOL 111/111H (grade of C or higher). This course is comprised of three hours lecture per week.

BIOL 223 Genetics Laboratory 1 cr.

This course is designed to introduce students to experimental approaches to studying problems in molecular genetics. Upon completion of the course, students should have a working knowledge of how problems pertaining to hereditary disorders are addressed. Students are taught techniques of how to extract DNA and protein, how to analyze these molecules by electrophoresis, spectrophotometry, polymerase chain reaction, and mammalian cell culture. Prerequisites: BIOL 111/111H; and BIOL 113/113H. This course is comprised of three hours of laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 231 Human Anatomy and Physiology I 3 crs.

This course provides an introduction to the structure and function of the human body. Topics included are chemistry and the cell, integument, skeletal, muscular and nervous systems. Prerequisites: BIOL 111/113, BIOL 112/114, BIOL 188) or for allied health program students (grade of C or higher). This course may not be used as a Biology Program Elective for credit toward the Biology major. This course is comprised of three hours of lecture per week.

BIOL 232 Human Anatomy and Physiology II 3 crs.

This course provides discussion of the respiratory, circulatory, excretory, endocrine, digestive, and reproductive functions of the human body. Pre-requisites: BIOL 231/233. This course may not be used as a Biology Program Elective for credit toward the Biology major. This course is comprised of three hours of laboratory per week.

**BIOL 233 Human Anatomy and Physiology 1 cr.
Lab I**

This course accompanies BIOL 231 and emphasizes student involvement in investigations related to human anatomy and physiology. The course provides practical experience with subject matter and includes written as well as practical examinations. Prerequisites: Biology 111/113. This course is comprised of two hours of laboratory per week. This course must be taken concurrently with BIOL 231. The laboratory fee associated with this course is \$25.00.

**BIOL 234 Human Anatomy and Physiology 1 cr.
Lab II**

This course complements the BIOL 232 course and emphasizes student involvement in investigations related to human anatomy and physiology. The course is designed to provide practical experience with subject matter and includes written as well as practical examinations. Prerequisites: BIOL 231 and BIOL 233 or equivalent. Co-requisite: BIOL 232. The laboratory fee associated with this course is \$25.00.

BIOL 261 Invertebrate Zoology 4 crs.

This course is presented as a survey of invertebrate animals with emphasis on the relationship between structure and function and evolution of major groups. Life history, strategies, and behaviors are major topics of discussion. Laboratory emphasis is on examination of animals. Prerequisites: BIOL 111/111H (grade of C or higher) or consent of the instructor. This course is comprised of two hours of lecture and two two-hour laboratories per week. The laboratory fee associated with this course is \$25.00.

BIOL 301 Microbiology 3 crs.

This course examines the basic life processes of various microscopic organisms and their relevance to humans, focusing on pathogenicity. Discussion also encompasses chemotherapy and the immune response to infection. The course provides an introduction to the study of microorganisms and their diversity, growth, life cycle, physiology and control. The role of microorganisms in diseases, the environment and industry, as well as other economic considerations. Prerequisites: BIOL111/

BIOL111H or equivalent (grade of C or better); one year of Chemistry, or permission of the instructor. This course is comprised of three hours of lecture per week.

BIOL 303 Microbiology Laboratory 1 cr.

This course is designed to expose students to laboratory activities that will acquaint them with procedures for the proper and safe handling of microorganisms to facilitate investigations using microorganisms. Co-requisite: BIOL 301. This course is comprised of two two-hour laboratory sessions per week. The laboratory fee associated with this course is \$25.00.

BIOL 311/H Vertebrate Embryology/Honors 4 crs.

This course provides the student with a study of the development of the vertebrate body as exemplified by early development of pre-chordate, early chordate, amphibians, birds and mammalian embryos. The course offers the student a descriptive study of the normal morphology of the fundamental morphological aspects of development. In addition, to increase the student's understanding of the mechanisms underlying the development of form to function, experimental, molecular, and genetic approaches are studied. Pre-requisites: BIOL 111/111H (grade of C or higher). This course is comprised of three hours of lecture and three hours of laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 322 Comparative Vertebrate Anatomy 4 crs.

This course is a study of the general features of chordate development, and a comparative study of the anatomy of the vertebrate classes. Evolution is the unifying theme. This course serves the need of students intending to pursue careers in medicine, biology, biomedical science and environmental science. Prerequisites for this course include: BIOL 111/111H (grade of C or higher) and BIOL112/112H (grade of C or higher). This course is comprised of two hours of lecture and four hours of laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 326 Cell Biology 3 crs.

Course material of cell biology focuses on understanding the roles of nucleic acids, lipids, proteins and carbohydrates in development and maintenance of eukaryotic organelles and cells. Discussions will target processes in each major organelle including the nucleus, plasma membrane, smoother and rough endoplasmic reticulum, Golgi, lysosomes, cytoplasm, and mitochondria. Students learn how events such as ADP ribosylation, methylation, phosphorylation/dephosphorylation and cleavage of polypeptides influence the activities of proteins and enzymes. Other topics include enzyme kinetics and inhibition, how mutations in DNA are produced and corrected, recombinant DNA technology, cloning, the cell

cycle, and cancer. Prerequisites: BIOL 111/111H (grade of C or higher) and BIOL 222 (grade of C or higher). This course is comprised of three hours of lecture per week.

BIOL 327 Cell Biology Laboratory 1 crs.

This course is designed to familiarize students to experimental approaches to studying problems in cell and molecular biology. Upon completion of the course, students should be able to participate in research projects aimed at studying molecular and cellular processes. Students are taught techniques of how to study DNA, RNA, and protein using computer databases and existing software, how to extract these molecules from cells and tissues, analyze them, and utilize them in subsequent studies such as the polymerase chain reaction, restriction enzyme analysis, SDS-PAGE, and Western Blot. Prerequisites: BIOL 111 (grade of C or higher), BIOL 113 (grade of C or higher), BIOL 222 (grade of C or higher), and BIOL 223 (grade of C or higher). The laboratory fee associated with this course is \$25.00.

BIOL 330 Evolution 3 crs

This course is an advanced exploration of the evolutionary perspective on Biology, including genetic and ecological aspects of evolutionary processes. Topics of discussion focus on the mechanisms of evolutionary change, adaptation, and the history of living organisms. Examples of evolutionary principles in medicine and environmental science are explored to relate concepts to practical application. Prerequisites: BIOL 111/111H (grade of C or higher), BIOL 211, and BIOL 222. This course is comprised of three hours of lecture per week.

BIOL 335 Biogeography 3 crs.

Exploration of the environmental factors and historical perspectives that explain distributions of organisms are strongly emphasized in this course. Focus is placed on mechanisms of distribution, environmental constraints and phylogenetic perspectives. Prerequisites: BIOL 111/111H (grade of C or higher); and BIOL 211. This course is comprised of three hours of lecture per week.

BIOL 341 Introductory Physiology 4 crs.

An examination of the mechanisms involved in control of body functions. Basic chemical and physical principles of animal function will be discussed. Prerequisites: BIOL 111/113, BIOL 112/114, BIOL 211/213 (grade of C or higher), and one year of Chemistry and a course in vertebrate anatomy. Three hours of lecture per week and three laboratory hours per week. The laboratory fee associated with this course is \$25.00.

BIOL 361 Animal Behavior 4 crs.

This course investigates the concepts and applications of animal behavior, with emphasis on the evolutionary basis

of behavior. Topics include both proximate influences on behavior and adaptive perspectives on reproductive and social behavior. The laboratory component of this course includes bench work and fieldwork to illustrate specific concepts. Prerequisites: BIOL 111/111H (grade of C or higher), and BIOL 112/112H (grade of C or higher) and BIOL 211/213 is recommended. This course is comprised of two hours of lecture per week, three hours of laboratory, and one hour of discussion per week. The laboratory fee associated with this course is \$25.00.

BIOL 402 Ecology 4 crs.

This course is designed to provide the student with a study of the basic interrelations of plants and animals with physical and biotic factors of the environment. Prerequisites: BIOL 111/111H (grade of C or higher), and BIOL 112/112H (grade of C or higher). BIOL 211/213 is recommended. This course is comprised of two hours of lecture, one hour of discussion, and three hours of laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 404 Conservation Biology 3 crs.

This course provides an introduction to the principles of conservation biology. Topics of discussion emphasize the application of ecological principles, management tools, and case history studies related to conservation issues. Prerequisites: BIOL 402 or equivalent.

BIOL 420 Animal Histology 3 crs.

This course is a study of the microscopic structure of vertebrate tissues and organs. Functional correlates are discussed. Prerequisites: BIOL 111/113, BIOL 112/114, BIOL 211/213 (grade C or better) a course in vertebrate anatomy and consent of the instructor. This course is comprised of three hours of lecture per week.

BIOL 421 Animal Histology Laboratory 1 cr.

This course is designed to accompany BIOL 420 and provides hands-on experience using the light microscope to examine vertebrate tissues discussed in lecture. Co-requisites for this course is BIOL 420. BIOL 421 must be taken concurrently. The laboratory fee associated with this course is \$25.00.

BIOL 426M Biotechnology 4 crs.

This course studies the basic principles of biotechnology and its applications to areas such as medicine, agriculture, and the industry. Emphasis is placed on recombinant DNA technology (gene cloning), metabolites of proteins, and animal and plant biotechnology. The weekly three-hour laboratory component of this course exposes students to various laboratory techniques employed in: gene cloning, cultivation components, sterile tissue culture, and study of cell-surface molecules. In addition to the scheduled three-hour component of this course, additional unscheduled time is required to complete assignments. Unscheduled time is dependent on specific techniques employed. This course is reserved primarily for advanced undergraduate students in the MARC Program. Prerequisites: BIOL 222 (grade of C or higher), BIOL 326 and CHEM 342/342H/342M. Co-

requisites: CHEM 342/342H/342M. The laboratory fee associated with this course is \$25.00.

BIOL 431 Mammalogy 4 crs.

This course provides a detailed investigation of mammalian biology, with emphasis on special physiological and ecological adaptations within the group. Topics of discussion include classification, physiological adaptations, ecological specializations and biogeography of mammals. Prerequisites: BIOL 111/111H (grade of C or higher) and BIOL 211, or permission of the instructor. This course is

comprised of three hours of lecture and three hours of laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 432 Herpetology 3 crs.

This course is a concentrated study of the ecology, behavior, and physiological characteristics of amphibians and reptiles. Topics of discussion include classification, adaptations and diversity of groups within the two vertebrate classes. Prerequisites: BIOL 111/111H (grade of C or higher), and BIOL 112/112H (grade of C or higher). This course is comprised of three hours of lecture per week.

BIOL 436 General Endocrinology 3 crs.

This course provides discussions of the importance of hormones in regulating body functions, integrating biological systems, protecting the body against stress and various diseases, and maintaining day-to-day life processes. The course also emphasizes a review of concepts relative to mechanisms of hormone action. Consideration is given to classic endocrine case studies. Prerequisites for this course include: BIOL 111/111H (grade of C or better). A course in Cell Biology is recommended. This course is comprised of three hours of lecture per week.

BIOL 441 Comparative Physiology 4 crs.

This course is a study of the major functional adaptations in animal systems providing for maintenance of homeostasis. The function of vertebrate and invertebrate systems is discussed. Prerequisites: BIOL 341, and CHEM 341, or permission of the instructor. This course is comprised of three hours of lecture and three hours of laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 462 General Parasitology 4 crs.

The identification of parasites common to man and domesticated animals is the primary focus of this course. Epidemiological aspects of zoonotic diseases are discussed. Other subjects to be covered are host habitats, vectors, types of hosts, and transmission methods, life cycles, and control and prevention measures. Prerequisites: BIOL 111/111H (grade of C or higher); and BIOL 112/112H (grade of C or higher); or consent of the instructor. A course in Invertebrate Zoology is recommended. This course is comprised of three hours of lecture and one four-hour laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 463 Wildlife Management 4 crs.

In this course, students develop an understanding of the theories, principles, and practices associated with wildlife management. Emphasis is placed on research design, sampling techniques, and field methodologies. Students gain theoretical knowledge and applied management techniques to work as professional wildlife biologists in natural resource professions. All terrestrial vertebrate taxonomic groups are addressed, including mammals, birds, amphibians, and reptiles. Graduate students are required to complete one additional research paper approved by the professor. Prerequisites: BIOL 111/111H

(grade of C or higher), or permission of the instructor. The laboratory fee associated with this course is \$25.00.

BIOL 464 Medical and Veterinary Entomology 4 crs.
This course provides a study of the arthropod (especially insects) species that are economically important pest, and vectors of diseases of man and domesticated animals. Epidemiological aspects of zoonotic diseases are discussed. Prerequisites: BIOL 111/111H (grade of C or better), and BIOL112/112H (grade of C or better), or BIOL 261, or consent of the instructor. This course is comprised of three hours lecture and one four-hour laboratory per week. The laboratory fee associated with this course is \$25.00.

BIOL 466 Medical Parasitology 3 crs.
This course provides students in the biological, agricultural, and medical sciences with the knowledge necessary to know and identify metazoan parasites common to all organisms including man and his domesticated animals. Detailed information on how to recognize and diagnose parasitic diseases, infections, histopathology, and infestations is discussed. Epidemiological aspects of zoonotic diseases are discussed, including detailed information on host habitats, vectors, types of hosts, and transmission. Life cycles, control measures, disease prevention, treatment, and location of parasites in relation to the hosts are considered. Prerequisites: BIOL 111/111H (grade of C or higher). This course is comprised of three hours of lecture per week.

**BIOL 497/H/M Biology Seminar/
Honors/MARC 1 cr.**
This course focuses on the discussion of various topics in biology, with the contents varied each semester. Student presentations are required. The BIOL 497M section is reserved for students in the MARC Program. Prerequisite: Senior level classification. This course is comprised of one hour of lecture per week.

BIOL 498 Independent Study 1-3 crs.
This course focuses on readings of significant publications in selected subjects and discussions with a Biology faculty member. The course is designed to enhance the student's knowledge base of a subject area related to the biological sciences. Credits and hours are by arrangement. Prerequisites: Junior or Senior level classification and permission of the instructor.

BIOL 499 Undergraduate Research 1-4 crs.

This course is designed for the undergraduate student who has an interest in pursuing a special problem as an independent research project. Credits and hours are by arrangement. Prerequisites: Junior and Senior level classification and permission of instructor.

CHEMISTRY

CHEM 101/W General Chemistry I/WEB 3 crs.
This course provides an introduction to inorganic chemistry and includes lectures on matter, dimensional analysis, elements (nomenclature, atomic structure, atomic formula and atomic orbital), compounds (nomenclature, molecular bonding, molecular structure, and molecular formulas), molecular conversions, solutions, acids, bases, and gases. This course satisfies General Education Requirements Area III (Biological and Physical Sciences). This course is recommended for the non-science major, pre-health professionals (including pre-nursing students and nutrition majors), agriculture and home economics majors. Note: Students requiring a lab-based course must also register for CHEM 103. Prerequisite or Co-requisite: MATH 101 or equivalent.

CHEM 102/W General Chemistry II/WEB 3 crs.
This course provides an introduction to organic and biological chemistry and includes lectures on carbon chemistry, organic nomenclature, basic organic reactions, saccharides, amino acids, proteins, and DNA. This course satisfies General Education Requirements Area III (Biological and Physical Sciences). This course is recommended for the non-science major, pre-health professionals (including nursing students and nutrition majors), agriculture, and home economists majors. Note: Students requiring a lab-based course must also register for CHEM 104. Prerequisite or Co-requisite: CHEM 101 or equivalent.

CHEM 103 General Chemistry Laboratory I 1 cr.
This two-hour per week laboratory includes experiments that illustrate the basic principles discussed in General Chemistry I. This course satisfies the laboratory component for General Education Requirements Area III (Biological and Physical Sciences Lab). This course is recommended for the non-science major, pre-health professionals, (including pre-nursing students and nutrition majors), agriculture and home economics majors. Prerequisite or Co-requisite: CHEM 101. Laboratory Fee: \$25.00

CHEM 104 General Chemistry Laboratory II 1 cr.
This two-hour per week laboratory includes experiments that illustrate the basic principles discussed in General Chemistry II. This course satisfies the laboratory for General Education Requirements Area III (Biological and

Physical Sciences Lab). This course is recommended for the non-science major, pre-health professionals (including nursing students and nutrition majors), agriculture and home economics majors. Pre-requisite or Co-requisite: CHEM 102. Laboratory Fee: \$25.00

indoctrinate them in proper chemical safety practices. The students will learn to perform a valid experiment in a safe manner, to observe and record any data acquired, and interpret the data using various equations and graphs. Laboratory skills such as spectroscopic measurement, pH measurement, and qualitative analysis will be developed. The lab period will be a three-hour session. Pre or Co-requisite CHEM 112/112H or consent of instructor. Laboratory Fee: \$25.00

CHEM 111/H Principles of Chemistry I/ Honors 3 crs.

This course deals with the basic concepts in chemistry (the study of the changes in matter and energy). The student learns logical problem-solving skills, including strategies to attack complicated problems by using a step-by-step procedure. The concepts studied in this course include density, basic atomic and molecular theory, chemical nomenclature, reaction stoichiometry, and the gas laws. The course is intended for science majors. Prerequisite: High School Chemistry or CHEM 101. Pre or Co-requisite MATH 109. Pre or Co-requisite: CHEM 113/113H or consent of instructor.

CHEM 211/H Fundamentals of Organic I/ Honors 3 crs.

Topics presented in this course include molecular structure, isomerism, and stereochemistry. The chemistry of alkanes, alcohols, ethers, alkenes, and aromatic hydrocarbons will also be discussed. Interpretation of spectra of major functional classes will be explained. Three hours of lecture, a one-hour discussion, and one three-hour lab (see below) must be taken concurrently. Prerequisite: The successful completion of CHEM 111/111H and CHEM 112/112H. Pre or Co-requisite: CHEM 213/213H or consent of instructor.

CHEM 112/H Principles of Chemistry II/ Honors 3 crs.

This course explores more advanced topics in chemistry, building on the concepts covered in CHEM 111/111H. The concepts studied in this course will include VSEPR theory, intermolecular forces, properties of liquids and solids, chemical kinetics, chemical equilibrium, acid/base chemistry and electrochemistry. The course is intended for science majors. Prerequisite: CHEM 111/113, CHEM 111H/113H. Pre or Co-requisite: CHEM 114/CHEM 114 or consent of instructor.

CHEM 213/213H Fundamentals of Organic Chemistry I Lab/Honors 1 cr.

This is the laboratory part of CHEM 211/211H. This course covers the practical application of theory presented in the lecture. Laboratory record keeping, neatness, laboratory notebooks, manipulation of common laboratory glassware, and safe practice and handling of chemicals will be stressed. Analysis of preparations by UV-Vis, FTIR, NMR etc., will be done. Careful recording of laboratory data and its interpretation will be covered. The lab period will be a three-hour session. Pre or Co-requisite CHEM 211/211H or consent of instructor. Laboratory Fee: \$25.00

CHEM 113/H Principles of Chemistry Lab I/ Honors 1 cr.

This course is the laboratory companion to CHEM 111/111H. It is designed to deepen the students' understanding of topics discussed in the lecture, increase their skill with common laboratory equipment, and indoctrinate them in proper chemical safety practices. The students will learn to perform a valid experiment in a safe manner, to observe and record any data acquired, and interpret the data using various equations and graphs. Laboratory skills such as filtration, titration, and the accurate measurement of masses and volumes will be developed. The lab period will be a three-hour session. Prerequisite or Co-requisite CHEM 111/111H or consent of instructor. Laboratory Fee: \$25.00

CHEM 212/H Fundamentals of Organic Chemistry II/Honors 3 cr.

This course is a continuation of CHEM 211/211H. Preparation and functional group reactions of carboxylic acids and their derivatives, aldehydes, carbanions, amines, polycyclic and heterocyclic aromatics, and macromolecules will be presented. Three hours of lecture, a one-hour discussion, and a three-hour laboratory (see below) must be taken concurrently. Prerequisite: successful completion of CHEM 211/CHEM 211H. Pre or Co-requisite: CHEM 214/CHEM 214H or consent of instructor.

CHEM 114/H Principles of Chemistry Lab II/Honors 1 cr.

This course is the laboratory companion to CHEM 112/112H. It is designed to deepen the students' understanding of topics discussed in the lecture, increase their skill with common laboratory equipment, and

CHEM 214/H Fundamentals of Organic Chemistry Lab II/Honors 1 cr.

This course is the laboratory part of CHEM 212/212H. The course is designed to refine the skills of safe practice and effective handling of chemicals and common laboratory equipment presented in CHEM 213. Spectroscopic analysis, laboratory data keeping and interpretation skills acquired in the previous laboratory course will be extended. The lab period will be a three-hour session. Prerequisites:

CHEM 211/211H, 213/213H. Co-requisite: CHEM 212/212H or consent of instructor. Laboratory Fee: \$25.00

CHEM 311 Analytical Chemistry I 4 crs.

This is a general course in quantitative analysis, including gravimetric, volumetric and instrumental analysis. The emphasis is placed on the understanding of the reaction stoichiometry involved for the various methods. Statistical analysis using spreadsheet programs is also introduced. The course consists of three hours of lecture and one three-hour laboratory period per week. Prerequisites: CHEM 112/112H and CHEM 212/212H or consent of instructor. Laboratory Fee: \$25.00

CHEM 312 Analytical Chemistry II 4 crs.

This is a continuation of the quantitative analysis begun in CHEM 311. Analytical methods based on electrochemistry such as potentiometry will be explored. An introduction to some modern analytical techniques and instrumentation is also presented. This introduction includes uv-visible spectroscopy as well as infrared spectroscopy. Separation methods such as gas chromatography and high performance liquid chromatography are also introduced. The course consists of three hours of lecture and one three-hour laboratory per week. Prerequisites: CHEM 311, CHEM 112/112H and CHEM 212/212H or consent of instructor. Laboratory Fee: \$25.00

CHEM 331 Elementary Organic Chemistry 4 crs.

This is a short course in the elementary principles of organic chemistry. This course is primarily intended for education, human ecology, and agriculture majors. It is not recommended for chemistry majors. The course consists of three hours lecture and one three-hour laboratory per week. Prerequisites: CHEM 101 and CHEM 102 or consent of instructor. Laboratory Fee: \$25.00

CHEM 332 Biochemistry 4 crs.

This course is a survey of the chemical properties of compounds of biological significance, integrated with the study of fundamental metabolic and genetic processes at the molecular level. Three hours lecture and three hours laboratory per week. Prerequisite: CHEM 211 or CHEM 331 or consent of instructor. Laboratory Fee: \$25.00

CHEM 341 Biochemistry I 3 crs.

This course is a study of the physical and chemical properties of the four major biomolecules: carbohydrates, lipids, proteins, enzymes, and nucleic acid. The course includes an introduction to intermediary metabolic pathways and their involvement in the generation and use of energy. The student will learn how to incorporate basic chemical principles to the biological function of organisms. This course consists of three hours of lecture per week. Prerequisite: Passing CHEM 211/211H, 212/212H with a letter grade of C or better. Co-requisite: CHEM 343 or consent of instructor.

CHEM 341H Honors Biochemistry 3 crs.

This course is more an intense study of the physical and chemical properties of the four major biomolecules:

carbohydrates, lipids, proteins, enzymes, and nucleic acid. The course includes an introduction to intermediary metabolic pathways and their involvement in the generation and use of energy. The student will learn how to incorporate basic chemical principles with the biological function of organisms. This course consists of three hours of lecture per week. Prerequisite: passing of CHEM 211/211H, 212/212H with a letter grade of C or better. Co-requisite: CHEM 343H or consent of instructor.

CHEM 342 Biochemistry II 3 crs.

This course is a continuation of CHEM 341. This course is more intense study of the detail of biochemical processes which include energy yielding metabolic pathways, the copying, transfer and decoding of genetic information, the regulation of gene expression and recombinant DNA techniques. This course consists of three hours of lecture per week. Prerequisite: Passing of CHEM 341/341H with a letter grade of C or better. Co-requisite: CHEM 344 or consent of instructor.

CHEM 342H Honors Biochemistry II 3 crs.

This course is a continuation of CHEM 341H. Students will focus on the detail of biochemical processes which include energy yielding metabolic pathways, the copying, transfer and decoding of genetic information, the regulation of gene expression and recombinant DNA techniques. This course consists of three hours of lecture per week. Prerequisite: Passing of CHEM 341H with a letter grade of C or better. Co-requisite: CHEM 344H or consent of instructor.

CHEM 343 Biochemistry Laboratory I 1 cr.

This is the co-requisite/laboratory part of CHEM 341. This laboratory includes three hours of work per week on experiments that expose students to methods covering isolation and characterization of biomolecules. Co-requisite: CHEM 341 or consent of instructor. Laboratory Fee: \$25.00

CHEM 343H Honors Biochemistry Laboratory I 1 cr.

This is the co-requisite/laboratory part of CHEM 341H. This laboratory includes three hours of work per week on experiments that expose students to methods covering isolation and characterization of biomolecules. Students are required to perform literature searches. Co-requisite: CHEM 341H or consent of instructor. Laboratory Fee: \$25.00

CHEM 344 Biochemistry Laboratory II 1 cr.

This is the co-requisite/laboratory part of CHEM 342. This laboratory includes three hours of work per week in experiments that expose students to methods covering isolation and characterization of biomolecules. Co-requisite CHEM 342 or consent of instructor. Laboratory Fee: \$25.00

CHEM 344H Honors Biochemistry Laboratory II 1 cr.

This is the co-requisite/laboratory part of CHEM 342H. This laboratory includes three hours of work per week on experiments that expose students to methods covering isolation and characterization of biomolecules. Students are required to perform literature searches. Co-requisite CHEM 342H or consent of instructor. Laboratory Fee: \$25.00

CHEM 401 Principles of Physical Chemistry I 4 crs.

This course covers the laws of thermodynamics with emphasis on their application to chemical systems. Topics covered include: thermochemistry, equation of state, physical and chemical equilibrium and electrochemistry. The course consists of three hours of lecture and one three-hour laboratory period per week. Prerequisites: CHEM 112/112H. Co-requisites: PHYS 161/181H, PHYS262/182H, MATH 211 or consent of instructor. Laboratory Fee: \$25.00

CHEM 402 Principles of Physical Chemistry II 4 crs.

This course is the continuation of CHEM 401. The course will cover molecular structure and bonding, interpretation of spectra, elementary quantum and statistical mechanics, kinetic, theory of gases, chemical kinetics and the theory or rate processes. The course consists of three hours of lecture and one three-hour laboratory period per week. Prerequisite: CHEM 401 or consent of instructor. Laboratory Fee: \$25.00

CHEM 420 Advanced Inorganic Chemistry 4 crs.

This course builds upon introductory courses that cover elementary principles of chemical bonding and structure, thermodynamics, kinetics and descriptive chemistry of the elements. This course consists of three hours of lecture and one three-hour laboratory period per week. Prerequisites: CHEM112/112H, CHEM114/114H or permission of the instructor. Laboratory Fee: \$25.00

CHEM 421 Instrumental Analysis 4 crs.

This course is an introduction to the various instruments in current use in analytical laboratories. The course is designed to afford the student an opportunity to develop an appreciation of the fundamental functions and importance of specialized instruments. The principles underlying their construction are gained through the performance of selected experiments. The methods studied in this course include uv-visible spectroscopy, infrared spectroscopy, nuclear magnetic resonance spectroscopy, gas chromatography-mass spectrometry, and thermogravimetric analysis. This course consists of three hours of lecture and three hours of laboratory per week. Prerequisite: CHEM 112/112H, CHEM 311 or consent of instructor. Laboratory Fee: \$25.00

CHEM 422M Bio-Inorganic Chemistry 3 crs.

This course deals with the functions of metallic elements in biology. Consequently the roles of metal ions and a variety of non-metals in crucial life processes will be discussed. The course, which is interdisciplinary in nature, is intended for pre-medical biology and chemistry majors and those who aspire to become researchers in the bio-medical field. It will also serve the needs of final year undergraduates in inorganic chemistry, as coordination chemistry will be emphasized. Prerequisites: CHEM 212/212H, CHEM 214/214H, CHEM 341/341H, BIOL 326 or permission of the instructor.

CHEM 488A/621 Advanced Environmental Chemistry 4 crs.

This course is a study of the origin, transport and effects of atmospheric and aquatic pollutants with emphasis on energy-related pollutants including coal, oil and synthetic fuels. The material is divided into a study of source, fate, distribution and toxicity of inorganic and organic substances of current environmental interest. The subject matter is divided into inorganic course material consisting of metals, nutrients, greenhouse gases, and vehicular emissions and organic chemical content including pesticides and petroleum hydrocarbon source material and products. The course consists of three hours of lecture and one three hour laboratory period per week. The laboratory includes gas chromatography, gas chromatography-mass spectrometry and high performance liquid chromatography experiments to supplement class discussion. Prerequisites: CHEM 112/112H, CHEM 211/211H and CHEM 311 or permission of the instructor. Laboratory Fee: \$25.00

CHEM 497/H/M Chemistry Seminar 1 cr.

This course focuses on current issues in the chemical field. Student participation is required. Both oral and written presentations will be required. Prerequisite: CHEM 112/112H or consent of instructor.

CHEM 498 Independent Study 3 crs.

The hours for this course are by arrangement with the individual instructor. This course will explore current and historic chemical topics and projects. It will also cover chemical information retrieval. Written presentations will be required. Oral presentation will be encouraged. Students should finish a contract with instructor during the first week of the class. Prerequisite: CHEM 112/112H and consent of instructor.

CHEM 499 Undergraduate Research 3-4 crs.

The hours for this course are by arrangement with the individual instructor. The student will be exposed to research methodology and have an opportunity to work closely with a faculty research advisor. It usually requires the use of advanced concepts, a variety of experimental techniques, and state-of-the-art instrumentation. This course is open to undergraduate students with an interest in pursuing a special problem as an independent research project. A written final report is required and an oral presentation is encouraged. Students should finish a

contract with the instructor during the first week of the class. The students must follow American Chemical Society guidelines for preparing the final research report. Pre- or Co-requisite: CHEM 498 or consent of instructor.

population, growth, urbanization, public policy, and environmental trade-offs and is also designed to discuss the scientific processes that have been applied to the identification of environmental problems.

ENVS 202 General Oceanography 3 crs.
This is a survey course of the physical and chemical processes associated with the ocean environment. Topics discussed include earth history and ocean basin evolution, global plate tectonics, the marine provinces, the chemistry of sea water, air-sea interaction, oceanic control of climate, oceanic sediments, major currents, waves, tides, water column stratification, deep-sea research, coastal and

DEPARTMENT OF NATURAL SCIENCE

DNCS 100 Freshman Seminar 1 cr.
This course is designed to facilitate the adjustment of freshman science majors to college life. Aspects of preparing students for career opportunities, professional development, adjustments needed to succeed in college, study and test taking skills, crisis or stress management, and understanding the significance of the land-grant system will be discussed. Other topics include note taking, time management, conflict resolution, proper use of a science textbook, analyzing graphs and figures, test taking skills, preparing laboratory reports, and adapting to instructor style.

estuarine processes, and marine resources. Co-requisite: ENVS 204.

ENVS 204 General Oceanography Laboratory 1cr.
This is a laboratory experience to accompany ENVS 202. Laboratory exercises are designed to acquaint the student with basic oceanographic methods, instruments, and data analysis. Exercises include ocean floor geology, plate tectonics and basin evolution, marine charts and navigation, salinity, beach profile determinations, bathymetry, marine weather, and seismic reflection data analysis. Field trips are also conducted during which students gain practical experience using oceanographic apparatus. Co-requisite: ENVS 202. Laboratory Fee: \$25.00

ENTOMOLOGY

ENTO 313 Entomology 3 crs.
This course provides students in the biological, agricultural and environmental sciences with the knowledge necessary to identify and study selected arthropodan groups that influence man (*Homo sapiens*) directly or indirectly. Detailed information on how to recognize and correctly identify the organism directly or from the damage caused by it is provided. A significant part of the course is devoted to aquatic insects, parasitoids, and ectoparasites. This information enables students to work in many settings including medical technology, fisheries and wildlife biology, forensic sciences and molecular biology. Detailed information on habitats, life cycles, control measures, disease prevention, Integrated Pest Management (IPM) principles and techniques, ecology, physiology, behaviors, survival strategies, and insect/plant interactions are discussed in detail. The prerequisites for this course include: BIOL/111H (grade of C or higher). This course is comprised of three hours of lecture per week.

ENVS 221 Principles of Environmental Science 3 crs.
This is an interdisciplinary course that examines human influences on the world's environments. This course integrates biological, physical, and chemical sciences to study the problems affecting our environment and engages social, political, and economic concepts to understand why these problems exist and the complexity of these issues. Various topics will be discussed, including ecology of natural systems, population growth, air and water pollution, global climate change, extinction of species, use of water, land, and food resources, energy use, toxic compounds, solid wastes, and legal and economic aspects of environmental degradation. This course is for science majors only. Prerequisites: BIOL 112/112H, CHEM 112/112H.

ENVIRONMENTAL SCIENCES

ENVS 101/W Introduction to Environmental Sciences/WEB 3 crs.

This is an introductory lecture-based course in environmental science for the non-science majors. This course surveys the scope and extent of man's environmental problems and also deals with socioeconomic and scientific aspects of pollution and control methods. The course emphasizes man's disruption of the environment,

ENVS 222 Principles of Environmental Science Lab 1 cr.
This course presents applications of basic principles in environmental sciences through experimental exercises in the laboratory, demonstration of field techniques in a problem solving setting and visits to sites that illustrate these basic principles. Co-requisite: ENVS 221. Laboratory Fee: \$25.00

ENVS 301 Marine Chemistry 3 crs.
The course provides understanding of the dynamic nature of marine ecosystems. Basic oceanography, the role of the oceans in geochemical cycles, the resident time of different elements in the ocean, the chemical cycling of elements important to biological systems, effects of the chemistry of

the oceans on the future of planet Earth, and examples of human impacts on ocean chemistry will be covered. Pre-requisite: BIOL 111/111H, BIOLL13/113H and CHEM 212/212H, CHEM 214/214H.

ENVS 333 Energy, Environment and Economics 3 cr.

This course examines the scientific, social, and economic factors affecting energy consumption in the United States and world wide. The effects of global energy production on the environment are emphasized as well as the potential effects of new energy sources. Because of the potential political, social and economic ramifications, the course involves discussions and readings into the role of these factors in influencing regional and global patterns of energy consumption and resultant environmental change. Prerequisite: PHYS 122, ENVS 221.

ENVS 403/601 Marine Ecotoxicology 3 crs.

This course cuts across traditional subject boundaries by integrating different disciplines, such as chemistry and biochemistry, through ecology and statistics. It provides students with a distinct approach to solving marine environmental pollution issues stemming from stable pollutants how they interact with biotic and abiotic components of the marine ecosystem. Pre-requisites: CHEM 112/112H, CHEM 211/211H, BIOL 112/112H and MATH 210.

ENVS 411 Water Pollution and Purification 3 crs.

This course discusses biological, chemical, and physical impurities in water, with emphasis on agricultural, industrial, and municipal water pollution, including acid mine drainage, detergents and eutrophication, thermal pollution, oil spills, and other non-point source pollution. Further study of the physical and biochemical processes for waste-water treatment, sludge handling and disposal, and land disposal of wastewaters. Prerequisites: BIOL 111, BIOL 112/112H, CHEM 112/112H, PHYS 122/182H, ENVS 221, Junior class standing or consent of the instructor.

**ENVS 413 Water Pollution and Purification 1 cr.
Lab**

This course consists of a three-hour laboratory session every week, designed to provide hands-on experiences in the determination of dissolved and suspended volatile solids in liquids, biochemical oxygen demand, chemical oxygen demand, turbidity, free and residual chlorine, nutrients and metals in water and wastewaters. Co-requisite: ENVS 411. Laboratory Fee: \$25.00

ENVS 434 Air Pollution 4 crs.

This course discusses air quality measurements and air pollution control legislation classification of atmospheric pollutants and their effects on visibility, inanimate, and animate receptors are discussed. Evaluation of source emissions and principles of air pollution control governing the distribution of air pollutants are studied. The laboratory section includes hands-on experiments to study the effect of smoke on living cells, thermal inversion, particulate collection using an impactor, effects of air pollutants on materials and field trips to electric power plant and other facilities. Prerequisites: BIOL 112/112H, CHEM 112/112H, PHYS 122/182H, ENVS 221, Junior class standing or consent of the instructor. Laboratory Fee: \$25.00.

ENVS 456 Future Sources of Energy 3 crs.

This course examines various sources of energy used in the United States and globally. Sources discussed include fossil fuels, hydro-electricity, and nuclear energy; alternative sources of energy, including geothermal, solar, photovoltaic cells, wind, tidal, hydrogen fuels from wastes and biomass, and ocean thermal gradient. Students also study processes dealing with energy conservation and energy policy and discuss current issues. Prerequisite: PHYS 122.

ENVS 460 Earth Science 3 crs.

This course is an interdisciplinary examination of the grand challenges confronting the environmental sciences in the 21st Century. Topics examined include biogeochemical cycles, biodiversity and ecosystem functioning, climate variability, hydrologic forecasting, infectious disease and the environment, legal control of resource use, land-use dynamics, and the re-use of materials. The practical and scientific importance of each topic is discussed as well as the readiness of the scientific establishment to meet important areas for future research. Students are expected to research and answer a series of practical hypothetical environmental problems in each area discussed. Prerequisites: ENVS 221, 222, or consent of the instructor.

**ENVS 497/W Environmental Science Seminar/ 1 cr.
WEB**

The course covers discussions on current issues in Environmental Sciences and includes student presentations. Topics such as global warming, green house effects, eutrophication, desertification, and other pertinent issues on the environment are covered. The course is opened to juniors and seniors only.

ENVS 498 Independent Study 1-3 crs.

In this course, students conduct literature survey under the supervision of a faculty member. It is designed to enhance student comprehension of specific environmental science specialty areas. Students are required to read significant literature in selected subjects followed by discussions with the instructor. The hours and credits for this course are by arrangement with the individual instructor.

ENVS 499 Undergraduate Research 1-4 crs.

In this course, students conduct independent research project under the supervision of a faculty member. Apart

from the research, students are also expected to present oral and written reports. The course is designed for juniors or seniors who have an interest in pursuing a special problem as a research project. The hours and credits for this course are by arrangement with the individual instructor.

PHYSICS

PHYS 101/W Theories and Applications of Physical Science/WEB 3 crs.

Physical Science is about the rules of the physical world—physics, chemistry, astronomy, geology and meteorology. This is a one-semester course intended for the non-science major. Because of the scope of these sciences, Physical Science is usually team taught whenever resources permit. Until team teaching becomes possible, choice of subject has been limited to Physics. As we assume little or no preparation on the part of the student, our choice of topics and how far to develop them is limited to emphasis on the basic concepts of each subject. This course satisfies the UMES general education requirement curriculum area III. There are three one-hour lectures per week. Prerequisites: High School Algebra or MATH 101.

PHYS 103 Physical Science Laboratory 1 cr.

This course consists of two hours laboratory work per week. Selected fundamental experiments basic to physical science are designed to provide the student opportunities to learn practical knowledge necessary for a well-rounded understanding of physical science. Laboratory Fee: \$25.00

PHYS 121 General College Physics I 3 crs.

This is the first semester of the two-semester course designed to provide the student with an overall view of the concepts, together with the ability to set-up and solve simple problems in physics. Areas covered include particle mechanics, heat, thermodynamics, and sound. This is a non-calculus based physics course. The course consists of three hours lecture per week. Prerequisite: MATH 109. Co-requisite: PHYS 123.

PHYS 122 General College Physics II 3 crs.

This is the second semester of the two-semester course in non-calculus based physics. Areas covered include: electricity, magnetism, light, and selected topics in modern physics. The course consists of three hours lecture per week. Prerequisite: PHYS 121. Co-requisite: PHYS 124.

PHYS 123 General College Physics I Lab 1 cr.

This course consists of two hours laboratory work per week. Standard laboratory experiments are selected to provide the student with practical knowledge of Physics and to enhance knowledge gained in the classroom. This

course should be taken in concurrence with PHYS 121. Laboratory Fee: \$25.

PHYS 124 General College Physics II Laboratory 1 cr.

This course consists of two hours laboratory work per week. Standard laboratory experiments are selected to provide the student with practical knowledge of Physics and to enhance knowledge gained in the classroom. This course should be taken in concurrence with PHYS 122. Laboratory Fee: \$25

PHYS 161 General Physics I Mechanics and Particle Dynamics 3 crs.

This is the first semester of a three-semester calculus based course in general physics (see PHYS 262, PHYS 263). Areas covered include laws of motion, energy conservation, linear momentum, collisions, rotation and angular momentum, universal gravitation and fluid mechanics. Registration in the laboratory part of the course is required. Three lectures per week. Prerequisites: High School Physics and MATH 112. Co-requisite: PHYS 163. Concurrent registration in MATH 211 is recommended.

PHYS 163 General Physics Laboratory I 1 cr.

This is a three-hour per week laboratory course associated with General Physics I. Laboratory exercises relate to the material covered in the lectures. The course introduces students to the modern tools of collecting and analyzing data. Labs are computer based, and extensive use of a spreadsheet program is made to analyze, plot, and interpret data. Pre-requisites: High school physics and basic knowledge of using a computer and a spreadsheet program. Co-requisite: PHYS161. Laboratory Fee: \$25.00.

PHYS 181H Introductory Physics I (Honors) 3 crs.

This is the first semester of a two-semester calculus-based sequence in introductory physics. Topics include Newtonian mechanics, hydrostatics, thermal physics, and mechanical waves. The detailed subject matter for the course is chosen to emphasize physical principles and their applications, which are essential to an understanding of contemporary physics. Registration in the laboratory part of the course is required. Three lectures and one-hour discussion session per week. Prerequisites: High School Physics and MATH 112. Co-requisite: PHYS 183H. Concurrent enrollment in MATH 211 is recommended.

PHYS 182H Introductory Physics II (Honors) 3 crs.

This is the second half of the two-semester course in calculus-based introductory physics. Areas covered include electrostatics, electrodynamics, geometrical and physical optics, and selected topics in modern physics. Three lectures and one-hour discussion session per week. Registration in the laboratory part of the course is required. Prerequisites: PHYS 181H and PHYS 183H. Co-requisite: PHYS 184H.

PHYS 183H Introductory Physics Laboratory I 1 cr.

The course consists of one three-hour laboratory session per week to accompany PHYS181H. Laboratory exercises are designed to relate to the material covered in the accompanying course. Experiments are computer based, and a spreadsheet program is used to analyze, plot, and interpret data. Pre-requisites: High school physics and basic knowledge of using a computer and a spreadsheet program. Co-requisite: PHYS181H. Laboratory Fee: \$25.

PHYS 184H Introductory Physics Laboratory II 1 cr.

The course consists of one three-hour laboratory session to accompany PHYS182H. Laboratory exercises are designed to reinforce the material covered in the accompanying course. Most experiments are computer based. Pre-requisites: PHYS181H and PHYS 183H. Co-requisite: PHYS182H. Laboratory Fee: \$25.

PHYS 262 General Physics II Waves, Heat, Electricity 3 crs.

This course consists of three lecture sessions per week. This is a second semester of a calculus based, three-semester course in general physics. Areas covered include: vibrations, waves, heat kinetic theory, thermodynamics, electrostatics, and DC circuits. Registration in the laboratory part of the course is required. Prerequisites: PHYS 161 and PHYS 163. Co-requisite PHYS 264.

PHYS 263 General Physics III: Magnetism, Electrostatics, Optics and Modern Physics 3 crs.

This is the third semester of a calculus-based general physics course. Areas covered include: Magnetism, electrostatics, geometrical and physical optics, and selected topics in modern physics. Registration in the laboratory part of the course is required Three lectures per week. Prerequisites: PHYS 262 and PHYS 264, or PHYS 182H and PHYS 184H. Co-requisite: PHYS 265.

PHYS 264 General Physics Laboratory II 1 cr.

This is a three-hour per week laboratory session associated with General Physics II. Several of the laboratory exercises are computer based and focus on reinforcing the material covered in the accompanying course. Prerequisites: PHYS161 and PHYS163. Co-requisite: PHYS262. Laboratory Fee: \$25.

PHYS 265 General Physics Laboratory III 1 cr.

This is a three-hour per week laboratory course intended for students enrolled in General Physics III. Experiments are designed to reinforce the material covered in the accompanying course. Modern tools are used to gather, analyze and plot data. Pre-requisites: PHYS262 and PHYS264; or PHYS 182H and PHYS 184H. Co-requisite: PHYS263. Laboratory Fee: \$25.00

PHYS 283 Modern Optics 3 crs.

This course presents an in-depth discussion of the principles of geometrical and physical optics. Approximately one-fourth of the course is devoted to geometrical optics and one-half to wave optics, including wave motion and interference, diffraction, polarization, and dispersion, etc. The remaining one-fourth of the semester is devoted to quantum optics which includes recent developments in the fields of lasers. Prerequisites: PHYS 182H and PHYS 184H; or PHYS 263 and PHYS 265.

PHYS 423 Modern Physics 3 crs.

This course is a survey of atomic and nuclear phenomena, special relativity, origin of quantum theory. Bohr atom, wave mechanics, atomic structure and optical spectra. This course consists of three one- hours lecture per week. Prerequisites: PHYS 182H and PHYS 184H; or PHYS 263 and PHYS 265.

PHYS 497 Physics Seminar 1 cr.

This course will discuss various current topics in physics. Prerequisite: One year of physics with "B" or better grade. It is open only with consent of instructor. Designed for juniors or seniors who have an interest in pursuing a special problem as a research project.

PHYS 498 Independent Study 1-3 crs.

This course is designed to enhance student comprehension of specific physics subject area. It is open to juniors and seniors with consent of instructor only.

PHYS 499 Undergraduate Research 1-4 crs.

This course is designed for juniors or seniors who have an interest in pursuing a special problem as a research project. It is open only with the consent of instructor. Prerequisite: One year of Physics with "B" or better grade.

Johnson, Linda
Associate Professor
B.S., Lincoln University
M.S., Ph.D., Temple University

Kananen, Gerald
Assistant Professor
B.S., John Carroll University
Ph.D., Duquesne University

FACULTY

Aighewi, Isoken Tito
Lecturer
B.S., M.S., Tuskegee University
Ph.D. University of Minnesota

Bass, Eugene L.
Professor
B.S., Brooklyn College, C.U.N.Y.
Ph.D., University of Massachusetts at Amherst

Boucaud, Dwayne, W.
Assistant Professor
B.S., Ph.D., State University of New York at Buffalo

Counts, Clement
Assistant Professor
B.A., M.S., Marshall University
Ph.D., University of Delaware

Dodoo, Joseph
Lecturer
B. S. Polytechnic of South Bank
M.S., Bedford College, University of London
Ph.D., King's College, University of London

Gupta, Gian C.
Professor
B.S., B.T., Panjab University, India
M. S., Vikaram University, India
Ph.D., Roorkee University, India

Hebel, Angela K.
Lecturer
B.S., M.S., Edinboro University of Pennsylvania

Ishaque, Ali B.
Associate Professor
B.Sc., University of Science & Technology, Kumasi, Ghana
M.Sc., Ph.D. Free University of Brussels, Belgium

Johnson, Andrea
Research Assistant Professor
B.S., University of Miami
M.S., University of South Florida
Ph.D., North Carolina State University

Love, Joseph
Post Doctoral Fellow
B.S. South Eastern Louisiana University
M.S. University of New Orleans
Ph.D., Mississippi State University

Mack, Kelly
Professor
B. S., University of Maryland Eastern Shore
Ph.D., Howard University

Mandouma, Ghislain
Assistant Professor
B.S. Imperial College, University of London, UK
M.S. University de Paris-Sud, Orsay-France
Ph.D., City University of New York Graduate Center

May, Eric
Distinguished Research Scientist
B.S. Oregon State University
M.S. North Arizona State University
Ph.D. Oregon State University

McCrary, Quintece
Lecturer
B.S., M.S., Tuskegee University

Mitra, Madhumi
Assistant Professor
B.S., Presidency College, India
M.S., Calcutta University, India
Ph.D. North Carolina State University

Nyame, A. Kwame
Professor
B.S. University of Science & Technology, Kumasi, Ghana
M.S. Tulane University School of Public Health & Tropical Medicine, New Orleans
Ph.D. University of Georgia, Athens, GA

Okoh, Joseph
Chair and Professor
B. S., University of Lagos, Nigeria
Ph.D., Howard University

Okulate, Mobolaji
Lecturer

B.S., Ph.D., University of Lagos, Lagos, Nigeria

Pitula, Joseph

Assistant Professor

B.S., Rutgers University

M.S., Ph.D., University of Buffalo, NY

Potter, Amelia

Lecturer

B.S., Birmingham University

M.S., University of Maryland Eastern Shore

Ruby, Douglas

Associate Professor

B.A., Gettysburg College

M.S., Ph.D., University of Michigan

Singh, Gurbax

Professor

B.S., M.S., Delhi University

Ph.D., University of Maryland College Park

Singleton, Jeurel

Lecturer

B.A. (B.S.), M.S., University of North Dakota

Ph.D., University of Ottawa, Canada

Waguespack, Yan

Associate Professor

B.S., Beijing Polytechnic University

Ph.D., Tulane University

White, Shawn

Lecturer

B.S., Shippensburg University of Pennsylvania

Ph.D., Clemson University

