
DEPARTMENT OF BUSINESS, MANAGEMENT AND ACCOUNTING

www.umes.edu/SBT

Dr. Kate Brown, Chairperson**MISSION**

The mission of the Department of Business, Management and Accounting at the University of Maryland Eastern Shore is to deliver high quality management education to students majoring in Accounting, Business Education, and Business Administration, as well as to provide core management courses to other majors throughout the University. The mission is accomplished primarily through instruction, supported by instructional development, applied research, and service. The focus is on breadth in curricula that facilitates employment and professional career development in the private, public, and not-for-profit sectors of a global economy. In addition, the Department's curricula are designed to enhance students' awareness of the moral and ethical issues confronting organizations. The role of technology in the decision-making process is emphasized by the integration of computer concepts and applications throughout the curricula. The Department's diverse, multicultural student body is assisted in the development of high-level intellectual, interpersonal, technical, and communication skills. The Department is committed to being a regional leader in the preparation of students for viable careers in the 21st Century.

OBJECTIVES

The objectives of the programs offered in the Department of Business, Management and Accounting are to:

1. Stimulate the intellectual curiosity of students and faculty as they discover new knowledge;
2. Enhance the students' problem solving and critical thinking skills;
3. Sponsor activities that enhance students' professional and social development;
4. Promote an understanding of the economic, ethical, and legal environment in which we live and businesses operate;
5. Provide practical management learning experiences through internship and/or cooperative programs;
6. Foster an awareness of ethical and global issues facing decision makers;
7. Prepare students for careers in professional accounting and managerial positions;
8. Prepare secondary school teachers in the area of business education;
9. Meet the standards of such external bodies as the AACSB, AICPA, The Maryland State Board of Accountancy, and The Maryland State Department of Education, NCATE, and the Middle States Commission on Higher Education;
10. Prepare students for graduate study.

DEGREES OFFERED

Bachelor of Science - Accounting
Bachelor of Science - Business Administration - General
Bachelor of Science - Business Administration – Finance Concentration
Bachelor of Science - Business Administration – Marketing Concentration
Bachelor of Science - Business Education

DESCRIPTION OF PROGRAMS

The programs offered in the Department of Business, Management and Accounting are grounded in the liberal arts. Nearly 50 percent of the curricula comprise general education and other liberal arts courses necessary for the development of each student's cognitive skills. These programs prepare students for professional careers in accounting and managerial positions. Accounting students are encouraged to meet the 150 credit-hour and residency requirements to sit for the Uniform Certified Public Accountants' Examination in their respective states. The Department plans to offer a Masters of Accountancy Degree Program to meet the legislated needs of accounting students.

The Department is committed to program enhancement and is currently pursuing Accreditation under the Association to Advance Collegiate Schools of Business - International (AACSB). The Accreditation Plan for the Department has been approved to allow the Department of Business, Management, and Accounting to continue to hold membership in the AACSB – International.

The Business Education major is the only accredited program of its kind in the State of Maryland. The program is designed to develop competencies among students to teach office administration, accounting, computer concepts and applications, and other business-related courses in secondary education.

GENERAL PROGRAM REQUIREMENTS

Overall Objectives

The overall objectives of the Departmental admission standards, effective from the Fall of 2001, are to promote high quality management education while maintaining high retention and graduation rates for students admitted to the programs offered in the Department of Business, Management and Accounting.

Criteria

Students admitted to the University who choose to major in business will be admitted unconditionally to the Department of Business, Management, and Accounting if they have a combined SAT score of 900 or higher on the Math and Verbal sections, or a total of 1350 or higher on the three component scores.

Students from other programs in the University can apply to change their major to those in the Department of Business, Management and Accounting if:

- a. They have earned 28 semester credit hours with a GPA of 2.5 or higher.
- b. They have earned grades of “C” or higher in MATH 109, ENGL 101, and ENGL 102; and
- c. They have passed the English Proficiency Examination.

All students must earn a grade of “C” or better in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major course requirements.

Transfer Students

To major in the Department of Business, Management, and Accounting, students transferring to UMES must have a minimum GPA of 2.5 and be in good standing at their former institution(s). Transfer students with a GPA less than 2.5 will be considered for admission into the Department of Business, Management, and Accounting after earning 28 credits with a 2.5 GPA during the first year of study at UMES. Grades of “C” or better must be earned in MATH 109, ENGL 101, and ENGL 102, if not completed prior to transferring. Also, the English Proficiency Examination must be passed prior to admission to the Department.

GENERAL RESTRICTIONS

1. Junior and senior level course requirements for a degree in Business Administration, Accounting, and Business Education cannot be satisfied through credit by examination, independent study, or other non-traditional methods.
2. At least 50 percent of the business credit hours required for the business administration and accounting degrees must be earned at UMES.
3. There is no business concentration in the General Studies Program.
4. Repeat courses should be taken at UMES.

GENERAL INFORMATION

Professional Development

Professional development is an integral part of preparing to establish viable management/accounting careers in business, government, and nonprofit organizations. During their sophomore and junior years, students majoring in the Department must enroll in the 0.5 credit Professional Development courses. In addition, participation in departmentally sponsored activities and student organizations is required. Appropriate business attire is required for various functions. During the first semester of the freshman year, all students must acquire appropriate business attire. Guidance is provided by the Department.

Student Organizations

The following are departmentally sponsored Student Organizations: UMES Student Chapter of the National Association of Black Accountants (NABA), Students in Free Enterprise (SIFE), National Student Business League (NSBL), Student Advisory Board (SAB), the Student Chapter of the American Marketing Association (AMA), and Phi Beta Lambda.

Honor Society

Sigma Beta Delta, a national scholastic honor society in business/management is open to students majoring in the Department who rank in the upper 5 percent of their junior class with a minimum GPA of 3.3 or in the upper 10 percent of their senior class. Students are eligible for induction the semester after they have earned 75 credits at the University of Maryland Eastern Shore. At least 50 percent of all course work must be taken on a full-time basis. The degree program must be completed within 6 years of the starting date.

Communication Skills

Written and oral communication skills are extremely important. Standard English is required for all formal settings and submissions, such as classroom interactions, presentations, written assignments, etc.

Practical Experience

All students majoring in Business Administration and Accounting are requirement to acquire meaningful, practical experience in a business, government, or non-profit organization. This requirement can be met in a variety of ways, such as approved work experience, voluntary services, on-campus externship, and/or faculty directed consulting/research projects. No credit is earned for these experiences.

However, students desiring credit for an approved internship must submit for approval a job description and, subsequently, a performance appraisal letter from their supervisor. Following approval by the Department Chairperson (or his/her designee) and enrollment in BUAD 480, the student will write a reflective paper approximately 25 pages in length. The reflective paper should integrate classroom knowledge with practical experiences acquired during the internship. Keeping a daily log of internship activities/tasks is required.

Teaching Internship

The Teaching Internship is the culmination of the Business Education Program. It consists of two (2) full-time placements in two (2) different classroom settings for a total of 15 weeks. The Internship Block includes the Teaching Internship and the Senior Seminar.

Center for Management Assistance and Research(C-MAR)

Through the Center for Management Assistance and Research (C-MAR), the departmental faculty and students provide technical assistance to small and micro enterprises. Particular attention is given to the needs of minority/disadvantaged small and micro business owners, as well as business development in developing regions of the world such as Southern Africa. Self-reliance is stressed through the program's encouragement and support of the entrepreneurial spirit. In addition, emphasis is placed on applied management research relative to business, government, and non-profit organizations. The C-MAR also facilitates the Business, Management and Accounting Department's goal of integrating real-world experience into the curricula via internships, consulting projects, and research projects.

DEPARTMENTAL REQUIREMENTS

Accounting – Accounting majors complete 120 hours of course work, of which 41 hours are general education, 9 are supporting liberal arts, and the remaining 70 are foundation knowledge and major requirement courses. A minimum grade of “C” must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses.

Business Administration – Students choose between three concentrations in the Business Administration major.

1. The General Concentration requires 41 credits of general education courses, 15 credits of supporting liberal arts, and 64 credits of foundation knowledge and major subject requirements. A minimum grade of “C” must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses.
2. The Finance Concentration requires 41 credits of general education courses, 9 credits of supporting liberal arts, and 70 credits of foundation knowledge and major subject requirements. A minimum grade of “C” must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses.
3. The Marketing Concentration requires 41 credits of general education courses, 9 credits of supporting liberal arts, and 70 credits of foundation knowledge and major subject requirements. A minimum grade of “C” must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses.

Business Education – The Business Education major requires 41 credits of general education, 6 credits of supporting liberal arts, 39.5 credits of foundation knowledge and major subject requirements, and 41-42 credits of Teacher Certification Requirements.

ACCOUNTING

DEPARTMENTAL REQUIREMENTS

Accounting majors complete 120 hours of course work, of which 41 hours are general education, 9 are supporting liberal arts, and the remaining 70 are foundation knowledge and major requirement courses. A minimum grade of "C" must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses.

Students in the Honors program must select courses in the area of Honors Accounting.

OBJECTIVES

The objectives of the Accounting Program are to:

- Provide students with understanding of the concepts, structure and meaning of accounting and financial data with the ability to produce clear and concise financial reports.
- Provide students with understanding of the process of identifying, gathering, measuring, summarizing, and analyzing financial data in business organizations.
- Provide students with understanding of the concepts, methods and process of control that provides for accuracy and integrity of financial data and safeguarding of business assets.
- Provide students with understanding of the nature of attest services and the conceptual and procedural bases for performing them.
- Provide students with understanding of taxation and its impact on financial and managerial decisions.
- Provide students with the skills to enter graduate school and conduct research.

COMMON REQUIRED COURSES

ACCT 201	BUAD 213	BUED 101	FINA 340
ACCT 202	BUAD 252	BUED 102	MKTG 308
	BUAD 300	BUED 333	
	BUAD 302		
	BUAD 353		
	BUAD 354		
	BUAD 412		
	BUAD 495		

CAREER OPPORTUNITIES FOR ACCOUNTING

The accounting program is designed for students who plan to pursue careers in Public Accounting, Corporate Accounting, Government or Not-For-Profit Accounting and related fields. It is also designed to prepare students for advanced study in Accounting and related fields.

REQUIRED MAJOR COURSES

ACCT 301	ACCT 400	ACCT 405	BUAD 414
ACCT 302	ACCT 402	ACCT 407	
ACCT 303	ACCT 405		
ACCT 308			

Students must select one course:

ACCT 304	ACCT 309	ACCT 401	ACCT 410
ACCT 309		ACCT 409	

CURRICULUM GUIDE FOR ACCOUNTING

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 100	1	ENGL 102	3
ENGL 101	3	GEN ED CURR AREA I ¹	3
MATH 109	3	GEN ED CURR AREA III ²	3
PSYC 200	3	BUAD 213	3
GEN ED CURR AREAIII ²	3	SOCI 101	<u>3</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	ACCT 202	3
BUAD 252	3	ACCT 308	3
ECON 201	3	BUED 101	.5
ENGL 203	3	ECON 202	3
GEN ED CURR AREA I ⁴	<u>3</u>	ENGL 305	3
	15	GEN ED CURR AREA I ⁴	<u>3</u>
			15.5

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 301	3	ACCT 303	3
ACCT 302	3	ACCT 400	3
BUAD 302	3	BUAD 353	3
BUED 333	3	BUED 102	.5
MKTG 308	<u>3</u>	FINA 340	3
	15	GEN ED CURR AREA I ⁵	<u>3</u>
			15.5

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Elective ⁶	3	ACCT 405	3
ACCT 402	3	ACCT 407	3
BUAD 354	3	BUAD 300	3
BUAD 412	3	BUAD 414	3
PSYC 303 or		BUAD 495	<u>3</u>
PSYC 305 or			15
PSYC 307	<u>3</u>		
	15		

Total Credit Hours: 120

¹Student must select one course from GEN ED CURR AREA I:A or D

²Student must select one science course from GEN ED CURR AREA III

³Student must select one science laboratory from GEN ED CURR AREA III

⁴Student must select one course from GEN ED CURR AREA I:C

⁵Student select one course from GEN ED CURR AREA I:B

⁶Student must select an elective in the area of Accounting.

CURRICULUM GUIDE FOR ACCOUNTING HONORS

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 100	1	ENGL 102H	3
ENGL 101H	3	GEN ED CURR AREA I ¹	3
MATH 111H	3	GEN ED CURR AREA III ²	3
PSYC 200	3	BUAD 213	3
GEN ED CURR AREA III ²	3	SOCI 101	<u>3</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	ACCT 202	3
BUAD 252.	3	ACCT 408	3
ECON 201H	3	BUED 101	.5
ENGL 203	3	ECON 202H	3
GEN ED CURR AREA I ⁴	<u>3</u>	GEN ED CURR AREA I ⁴	<u>3</u>
	15		15

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 301	3	ACCT 303H	3
ACCT 302H	3	ACCT 400H	3
BUAD 302H	3	BUAD 353	3
BUED 333	3	BUED 102	.5
MKTG 308	<u>3</u>	FINA 340	3
	15	GEN ED CURR AREA I ⁵	<u>3</u>
			15.5

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>First Semester</i>	<i>Credit</i>
Elective ⁶	3	ACCT 405H	3
ACCT 402	3	ACCT 407H	3
BUAD 354H	3	BUAD 300	3
BUAD 412	3	BUAD 414	3
PSYC 303 or		BUAD 495	<u>3</u>
PSYC 305 or			15
PSYC 307	<u>3</u>		
	15		

Total Credit Hours: 120

¹Student must select course from GEN ED CURR AREA I: A or D

²Student must select one science course from GEN ED CURR AREA III

³Student must select one science laboratory from GEN ED CURR AREA III

⁴Student must select course from GEN ED CURR AREA I:C

⁵Student must select course from GEN ED CURR AREA I:B

⁶Student must select course in the area of Honors Accounting.

BUSINESS ADMINISTRATION

DEPARTMENTAL REQUIREMENTS

Students choose between a major in the Business Administration or one of two concentrations.

1. The Business Administration General requires 41 credits of general education courses, 15 credits of supporting liberal arts, and 64 credits of foundation knowledge and major subject requirements. A minimum grade of "C" must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses. Students in the Honors program must select courses in the area of Honors Business Administration.
2. The Finance Concentration requires 41 credits of general education courses, 9 credits of supporting liberal arts, and 70 credits of foundation knowledge and major subject requirements. A minimum grade of "C" must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses.
3. The Marketing Concentration requires 41 credits of general education courses, 9 credits of supporting liberal arts, and 70 credits of foundation knowledge and major subject requirements. A minimum grade of "C" must be earned in ENGL 101, ENGL 102, MATH 109, and all foundation knowledge and major requirement courses.

OBJECTIVES

The objectives of the Business Administration – General Program are to:

1. To understand theories and concepts of organizational behavior and their management.
2. To provide opportunities for developing team-work skills.
3. To learn about and become sensitive to the rights and responsibilities of employers, employees and other stakeholders.
4. To develop successful management strategies through scientific methods, simulation and information technology.
5. To help generate critical thinking and problem solving skills to face global economic challenges.
6. Provide students with the skills to enter graduate school and conduct research.

COMMON REQUIRED COURSE

ACCT 201	BUAD 213	BUED 101	FINA 340
ACCT 202	BUAD 252	BUED 102	MKTG 308
	BUAD 300	BUED 333	
	BUAD 302		
	BUAD 304		
	BUAD 353		
	BUAD 354		
	BUAD 412		
	BUAD 495		

CAREER OPPORTUNITIES

A degree in Business Administration will allow students to pursue career opportunities in a variety of areas within the field of business including marketing, general management and human resource management. The program also prepares students to be admitted into advanced degree programs.

REQUIRED MAJOR COURSES

BUAD 410	BUAD 411	BUAD 420	FINA 341
Students must select two courses:			
ACCT 301	BUAD 306	FINA 440	MKTG 314
ACCT 402	BUAD 313	FINA 441	MKTG 315
ACCT 408	BUAD 414	FINA 442	MKTG401
	BUAD 430	FINA 443	MKTG 404
		FINA 445	MKTG 406
		FINA 446	MKTG 409
			MKTG 410
			MKTG 421

CURRICULUM GUIDE FOR BUSINESS ADMINISTRATION - GENERAL

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 100	1	ENGL102	3
ENGL 101	3	GEN ED CURR AREA I ¹	3
MATH 109	3	GEN ED CURR AREA III ²	3
PSYC 200	3	BUAD 213	3
GEN ED CURR AREA III ²	3	SOCI 101	<u>3</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	ACCT 202	3
BUAD 252	3	BUED 101	.5
ECON 201	3	ECON 202	3
ENGL 203	3	ENGL 305	3
GEN ED CURR AREA I ⁴	<u>3</u>	BUAD 300	3
	15	GEN ED CURR AREA I ⁴	<u>3</u>
			15.5

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 302	3	BUAD 306	3
BUAD 304	3	BUAD 354	3
BUAD 353	3	BUED 102	.5
BUED 333	3	FINA 340	3
MKTG 308	<u>3</u>	GEN ED CURR AREA I ⁵	3
	15	GEN ED CURR AREA ⁶	<u>3</u>
			15

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD Elective ⁷	3	BUAD Elective ⁷	3
BUAD 412	3	BUAD 411	3
BUAD 410	3	BUAD 420	3
FINA 341	3	BUAD 495	3
GEN ED CURR AREA ⁶	<u>3</u>	PSYC 303 or	
	15	PSYC 305 or	
		PSYC 307	<u>3</u>
			15

Total Credit Hours: 120

¹Student must select course from GEN ED CURR AREA I: A or D

²Student must select one science course from GEN ED CURR AREA III

³Student must select one science laboratory from GEN ED CURR AREA III

⁴Student must select course from GEN ED CURR AREA I:C

⁵Student must select course from GEN ED CURR AREA I:B

⁶Student may select from one course from either GEN ED CURR AREA.

⁷Student must select 300 level or above Elective.

**CURRICULUM GUIDE FOR
BUSINESS ADMINISTRATION HONORS – GENERAL**

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 100	1	ENGL102H	3
ENGL 101H	3	GEN CURR AREA I ¹	3
MATH 111H	3	GEN ED CURR AREA III ²	3
PSYC 200	3	BUAD 213	3
GEN ED CURR AREA III ²	3	SOCI 101	<u>3</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	ACCT 202	3
BUAD 252	3	BUED 101	.5
ECON 201H	3	ECON 202H	3
ENGL 203	3	ENGL 305	3
GEN ED CURR AREA I ⁴	<u>3</u>	BUAD 300	3
	15	GEN ED CURR AREA I ⁴	<u>3</u>
			15.5

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 302H	3	BUAD 300	3
BUAD 304	3	BUAD 354H	3
BUED 333	3	BUED 102	.5
FINA 340H	3	FINA 341H	3
MKTG 308	<u>3</u>	GEN ED CURR AREA I ⁵	3
	15	GEN ED CURR AREA ⁶	<u>3</u>
			15

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 306	3	BUAD 410	3
BUAD 411H	3	BUAD 412	3
BUAD Elective	3	BUAD 420	3
PSYC 303 or		BUAD Elective	3
PSYC 305 or		BUAD 495	<u>3</u>
PSYC 307	<u>3</u>		15
GEN ED CURR AREA ⁶	<u>3</u>		
	15		

Total Credit Hours: 120

¹Student must select course from GEN ED CURR AREA I: A or D

²Student must select one science course from GEN ED CURR AREA III

³Student must select one science laboratory from GEN ED CURR AREA III

⁴Student must select course from GEN ED CURR AREA I:C

⁵Student must select course from GEN ED CURR AREA I:B

⁶Student may select from one course from either GEN ED CURR AREA

BUSINESS ADMINISTRATION - FINANCE

OBJECTIVES

The objectives of the Business Administration – Finance Concentration Program are to:

1. Provide students with understanding of the concepts that underlie the raising and spending of capital.
2. Provide students with understanding of the process of cash flows within an organization.
3. Provide students with understanding of the concepts of forecasting and discounting to determine appropriate investments.
4. Provide students with understanding of the nature of financial markets and institutions in the current global context.
5. Provide students with understanding of finance as it relates to them.
6. Provide students with the skills to enter graduate school and conduct research.

COMMON REQUIRED COURSES

ACCT 201	BUAD 213	BUED 101	FINA 340
ACCT 202	BUAD 252	BUED 102	MKTG 308
	BUAD 300	BUED 333	
	BUAD 302		
	BUAD 304		
	BUAD 353		
	BUAD 354		
	BUAD 412		
	BUAD 495		

CAREER OPPORTUNITIES

A degree in Business Administration – Finance will allow students to pursue career opportunities in banking, business advising, budgeting, financial analysis, brokerage, and other finance related areas. The program also prepares students to be admitted into advanced degree programs.

REQUIRED MAJOR COURSES

BUAD 410	BUAD 411	BUAD 420	FINA 341
			FINA 440

Student must select four (4) courses:

FINA 441	FINA 443	FINA 445	FINA 490
FINA 442	FINA 444	FINA 446	FINA 491

CURRICULUM GUIDE FOR BUSINESS ADMINISTRATION – FINANCE

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 100	1	ENGL102	3
ENGL 101	3	GEN ED CURR AREA I ¹	3
MATH 109	3	GEN ED CURR AREA III ²	3
PSYC 200	3	BUAD 213	3
GEN ED CURR AREA III ²	3	SOCI 101	<u>3</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	ACCT 202	3
BUAD 252	3	BUED 101	.5
ECON 201	3	ECON 202	3
ENGL 203	3	ENGL 305	3
GEN ED CURR AREA I ⁴	<u>3</u>	BUAD 300	3
	15	GEN ED CURR AREA I ⁴	<u>3</u>
			15.5

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 302	3	BUED 333	3
BUAD 304	3	BUAD 354	3
BUAD 353	3	BUED 102	.5
BUED 340	3	FINA 340	3
MKTG 308	<u>3</u>	GEN ED CURR AREA I ⁵	3
	15	PSYC 303 or	
		PSYC 305 or	
		PSYC 307	<u>3</u>
			15.5

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
FINA Elective	3	FINA 440	3
FINA Elective	3	FINA Elective	3
BUAD 411	3	FINA Elective	3
BUAD 412	3	BUAD 420	3
BUAD 410	<u>3</u>	BUAD 495	<u>3</u>
	15		15

Total Credit Hours: 120

¹Student must select course from GEN ED CURR AREA I: A or D

²Student must select one science course from GEN ED CURR AREA III

³Student must select one science laboratory from GEN ED CURR AREA III

⁴Student must select course from GEN ED CURR AREA I:C

⁵Student must select course from GEN ED CURR AREA I:B

BUSINESS ADMINISTRATION - MARKETING

OBJECTIVES

The objectives of the Business Administration – Marketing Concentration Program are to:

1. Provide students with understanding of the concepts and interactions between competitive forces and marketing strategies.
2. Provide students with understanding of the concepts, processes and metrics for optimizing the position of a product and the segments it serves.
3. Provide students with the ability to plan the allocation of resources between all elements of the marketing mix including brand equity creation.
4. Provide students with the ability to analyze the implications of institutional policies on firm profitability.
5. Provide students with understanding of the theories of consumer perception, learning, motivation and attitude formation.

COMMON REQUIRED COURSES

ACCT 201	BUAD 213	BUED 101	FINA 340
ACCT 202	BUAD 252	BUED 102	MKGT 308
	BUAD 300	BUED 333	
	BUAD 302		
	BUAD 304		
	BUAD 353		
	BUAD 354		
	BUAD 412		
	BUAD 495		

CAREER OPPORTUNITIES

A degree in Business Administration – Marketing will allow students to pursue career opportunities in all types of marketing positions in marketing research, advertising, retailing, ecommerce and international marketing. The program also prepares students to be admitted into advanced degree programs.

REQUIRED MAJOR COURSES

BUAD 410	BUAD 420	MKTG 401	MKTG 410
BUAD 411		MKGT 404	

Student must select three (3) courses:

MKTG 312	MKTG 315	MKTG 406	MKTG 421
MKTG 314		MKGT 409	

CURRICULUM GUIDE FOR BUSINESS ADMINISTRATION - MARKETING

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 100	1	ENGL102	3
ENGL 101	3	GEN ED CURR AREA I ¹	3
MATH 109	3	GEN ED CURR AREA III ²	3
PSYC 200	3	BUAD 213	3
GEN ED CURR AREA III ²	3	SOCI 101	<u>3</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	ACCT 202	3
BUAD 252	3	BUED 101	.5
ECON 201	3	ECON 202	3
ENGL 203	3	ENGL 305	3
GEN ED CURR AREA I ⁴	<u>3</u>	BUAD 300	3
	15	GEN ED CURR AREA I ⁴	<u>3</u>
			15.5

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 302	3	MKTG Elective	3
BUAD 304	3	MKTG Elective	3
BUAD 353	3	BUAD 354	.5
BUED 333	3	BUED 102	3
MKTG 308	<u>3</u>	FINA 340	3
	15	GEN ED CURR AREA I ⁵	<u>3</u>
			15

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MKTG Elective	3	MKTG 410	3
BUAD 411	3	MKTG 401	3
BUAD 412	3	MKTG 404	3
BUAD 410	3	BUAD 420	3
PSYC 303 or		BUAD 495	<u>3</u>
PSYC 305 or			15
PSYC 307	<u>3</u>		
	15		

Total Credit Hours: 120

¹Student must select course from GEN ED CURR AREA I: A or D

²Student must select one science course from GEN ED CURR AREA III

³Student must select one science laboratory from GEN ED CURR AREA III

⁴Student must select course from GEN ED CURR AREA I:C

⁵Student must select course from GEN CURR AREA I:B

BUSINESS EDUCATION PROGRAM

The objectives of the Business Education Program are to:

1. Provide students with the skills to create, analyze, revise and implement curricula to prepare learners for a dynamic and rapidly changing world and to assess learner progress.
2. Provide students with the skills to build relationships with various publics to produce a vibrant, holistic learning environment.
3. Provide students with a solid foundation in general education, business content areas, and professional studies.
4. Provide students with an understanding of the need to grow continuously as a professional.
5. Provide students with the skills to enter graduate school and conduct research.

COMMON REQUIRED COURSES

ACCT 201	BUAD 302	BUED 101	MKTG 308
ACCT 202	BUAD 304	FINA 340	
	BUAD 412		

CAREER OPPORTUNITIES

A degree in Business Education will allow students to pursue career opportunities in 5-12 schools, higher education, business, government, consulting, training, and with not-for-profit organizations. The program also prepares students to be admitted into advanced degree programs.

REQUIRED MAJOR COURSES

BUAD 213	BUAD 313	BUAD 430	BUED 333
BUAD 252			BUED 414

PROFESSIONAL EDUCATION REQUIREMENTS

EDCI 200	EDCI 400	EDSP 428	PSYC 305
EDCI 201 ^{1,2}	EDCI 406		PSYC 307
EDCI 311	EDCI 409		
	EDCI 410		
	EDCI 427B		
	EDCI 480B		
	EDCI 490B		

¹Course is only required for students who have not passed the PRAXIS Examination.

²Course does not count toward graduation.

CURRICULUM GUIDE FOR BUSINESS EDUCATION

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUED 100	1	ENGL102	3
ENGL 101	3	PSYC 200	3
MATH 109	3	GEN ED CURR AREA I ¹	3
SOCI 101	3	BUED 213	3
GEN ED CURR AREA III ²	3	BUAD 252	<u>3</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	ACCT 202	3
EDCI 200	3	BUED 101	.5
ECON 201	3	ECON 202	3
ENGL 203	3	ENGL 305/Online	3
GEN ED CURR AREA III ²	3	BUAD 313	3
EDCI 201 ^{4,5}	<u>3</u>	GEN ED CURR AREA I ⁶	<u>3</u>
	15		15.5

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 302	3	BUED 414	3
BUAD 304	3	EDCI 406	3
BUED 333	3	EDCI 409	3
FINA 340	3	PSYC 307	3
PSYC 305	3	BUAD 412	<u>3</u>
MKTG 308	<u>3</u>		15
	18		

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EDCI 311	3	EDCI 400	3
EDCI 410	3	EDCI 480B	6
EDCI 427B	3	EDCI 490B	<u>6</u>
EDSP 428	3		15
BUAD 488C	<u>3</u>		
	15		

Total Credit Hours: 120

¹Student must select course from GEN ED CURR AREA I: A or D

²Student must select one science course from GEN ED CURR AREA III

³Student must select one science laboratory from GEN ED CURR AREA III

⁴Course does not count towards graduation.

⁵Required until PRAXIS is passed.

⁶Student must select course from GEN ED CURR AREA I:B

MINOR PROGRAMS

The Department of Business, Management and Accounting offers minors in Accounting and Business Administration and these are available to students in major programs of study outside the Department of Business, Management and Accounting. Each minor program consists of 18 semester hours of program courses with a grade of "C" or better. Courses may not be used to fulfill graduation requirements in another major.

The Business Administration minor requires:

BUAD 302	FINA 340	MKTG 308	Two 300-400 business electives
BUAD 412			

The Accounting minor requires:

ACCT 201	ACCT 301	ACCT 303	ACCT 402
ACCT 202,	ACCT 302		

COURSE DESCRIPTIONS FOR ACCOUNTING

- ACCT 201 Introductory Financial Accounting/Hybrid Credit 3**
This course is the beginning study of financial accounting principles and concepts. Emphasis is on the conceptual understanding of accounting and its role in society. Practical applications of accounting concepts are demonstrated both manually and electronically. The focus is on accounting for sole proprietorships. Not open as free or program elective. Prerequisites: Grade of "C" in ENGL 101, ENGL 102, and MATH 109.
- ACCT 202 Introductory Corporate & Managerial Accounting/Hybrid Credit 3**
Financial accounting principles and concepts as they relate to partnerships and corporations are covered. Theory and practice applicable to income determination and asset valuation are considered. In addition, managerial and cost accounting topics are explored. Prerequisite: ACCT 201.
- ACCT 301 Cost & Budgetary Control Credit 3**
This course is a study of the basic principles of managerial accounting and the environment in which cost accounting information is developed and used for decision-making. Basic cost accounting concepts under job order and process costing systems and budgeting techniques are emphasized. Prerequisite: ACCT 202.
- ACCT 302 Intermediate Accounting I/Honors Credit 3**
The course involves an in-depth study of modern financial accounting, concepts, principles, practices, and the conceptual framework on which accounting is developed. The accounting cycle, adjusting entries, corporate transactions and the preparation of financial statements are emphasized. Prerequisites: ACCT 202.
- ACCT 303 Intermediate Accounting II/Honors Credit 3**
The course is a continued in-depth study of modern financial accounting as it relates to income determination, asset valuation, and stockholders' equity. International and ethical implications are considered. Prerequisite: ACCT 302.
- ACCT 304 Managerial Accounting Credit 3**
The course consists of a study of the usefulness of financial data and financial analysis in the management functions of planning, control, and decision-making. The course surveys the elements of cost, as well as the main aspects of the accounting structure. Prerequisite: ACCT 301.
- ACCT 308 Accounting Information Systems/Hybrid Credit 3**
The course provides a basis for understanding, using and controlling accounting information systems (AIS) as found in business organizations. The principle content areas include documentation of accounting information systems; security, privacy and ethics; internal control systems, AIS and business processes. Prerequisite: ACCT 201 with a grade of 'C' or better.
- ACCT 309 Financial Statement Analysis Credit 3**
This course investigates the use of financial statements from the view of main users of these statements. Prospective users include investors, financial analysts, and creditors who have to assess the information content of accounting numbers and the predictive value of accounting data. Balance sheet and Income Statement Information, Cash Flow Statements, profitability analysis, and ratio analysis and interpretation are covered. Prerequisite: ACCT 302, with a grade of "C" or higher.
- ACCT 400 Intermediate Accounting III/Honors Credit 3**
The course is a continued in-depth study of modern financial accounting. This course covers investments, earnings per share, revenue recognition, pensions, leases, accounting for changes and cash flows. Prerequisite: ACCT 302 with "C" grade or better.
- ACCT 401 Advanced Financial Accounting/Honors Credit 3**
The course is a study of specialized issues in partnerships, business combinations, consolidation of parent and subsidiary financial statements, segment reporting, foreign currency transactions and hedging, and foreign financial statements. Prerequisite: ACCT 303 with a grade of 'C' or better.
- ACCT 402 Federal Income Tax Accounting Individual/Honors Credit 3**
The course an in-depth study of tax provisions and planning for individuals. The basic procedures involved in the determination of income tax liability of individuals are performed. Prerequisite: ACCT 302.
- ACCT 405 Government and Non-Profit Accounting/Honors Credit 3**
Accounting principles and practices for governmental and not-for-profit organizations are covered with specific emphasis on state and local government units. The course also focuses on accounting and reporting issues in private not-for-profit organizations, such as hospitals and schools. Prerequisite: ACCT 302.

ACCT 407 Auditing/Honors/Hybrid Credit 3
This is a capstone course for accounting majors. Financial auditing principles, concepts and practices including professional ethics, statistical sampling techniques, and audit liability are covered. Work paper preparation and audit reports are an important part of the course. The use of audit software is required. A thorough understanding of financial accounting is required. This capstone course in Accounting is taken during the final semester of study. Prerequisites: Senior Standing, ACCT 303, ACCT 400.

ACCT 408 Accounting Information Systems/Honors Credit 3
The course provides a basis for understanding, using and controlling accounting information systems (AIS) as found in business organizations. The principle content areas include documentation of accounting information systems; security, privacy and ethics; internal control systems, AIS and business processes. Prerequisite: ACCT 201 with a grade of 'C' or better.

ACCT 410 CPA Problems Credit 3
A study, review, and analysis of the content, form, and scope of the CPA Examination. The purpose of the course is to prepare students to sit for the Certified Public Accountants Examinations. Prerequisite: Advanced standing with minimum of 18 credit hours, or permission of instructor.

ACCT 409 Forensic Accounting Credit 3
Forensic accounting deals with the relation and application of the accounting systems used to record and summarize business and financial transaction to a legal problem. This course encompasses both investigative accounting and litigation support, with emphasis on the following topics: protection and recovery of assets; investigating and analyzing financial evidence; developing computerized applications to assist in the analysis and presentation of financial evidence; communicating findings in the form of reports and collections of documents; and assisting in legal proceedings, including testifying in court as an expert witness and preparing visual aids to support trial evidence. Prerequisites: ACCT 303 and ACCT 400.

ACCT 498 Independent Study in Accounting Credit 3
The hours for this course are by arrangement with designated or individual faculty. Under the guidance of the faculty member, students conduct an intensive investigation of a topic within the field of accounting. A written proposal is required for approval. Projects typically include library research, interviews with operating and/or staff managers, and other requirements appropriate to the topic. One of the products of this project is a report. Prerequisites: BUAD 302 and permission of instructor.

BUSINESS ADMINISTRATION

BUAD 132 Introduction to Business Credit 3
A course designed to acquaint students with the way in which business enterprises are owned, organized, managed, and controlled. It provides a broad background in common business practices by surveying the entire field of Business Administration. Not open as Free or Program Elective for business majors.

BUAD 213 Business Software Applications/Hybrid/Online Credit 3
The course is designed to develop advanced computer application competencies. Emphasis is placed on the use of various software packages in accessing and processing large quantities of data for decision making and developing practical methods for using the computer to solve quantitative business/management problems. Coverage will include advanced use of Operating System and Application Software related to spreadsheets, graphics, databases, and statistical analysis (SAS or SPSS), as applied in business and industry.

BUAD 252 Calculus with Business and Management Applications Credit 3
The course focuses on development and review of mathematical techniques in Linear Algebra and Calculus for applications in a wide variety of courses in Business and Management. Emphasis is on those techniques which are required for an understanding of Business Statistics, Operations Research, Decision Theory, and Economic Theory. Prerequisite: MATH 109.

BUAD 300 Business Ethics/Online Credit 3
The purpose of this course is to assist students in understanding ethical implications in the decision-making process and to assume their role as managers with a sense of a broader purpose and a moral consciousness. Concepts and principles are discussed in light of problem situations with ethical implications, with a focus on the development of critical and analytical thinking. Prerequisite: Sophomore standing.

- BUAD 302 Management and Organizational Behavior/Hybrid/Honors Credit 3**
This course is designed to develop a full understanding of the role of business organizations and their effective management. It deals with principles and practices of management and theory and analysis of organizations. Course content includes historical background of management theory and analysis of organizations, principles and processes of management functions, leadership, communication, and morale. Prerequisite(s): Junior standing and ECON 201, ECON 202, ACCT 201 and ACCT 202, PSYC 200, and SOCI 101. Fashion Merchandising majors only: ECON 202 and permission of the respective Department Chairs.
- BUAD 303 Advanced Organizational Behavior Credit 3**
This course provides an understanding of managerial behavior in an organizational setting. It explores individual attitudes and behavior in interpersonal and intra-group relationships, with the specific goal of improving awareness, perception, and understanding of one's own and others' points of view and behavior. Prerequisite: BUAD 302.
- BUAD 304 Small Business Management and Entrepreneurship/Hybrid Credit 3**
Development and assessment of the viability of small and micro business ventures are the focus of this course. Emphasis is on the business planning process, the management of small enterprises, feasibility studies, formulation of business plans, risk management, and entrepreneurial characteristics. Not open as Free or Program Elective. Prerequisites: BUAD 302 and Junior standing.
- BUAD 306 Human Resource Management Credit 3**
This course involves a study of company personnel objectives, programs, policies and procedures relating to manpower planning, recruitment, selection, training and development, compensation, and employee appraisal. Prerequisites: BUAD 302 and Junior standing.
- BUAD 307 Industrial Relations Credit 3**
Emphasis is on union-management relations and their effect upon personnel programs and economic and legal analysis of the union/management activities: collective bargaining trade agreements, strikes, boycott and lock-out; arbitration, mediation and conciliation, company unions, employee representation, and injunctions. Prerequisite: Junior standing.
- BUAD 313 Advanced Business Applications/Hybrid Credit 3**
The course is designed to develop computer application techniques for skilled users. Emphasis is placed on more advanced commands and techniques as applied in business and industry. Prerequisite: BUAD 213
- BUAD 353 Business Statistics I/Honors Credit 3**
The course deals with descriptive as well as inferential statistics with specific reference to business. Major topic areas covered are measures of central tendency, variation, probability, estimation, and test of hypothesis. Prerequisite: BUAD 252.
- BUAD 354 Business Statistics II/Hybrid/Honors Credit 3**
Advanced inferential statistics are emphasized. The topics covered include time series, regression analysis, chi-square test, and analysis of variance as these relate to solutions to business and economic problems. Prerequisite: BUAD 353.
- BUAD 410 Production Management/Hybrid/Honors Credit 3**
Emphasis is placed on production management, planning, and control in service and manufacturing enterprises. Topics include quality management, process selection, demand forecasting, materials planning and control, and capacity planning. Case studies are used to analyze the manufacturing and service environments in terms of operational planning, the use of teams, teamwork, and decision making regarding problems commonly confronting managers and supervisors in national and transnational production organizations. Prerequisites: BUAD 302, BUAD 354, and FINA 340.
- BUAD 411 Operations Research and Decision Theory/Hybrid/Honors Credit 3**
The course is designed to acquaint students with the latest Operations Research and Decision Analysis techniques. It includes Linear Programming, Transportation, Queuing, Algorithm simulations and other models. Prerequisite(s): BUAD 252 and BUAD 354 or MATH 112 and MATH 210.
- BUAD 412 Business Law I Credit 3**
The study of laws governing commercial and business transactions are emphasized. Major areas of consideration are the forces that determine business laws, contracts, commercial paper, and bailment's. Prerequisites: BUAD 302.

- BUAD 414 Business Law II Credit 3**
The course will continue the emphasis on private law partnerships, corporations, risks, and property. It also examines public laws pertaining to government regulations of business competition, markets, and labor relations. Prerequisites: BUAD 412.
- BUAD 420 International Business Credit 3**
This course is designed to develop an understanding of the various interdisciplinary factors bearing on the operations of businesses in a global economy. Emphasis is on the economic, political and social environment. Prerequisites: BUAD 302.
- BUAD 480 Directed Study and Practical Applications in Business and Accounting Credit 3**
This course is designed to reinforce knowledge in certain specialized areas of study. It is structured to meet the needs of the students taking the course. Enrolled students are assigned to faculty advisors with whom they work out specific plans of study. Students will have the primary responsibility of completing all assignments. Approved internships with written projects are also appropriate. Prerequisite(s): Senior standing and consent of the Chair.
- BUAD 488A Business and Economic Indicators Credit 3**
This course provides a framework to illustrate how important economic indicators interact and how their changes affect business decisions. The identification of major supply side and demand side economic indicators is followed by analysis of their effects at firm, industry sector, and macroeconomic levels. Topics covered include Federal Reserve policy on interest rates, GDP growth rate, unemployment rate, business inventories, consumer confidence, and consumer price index. Prerequisites: ACCT 202, ECON 201 & 202, BUAD 302, MKTG 308.
- BUAD 488C Ethical, Economic, Managerial and Societal Considerations of Technological Information Systems Credit 3**
This course will examine the evolution of technological systems exploring the impact on business, economics, knowledge acquisition, and society. Management considerations, system options, technology adoption models, major theories, security and data control issues, and factors that can either stimulate or deter technological implementation will be covered. The role of enterprise resource planning in supply chain, data, customer relationship, human resource, financial, and project management will be discussed. Critical legal and ethical issues will also be explored.
- BUAD 490 Senior Seminar in Business Credit 3**
Topics of current interest are announced before registration. The course provides opportunity for individualized, in-depth study with presentation to and criticism by peers. Prerequisite: Senior standing.
- BUAD 491 Research Methods in Business/Honors Credit 3**
The planning of research and the collection, analysis, and interpretation of data are important aspects of the course. A completed research project is required.
- BUAD 495 Strategic Management/Hybrid/Honors Credit 3**
The course is designed to integrate the knowledge and analytical skills acquired in the functional subject areas in Business Administration and related areas. The scope of the subject matter includes responsibilities of top management, together with the organizational processes for formulating and implementing organizational strategy. The course includes the integration of the functional areas of Economics, Accounting, Management, Marketing, Finance, and Law. This course uses case study methods and pedagogical techniques to deal with business problems and to formulate business policies and strategies. Prerequisite(s): Senior standing. To be taken during final semester of study. Capstone course culminating with the completion of a high quality written research project.
- BUAD 498 Independent Study in Management Credit 3**
The hours for this course are by arrangement with designated or individual faculty. Under the guidance of the faculty member, students conduct an intensive investigation of a topic within the field of management. A written proposal is required for approval. Projects typically include library research, interviews with operating and/or staff managers, and other requirements appropriate to the topic. One of the products of this project is a report. Prerequisites: BUAD 302 and consent of instructor.

BUSINESS EDUCATION

BUED 100 First Year Experience/ Business

Credit 1

The course is interdisciplinary in nature with emphasis on preparing graduates for productive personal and professional lives. Course content includes the following: orientation to The University; the role and responsibilities of the students; the student as a member of the University team; expectations of the faculty and staff; effective study techniques; time management, conflict management; stress management; test taking skills; and learning style assessment. Determination/perseverance, time on task and help-seeking are emphasized. The faculty facilitator relies heavily on guest lectures for selected topics.

BUED 101 Sophomore Professional Development

Credit .5

A continuation of BUED 100 with emphasis on strategic planning for life, including personal and career planning, decision making, values clarification, and occupational testing. Interpersonal skill development, business etiquette, dressing for success, and the need for continued intellectual development are topics that are stressed. Business and professional resource persons present selected topics. Prerequisite: Business major with Sophomore Standing.

BUED 102 Junior Professional Development

Credit .5

A continuation of BUED 101 with emphasis on strategic planning for life including personal and career planning, decision making, values clarification, and occupational testing. Interpersonal skill development etiquette, dressing for success and the need for continued intellectual development are stressed. Business and professional resource persons present selected topics. Prerequisite: Business major with Junior Standing.

BUED 212 Computer-Concepts/ Applications I/Hybrid/Online

Credit 3

The course introduces students to electronic information processing. Emphasis is placed on various computer concepts and applications. Contemporary computer software including System Software, and Application Software for word processing, spreadsheets and databases relevant to business and industry are taught. Not Open as Free or Program Elective.

BUED 333 Business Communications/Hybrid

Credit 3

This course prepares students for the future by enhancing writing, speaking, and delivery skills, as well as critical thinking and analytical skills that focus on how to organize reports and presentations, solve problems, and build arguments. Students will utilize technology in demonstrating presentation and organization skills associated with communicating in a business/management environment. Prerequisites: ENGL 102, ENGL 203, and Junior Standing.

BUED 414 Management/Online

Credit 3

A study of the various scientific and management principles applicable to office organization and control, office systems and procedures. Also included are office layout and equipment and personal supervision. Prerequisites: Senior Standing, BUAD 302

FINANCE

FINA 340 Financial Management/Hybrid/Honors

Credit 3

The course is designed to provide a basic understanding of principles and practices in the area of business finance as an integral part of the business enterprise. It deals with sources and allocation of funds, channels and procedures of financing in the capital market, internal and external financing and inter-firm relations, corporate finance and international capital markets, and public regulations by government and non-government agencies. Prerequisites: ACCT 202, ECON 201, and ECON 202.

FINA 341 Investment and Security Analysis/Hybrid/Honors

Credit 3

The course involves financial analysis of investment alternatives available to individual and institutional investors. Security analysis is employed in the allocation and evaluation of specific investments and in dealing with the problems of changing economic and financial conditions. Prerequisite: FINA 340.

FINA 440 Advanced Financial Management/Hybrid/Honors

Credit 3

The course is designed to develop analytical and decision-making abilities of students in relation to varied problems that normally confront financial management. Problem areas include financial planning and control of current operations and long-term capital commitments, income management, evaluation of income-producing property, and expansion through merger and consolidation. Prerequisite: FINA 340.

FINA 441 Insurance and Business Risks

Credit 3

The course deals with the study of risks and the methods of meeting them through the insurance mechanism. Basic principles and types of coverage for social business relations, and principles and types of coverage for social business risks are studied. Special emphasis is placed on business risks, coverage, and problems of risk management. Prerequisite: FINA 340

FINA 442 Principles of Real Estate/Hybrid Credit 3
The course is designed to study the principles, techniques and legal implications of acquiring and selling real estate. Areas covered include the factors influencing real values of residential, commercial and industrial properties, and relevant laws governing contracts, agency, brokerage, listings, agreements, deeds, titles, mortgage instruments, liens, landlord and tenant relationships, settlements, appraisal, real estate financing, real estate licensing laws, and ethics. Prerequisites: ACCT 202, ECON 201, ECON 202 or consent of instructor

FINA 443 Futures and Options Credit 3
The focus of this course is the understanding of options and futures. Theoretical issues as well as practical matters will be discussed. Emphasis will be on the valuation of derivatives and applications to the management of financial risk. Techniques for managing both individual and corporate investment risk will be examined. Speculation strategies will also be discussed. Prerequisite: FINA 341

FINA 444 Entrepreneurial and Small Firm Finance Credit 3
The focus of this course is the assessment of the financial needs and sources of funds for new firms based on forecasting cash flows. Topics for discussion will include the value of the endeavor to the entrepreneur, strategic issues such as the tradeoffs between alternative financing choices, and issues of financial flexibility and control. While the primary focus will be new ventures, discussion of the financing of existing small firms will be included. Prerequisite: FINA 340

FINA 445 Financial Institutions Credit 3
The focus of this course is the role of institutions in the flow of funds in the economy. The banking sector, from the Federal Reserve to local retail banks, will be thoroughly examined. The development and regulatory issues of financial markets will be discussed. The course will include the theoretical underpinnings of financial markets as well as practical issues relating to money. Prerequisites: ECON 201 and 202

FINA 446 Personal Finance Credit 3
The focus of this course is the management of an individual's money. Topics will include saving, investing, cash management, and credit. Discussion will focus on decision making and the acquisition of relevant information. Prerequisite: Junior Standing.

FINA 490 Senior Seminar in Finance Credit 3
This course provides the opportunity for advanced study of topics in finance; offerings to be announced prior to registration. Will satisfy elective requirement in Finance Concentration program. Prerequisite: Senior standing.

FINA 491 Research Methods in Finance/Honors Credit 3
The focus of this course is the planning and execution of a research project, including the collection, analysis and interpretation of data on a topic in Finance. A completed research report is required. Prerequisite: Senior standing.

FINA 498 Independent Study in Finance Credit 3
The hours for this course are by arrangement with designated or individual faculty. Under the guidance of the faculty member, students conduct an intensive investigation of a topic within the field of finance. A written proposal is required for approval. Projects typically include library research, interviews with operating and/or staff managers, and other requirements appropriate to the topic. One of the products of this project is a report. Prerequisites: BUAD 302 and consent of instructor.

MARKETING

MKTG 308 Principles of Marketing/Hybrid Credit 3
The focus is on introducing the nature and fundamentals of marketing activities in the modern industrial economy. This course deals with the analysis of the socio-economic and psychological factors, influencing consumer behavior, market measurement and forecasting methods, development of marketing programs in the areas of product-line, price, promotion and channels of distribution, procedures for planning and controlling marketing operations and the legal aspects of marketing. Prerequisites: ECON 201, ECON 202, ACCT 202 and Junior standing. (Fashion Merchandising Majors only. ECON 202 and permission of the respective Department Chairs).

MKTG 312 Sales Management Credit 3
The course involves a study of the techniques and policies in the administration of the sales organization with respect to the market strategies. Managerial functions, such as selecting, training, compensating, and supervising field sales personnel, are also dealt with. The course also includes planning, implementing, and coordinating the sales program with the total marketing effort of the firm. Prerequisite: MKTG 308.

- MKTG 314 Retail Management Credit 3**
 The course involves a study of retailing as a marketing institution from the standpoint of management. Topics covered include the store location, layout and facilities, policy formulation in the areas of buying, merchandising, pricing, inventory planning and controlling, sales promotion, customer service, and general management problems. Prerequisite: MKTG 308.
- MKTG 315 E-Commerce Credit 3**
 This course is designed to familiarize students with the emergence and importance of electronic commerce. The course examines the exchange of business information, products, services and payments over the Internet and World Wide Web. Students will understand the field of electronic commerce and its basic vocabulary, as well as learn the skills to develop electronic commerce applications (on the web). Prerequisite: MKTG 308.
- MKTG 401 Advertising Management Credit 3**
 Emphasis is on an analysis of advertising problems from the points of view of the general administrator and marketing manager. The major topics covered are determining the role of advertising in an organization's total set of strategies, coordinating and integrating advertising with the total marketing effort, and developing of appropriate copy, media selection, client-agency relationships, and available techniques to measure the effectiveness of advertising expenditures. Prerequisite: MKTG 308
- MKTG 404 Consumer Behavior and Theory Credit 3**
 This course examines motivation, cognition, and learning of preferences and tastes from the interdisciplinary perspective of the social sciences. Dynamics of consumer demand and behavior are emphasized. Prerequisite: MKTG 308.
- MKTG 406 Purchasing Management Credit 3**
 The course involves a study of the problems in industrial, institutional, and government purchasing, such as the purchasing of raw material, supplies, and equipment. Procedures for procurement, value analysis, quality control, and inventory control are covered. Factors in determining suitability of product, preparation of specifications, and legal aspects are also dealt with. Prerequisite: MKTG 308.
- MKTG 409 Marketing Research Credit 3**
 The focus is on the process of acquiring, classifying and interpreting primary and secondary marketing data at the macro and micro level needed for profitable marketing decisions. Skills in evaluating the appropriateness of inductive, deductive, survey, observational, and experimental methodologies are developed. Recent developments in the systematic recording and use of internal and external data needed for marketing decisions are evaluated. The course focuses on integrating problem formulation, research design, questionnaire construction, sampling, data collection and data analysis to yield valuable marketing information. The course also examines the proper use of statistical applications such as time series analysis as well as qualitative methods, with an emphasis on the interpretation and use of results. Prerequisite: MKTG 308
- MKTG410 Marketing Strategy and Policy Credit 3**
 This course emphasizes the managerial aspects of marketing and distribution problems. The course specifically deals with the factors affecting consumer demand, methods of satisfying it, the structure of the market, marketing methods, and the problems of various agencies, competitive practices, and management of the selling activities of a business, including distribution policies, pricing, and organizing and planning of market operations. Prerequisite: MKTG 308.
- MKTG 421 International Marketing Credit 3**
 The focus is on company survival and growth in developed and emerging markets. This course examines the challenge of entering and operating effectively in foreign markets. Decisions must be made regarding international marketing objectives, strategies and policies, foreign market selection and entry, adaptation and customization of products, distribution channel design and communication programs to fit each foreign market. International marketing organization, international marketing research, planning and control are discussed. Student projects will explore and demonstrate understanding of cultural and language issues through readings, case discussion, class presentations and a term project. Techniques for communicating and marketing products and services in a specific country that accommodate cultural differences are emphasized. Prerequisite: MKTG 308.
- MKTG 498 Independent Study in Marketing Credit 3**
 The hours for this course are by arrangement with designated or individual faculty. Under the guidance of the faculty member, students conduct an intensive investigation of a topic within the field of marketing. A written proposal is required for approval. Projects typically include library research, interviews with operating and/or staff managers, and other requirements appropriate to the topic. One of the products of this project is a report. Prerequisites: BUAD 302 and consent of instructor.

DIRECTORY OF FACULTY

- Ali, Mohammad** **Assistant Professor**
B.A., University of Dhaka, Dhaka, Bangladesh; M.A., University of Dhaka; M.B.A., University of Dhaka; M.S., Ph.D.,
University of Florida
- Brown, Kate** **Associate Professor & Chair**
B.A., M.B.A., Ph.D. University of Connecticut
- Buzzetto- More, Nicole** **Associate Professor**
B.A., Marist College; M.S., College of New Rochelle; Ed.M., Columbia University; Ed.D., Columbia University
- Das, Monisha** **Associate Professor**
B.A., University of Calcutta, India; M.A., University of Bombay, India; M.B.A., J. Bajaj Institute of Management Studies; Ph.D.,
Golden State University
- Habib, Nagy** **Associate Professor**
B.A., Higher Commercial Institute, Egypt; M.A., New York University; Ph.D., Indiana University, Bloomington
- Hummer, William** **Lecturer**
B.G.S., University of Nebraska at Omaha; M.B.A., University of Montana; M.S., University of Delaware
- Lee, Kyung Joo** **Associate Professor**
B.B.A., Korea University, Seoul, Korea; M.B.A., Indiana University; Ph.D., University of Arizona
- Li, Diane** **Associate Professor**
B.S., Shandong University; M.S., Ph.D., Old Dominion University
- Mitchell, Bryant** **Associate Professor**
B.S., University of Maryland Eastern Shore; M.B.A., Columbia University; Ph.D., Clemson University
- Moore, John** **Professor**
B.S., Michigan State University; M.B.A., James Madison University; Ph.D., Virginia Commonwealth University
- Panda, Dandeson** **Associate Professor**
B.S., University of the District of Columbia; M.B.A., Atlanta University; Ph.D., Howard University
- Sampson, Allen** **Lecturer**
B.S., Morgan State University; M.B.A., Wharton Graduate School of Business, University of Pennsylvania
- Sharma, Dinesh** **Professor**
B.S., Maharshi Dayanand University; M.S., Meerut University; M.S., University of North Carolina; Ph.D., Chaudhary Charan
Singh University

DEPARTMENT OF ENGINEERING AND AVIATION SCIENCES

www.umes.edu/SBT

Ali Eydgahi, Chairperson

MISSION

The mission of the Department of Engineering and Aviation Sciences is to provide quality professional degree programs, to prepare students for employment in their chosen field, to establish close partnerships with and facilitate technology transfers to industry and government, to prepare students for advanced studies, to contribute to economic development of the State, and to provide related service to the campus community and the community at large.

OBJECTIVES

The objectives of the programs offered in the Department of Engineering and Aviation Sciences are as to:

1. Provide students with academic curricula that develop a strong background in Engineering and Aviation Sciences concentration areas.
2. Prepare students for life long learning.
3. Expose students to social, historical, and ethical issues involving Engineering and Aviation Sciences.
4. Promote interaction between the university and the community through departmental activities by faculty and students.
5. Encourage, through recruitment, outreach, and intervention programs, minorities and women to pursue careers in the Engineering and Aviation Sciences programs.
6. Provide students in the department opportunities for scholarship, work-study arrangements, summer employment, and jobs.

DEGREES OFFERED

Bachelor of Science - Engineering

With Specializations in:

- Aerospace
- Computer
- Electrical
- Mechanical

Bachelor of Science - Aviation Sciences

With concentration in:

- Professional Pilot
- Aviation Electronics
- Aviation Management
- Aviation Software

GENERAL PROGRAM REQUIREMENTS

The admission of students to the Engineering program is based upon SAT scores, high school or college grades, and preparation in mathematics and science in high school or college. The course sequence and prerequisites for the Engineering program require that the student place into MATH 112, Calculus I, in order to complete the program in eight semesters.

Students admitted to the university who do not place appropriately in mathematics will be permitted to enroll in the Engineering or Aviation Sciences programs. These students will require additional preparatory courses at UMES prior to starting the core courses in the Engineering program, and this may extend their program by one or more semesters. Successful completion of the Bridge, Jump Start, PACE, or similar programs during the summer prior to students' Freshman year is highly recommended.

Collaborative Agreements with Other Institutions of Higher Learning

UMES maintains collaborative agreements with various community colleges in the state of Maryland to provide students the opportunity to complete a bachelor's degree in Engineering or Aviation Sciences programs by combining upper level courses taken through UMES with their lower level courses taken at the community college. In all cases, students desiring to earn a UMES Engineering or Aviation Sciences degree must complete all UMES degree requirements. Students normally enter the collaborative program upon completion of their associate degree, but may elect to enroll concurrently in both programs, taking UMES courses and community college courses simultaneously. In some cases, credit towards the community college degree may be granted for UMES courses; for details, the student's community college must be consulted. Attainment of an associate degree is not required for award of a UMES Engineering or Aviation Sciences degree if all UMES degree requirements are met. Transfer credit toward a UMES degree for courses taken at a community college is granted in accordance with the MHEC regulations. Collaborative agreement students who wish to enroll in the UMES program must apply for admission to UMES as transfer students using the procedures specified elsewhere in this catalog. Students accepted in the program will be assigned a UMES advisor for planning their degree completion.

CAREER OPPORTUNITIES

Engineering is a profession in which fundamentals of mathematics and natural sciences are applied to develop and create techniques and products for the benefits of humanity. Aerospace engineers design and develop various types of imaginable flying machines such as military fighter jets or unmanned aerial vehicles. Computer engineers deal with all aspects of the design, construction, and operation of computer systems and their hardware and software. Electrical engineers are involved in much of the technology in computers, communication systems, power systems, satellites, microelectronics, and integrated circuits. Mechanical engineers design and develop all types of machinery such as artificial organs, robotics, manufacturing, automotive, or air conditioning.

COMMON REQUIRED

ENGE 100	ENGE 370	MATH 211	PHYS 262
ENGE 150	ENGE 380	MATH 212	PHYS 263
ENGE 170	ENGE 382	MATH 321	PHYS 264
ENGE 240	ENGE 383		PHYS 265
ENGE 241	ENGE 476		
ENGE 250	ENGE 477		
ENGE 251			
ENGE 260			
ENGE 261			
ENGE 270			

REQUIRED MAJOR COURSES¹

Aerospace Specialization (ENAE)

ENAE 342	ENAE 412	ENAE 462	ENAE 472
ENAE 345	ENAE 420	ENAE 464	ENAE 475
ENAE 389	ENAE 430	ENAE 465	
	ENAE 440	ENAE 467	
	ENAE 442	ENAE 472	

Computer Specialization (ENCE)

ENCE 350	ENCE 452	ENCE 460	ENCE 742
ENCE 352	ENCE 454	ENCE 462	ENCE 475
ENCE 387	ENCE 456	ENCE 464	
	ENCE 458	ENCE 468	
		ENCE 469	

¹Students must take five courses and one lab from one of the areas of specialization.

Electrical Specialization (ENEE)¹

ENEE 330	ENEE 443	ENEE 460	ENEE 472
ENEE 348	ENEE 444	ENEE 462	ENEE 475
ENEE 385		ENEE 464	
ENEE 387		ENEE 465	
		ENEE 468	
		ENEE 469	

Mechanical Specialization (ENME)¹

ENME 342	ENME 422	ENME 462	ENME 472
ENME 345	ENME 425	ENME464	ENME 475
ENME 346	ENME 430	ENME 468	
ENME 422	ENME 440	ENME 469	
ENME 425	ENME 442		

¹Students must take five courses and one lab from one of the areas of specialization.

CURRICULUM GUIDE FOR ENGINEERING

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CHEM 111	3	ENGE 170	3
CHEM 113	1	ENGL 102	3
ENGE 100	1	MATH 211	4
ENGE 150	3	PHYS 161	3
ENGL 101	3	PHYS 163	<u>1</u>
MATH 112	<u>4</u>		14
	15		

SOPHMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGE 250	3	ENGE 240	3
ENGE 251	1	ENGE 241	1
ENGE 260	3	ENGE 261	3
ENGL 203	3	ENGE 270	3
MATH 321	4	MATH 212	4
PHYS 262	3	PHYS 263	3
PHYS 264	<u>1</u>	PHYS 265	<u>1</u>
	18		18

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGE 340	3	ENGE 320	3
ENGE 341	1	ENGE 382	3
ENGE 362	3	ENGE 383	1
ENGE 370	3	GEN ED CURR AREA	3
ENGE 380	3	Specialization Elective	3
ENGL 305	<u>2</u>	Specialization Elective	<u>2</u>
	16		16

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGE 476	2	ENGE 477	2
GEN ED CURR AREA	3	GEN ED CURR AREA	3
GEN ED CURR AREA	3	GEN ED CURR AREA	3
Specialization Elective	3	Specialization Elective	3
Specialization Lab	<u>2</u>	Specialization Elective	<u>2</u>
	13		14

Total Credit Hours: 124

AVIATION SCIENCES

GENERAL PROGRAM REQUIREMENTS

The Aviation Sciences program does not have any specific admissions requirements for general admission to UMES, although this is subject to change. The course sequence and prerequisites for Aviation Sciences program require that the student place into MATH 109, College Algebra, or higher (except for Aviation Electronics, which requires placement into MATH 112, Calculus I) in order to complete the program in eight semesters.

Students admitted to the university who do not place appropriately in mathematics will be permitted to enroll in the Aviation Sciences programs. These students will require additional preparatory courses at UMES prior to starting the core courses in Engineering or Aviation Sciences programs, and this may extend their program by one or more semesters. Successful completion of the Bridge, Jump Start, PACE, or similar programs during the summer prior to students' Freshman year is highly recommended.

DEPARTMENTAL REQUIREMENTS

The Aviation Sciences program consists of 120 total credit hours. Students complete 34 credit hours of Aviation core courses and choose one of four concentrations. The concentration areas are Professional Pilot, Aviation Electronics, Aviation Management, Aviation Software, and each consists of 33 credit hours. The curricula include 41 credit hours of general education courses, 6 credit hours of support courses, and 6 hours of Aviation elective courses.

CAREER OPPORTUNITIES

Aviation Sciences is the study of the technical and professional skills and disciplines necessary for the operation and management of aviation enterprises including piloting, business management /administration, and supporting technical areas such as development of aviation specific electronic and software systems. Career opportunities include Professional Pilots, Air Traffic Controllers, Airport Managers, Airline Managers, General Aviation Operation Managers, and Navigation/Communication/Flight Control System Designers and Programmers

Flight Training

The flight training course syllabus (certified by the Federal Aviation Administration under Part 61 and 141 of the Federal Air Regulations) is designed to prepare students for their FAA pilot and flight instructor certificates in the most effective and efficient manner possible. UMES' ground instruction provides a broad base knowledge and experience that are needed for good decision-making of pilots. Flight training is accepted from FAA Part 61 & 141-approved flight schools operating under memorandum of understanding (MOU) with UMES. Training is monitored by appropriately-rated UMES aviation faculty who also conduct periodic stage checks in flight as part of the students' flight training courses.

Flight Training Expenses

Because the per-student cost of flight training is so much greater than the costs of other University of Maryland Eastern Shore (UMES) educational activities, this cost is not included in the UMES tuition. Fees paid for flight training are considered qualified educational expenses and will be paid directly to the flight training contractor.

Students interested in financial aid to cover the cost of flight training should meet with their departmental advisor and the financial aid office to discuss the various options available. Students enrolled in flight training courses may request that their student budget be increased so that they may be eligible for loans or scholarships above and beyond the UMES tuition and fees. Any additional financial aid will be refunded to the student (or in the case of parental loans, to the parent) and can then be applied to flight training expenses through the flight training provider.

Training Aids

The Aviation program training aids include a complete selection of visual aids, computer access, and the latest software support for pilots, such as PC-based flight simulation programs and FAA written knowledge test preparation packages. The department has an FAA-certified Frasca 142 flight training system and a Precision Flight Controls CAT-V MFD advanced aviation training system on campus for instrument and procedures instruction at all levels, from basic flight to advanced multi-engine operations.

Simulator Use

The FAA allows a portion of student's aeronautical training to be conducted with the University's Flight Training Systems and simulators. This provides a significant cost savings over the use of an aircraft for the same experience. Additionally, solo practice in the simulator is very useful. As with other laboratory facilities at UMES, it is necessary to charge for the use of the flight simulator to cover the costs of operation and maintenance. Students enrolled in flight training practicum courses will be assessed a lab fee for simulator use. The lab fee is based on the projected number of hours students will be able to complete in the flight simulator toward completion of flight training courses. The lab fee provides for unlimited usage of the flight simulator. The lab fee for the 2008-2009 academic year is \$250 and will be charged for enrollment in the following courses: AVSC 142, AVSC 143, AVSC 153, AVSC 162, AVSC 163, AVSC 252, AVSC 253, AVSC 254, AVSC 452, AVSC 462, AVSC 472.

Medical Examination

To qualify for flight training, a student must be enrolled in a degree program at UMES or other member school of the University System of Maryland and pass an appropriate FAA Aviation Medical Examination. An Aviation Medical Examination is a physical exam given by an FAA-approved physician known as an Aviation Medical Examiner (AME). It is important that students embarking on a career as a Professional Pilot know before they proceed whether they have a medical condition which would prevent employment as a pilot. Therefore, students intending to enroll in the Professional Pilot concentration are encouraged to obtain an FAA Second Class medical (the level required to act as a pilot for compensation or hire) and Student Pilot certificate before arriving on campus. AME's are listed on the internet at www.faa.gov/pilots/amelocator. For further assistance, contact the UMES Aviation Sciences program office. AME's are available in the UMES area to provide examinations to those who do not have one when they arrive. Fees for this examination are approximately \$50 - \$75, and for students under age 40 with no abnormal conditions, the examination is good for three years of training.

Aviation Security Requirements

Federal regulations (49 CFR Part 1552) enacted in 2004 require all flight training students to either document US citizenship or complete a Federal security background check. Students may participate in non-flight programs without complying with these regulations, but those in flight programs must comply before their first flight. The background checks apply to all non-US citizens, including nationals of other countries with permanent resident status in the US. These checks include fingerprinting, photographing, and submitting personal data, copies of passports, visas, and other documents to the Transportation Security Administration (TSA). US citizens must present either a current valid US passport or an original or raised-seal official copy of their certificate of birth or naturalization. Non-US citizen students must make application to the US Transportation Security Administration and pay a fee (currently \$130.00) to TSA. This must be accomplished before starting flight training at UMES and again before starting instrument training and multiengine training although the fee will only be charged one time. All actions necessary to accomplish this check may be completed at the UMES campus and/or at the location of the flight training provider when the student arrives for training. Training may begin as soon as the application is completed, but may be suspended if TSA rejects the student or requires further checks. UMES is legally obligated to deny training to any student rejected by TSA. As the TSA Flight Student security program is not under UMES' control, UMES cannot accept any responsibility for it nor can UMES make any promise that any student will pass the checks. More information on the TSA Flight Student security program may be found on the Internet at <https://www.flightschoolcandidates.gov/>.

Credit for Prior Flight Training

Students who arrive with FAA pilot and/or flight instructor certificates and ratings will be granted academic credit for completion of the courses for the certificates and ratings held upon satisfactory demonstration of proficiency to the University's standards (AABI Criterion 2.9). This may be accomplished by taking standardized test in university simulator lab using FAA Practical Test Standards, or via departmental oral exam and interview.

The following Federal Aviation Administration (FAA) certifications will be eligible for academic credit:

Private Pilot Certification

AVSC 141 AVSC 112 AVSC 142

Private Pilot with Instrument Rating¹

AVSC 161 AVSC 162

Commercial Certificate with Instrument Rating²

AVSC 251 AVSC 252 AVSC 253
AVSC 254

¹Students must select courses listed in Private Pilot Certification plus courses listed in Private Pilot with Instrument Rating.

²Students must select courses listed in Private Pilot Certification, Private Pilot with Instrument Rating plus Commercial Certificate with Instrument Rating.

Since the holder of a Commercial Pilot Certificate has previously met the requirements of the Private Pilot Certification and Instrument Rating, applicants will receive credit for those foundation courses after showing proof that the applicant holds a Commercial Pilot's License.

Certified Flight Instructor Certificate

AVSC 451 AVSC 452

Certified Flight Instructor – Instrument¹

AVSC 461 AVSC 462

Multi-Engine Rating

AVSC 472

COMMON REQUIRED MAJOR

AVSC 112	AVSC 305	BUED 212 ² or	MATH 211 ³
AVSC 131	AVSC 331	ENGE 170 ⁴	
AVSC 151	AVSC 421	BUAD 252	
AVSC 201	AVSC 441		
AVSC 202	AVSC 490		
AVSC 231			
AVSC 241			

REQUIRED MAJOR COURSES

Professional Pilot Concentration

AVSC 141	AVSC 251	AVSC 302	AVSC 451
AVSC 143	AVSC 252	AVSC 311	AVSC 452 ⁵ or
AVSC 153	AVSC 253	AVSC 342	AVSC 472
AVSC 161	AVSC 254	AVSC 380	
AVSC 163			

Aviation Management Concentration

AVSC 132	AVSC 431	ACCT 201	ECON 201
AVSC 232	AVSC 432	ACCT 202	ECON 202
AVSC 261	AVSC 442		
AVSC 355			

Aviation Electronics Concentration

AVSC 302	EDTE 211	ETEE 303	ETEE 421
AVSC 361	EDTE 212	ETEE 335	ETEE 425
		ETEE 355	ETEE 485
			ETEE 486

Aviation Software Concentration

AVSC 302	CSDP 220	CSDP 301	CSDP 401
	CSDP 221	CSDP 305	
	CSDP 222	CSDP 321	
	CSDP 250	CSDP 350	

¹Courses listed in Certified Flight Instructor Certification plus courses listed in Certified Flight Instructor - Instrument.

²Student must select either BUED 212 or ENGE 170.

³Students majoring in Aviation Electronics and Aviation Software must select MATH 211.

⁴Student must select either ENGE 170 or BUED 212.

⁵Student must select from either AVSC 452 or AVSC 472.

CURRICULUM GUIDE FOR AVIATION SCIENCES

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AVSC 100	1	AVSC 131	3
AVSC 112	3	AVSC 152	3
ENGL 101	3	BUED 212 or	
MATH ¹	3	ENGE 170	3
Concentration Course	<u>3</u>	ENGL 102	3
	13	Concentration Course	<u>3</u>
			15

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AVSC 201	3	AVSC 202	3
AVSC 241	3	AVSC 231	3
Concentration Course	3	MATH ¹	3
ENGL 203	3	SOCI 101	3
Science Course with Lab	<u>4</u>	SOCI ²	<u>3</u>
	16		15

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AVSC 305	1	Concentration Course	3
AVSC 331	3	Concentration Course	3
Concentration Course	3	ENGL 305 or	
Concentration Course	3	ENGL 310	3
GEN ED CURR AREA	3	GEN ED CURR AREA	3
PSYC 200	<u>3</u>	Science Course	<u>3</u>
	16		15

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
AVSC Elective	3	AVSC Elective	3
AVSC 421 or		AVSC 441	3
PSYC ³ or		AVSC 490	3
SOCI ³	3	Concentration Course	3
Concentration Course	3	Concentration Course	<u>3</u>
Concentration Course	3		15
EXSC 111 ⁴	<u>3</u>		
	15		

Total Credit Hours: 120

¹Student must select supportive MATH course required by Concentration.

²Student must select a course in the Social Sciences area.

³Student must select either PSYC or SOCI Upper Level Advanced Behavior course.

⁴EXSC 111 cannot be repeated for credit.

COURSE DESCRIPTIONS FOR AVIATION SCIENCES IN AVIATION SCIENCES

AVSC 100 First Year Orientation with Aviation

Credit 1

This course offers an overview of the aviation industry and an overview of college life. This course is an orientation for incoming freshmen and covers stress and time management and life skills. In addition, the course explores ethics, educational requirements, FAA requirements, scholarship availability, career opportunities, and the need to be trained.

AVSC 112 Aviation Fundamentals

Credit 3

This course provides a basic overview of aviation, including Fundamentals of Flight, Flight Operations, Aviation Weather, Performance and Navigation, and Integrating Pilot Knowledge and Skills. Critical thinking is stressed. Aviation Science students in the Professional Pilot Concentration should enroll concurrently in AVSC 141.

AVSC 131 Air Transportation

Credit 3

This course covers the history, development, and present status of air transportation, including: government legislation, regulations, the FAA and CAB organizations and functions; classification of air carriers; facilities and airline operations; future air transportation requirements; economics and social implications.

AVSC 132 Introduction to Aviation Business

Credit 3

This course is an introductory course to provide an overview of the structure of business, management and organization, human resources, financial management, production, labor-management relations, marketing, accounting, and insurance as well as the global dimensions of business and social responsibilities of business as these topics relate to aviation business. Also included is an exploration of the management of FBOs and other general aviation enterprises. Prerequisite: AVSC 131.

AVSC 141 Private Pilot Ground Lab

Credit 1

This course provides ground and simulator instruction to meet FAA private pilot aeronautical knowledge requirements. Subjects include all applicable Federal Aviation Regulations (FARs), visual flight rules (VFR) navigation, aviation weather, aircraft operations, safety considerations, etc. Training includes instruction necessary to complete the airmen knowledge requirements of the Private Pilot Airplane airmen knowledge test (FAA written exam). This course is designed for students in the Professional Pilot Concentration and should be taken concurrently with AVSC 112 Aviation Fundamentals. Prerequisite: MATH 101 with "C" or better, placement into MATH 109, or permission of instructor. Co-requisite: AVSC 112

AVSC 142 Private Pilot Flight

Credit 3

This course includes actual flight and simulator time to meet private pilot requirements. Topics include all FAA required maneuvers such as: aircraft pre-flight operations, airport and traffic pattern operations, flight maneuvering, flight at slow airspeeds, normal and crosswind takeoffs and landings, control and maneuvering of the aircraft solely by reference to flight instruments, cross-country navigation, maximum performance takeoffs and landings, night flying and emergency operations. Upon successful completion of this course the student will have the aeronautical experience and skill requirements for, and will have obtained, an FAA Private Pilot Airplane Single Engine Land certificate. This course, completed together with AVSC 162, is the equivalent of AVSC 143, 153, and 163. Lab fee \$250. Co-requisite: AVSC 141.

AVSC 143 Primary Flight Training I

Credit 2

This course includes actual flight and simulator time to meet the requirements of the first two stages of the FAA 141 Private Pilot Flight syllabus. Topics include the FAA required maneuvers such as: aircraft pre-flight operations, airport and traffic pattern operations, flight maneuvering, flight at slow airspeeds, normal and crosswind takeoffs and landings, control and maneuvering of the aircraft solely by reference to flight instruments, cross-country navigation training, maximum performance takeoffs and landings, night flying and emergency operations. Upon completion of this course, the student will have passed the Private Pilot Stage I and Stage II stage checks. Lab fee \$250. Co-requisite: AVSC 141.

AVSC 152 Meteorology & Environmental Issues

Credit 3

This course covers the following topics: the atmosphere, atmospheric energy and temperature, pressure and density altitude, wind, atmospheric circulation systems, air-masses, fronts, vertical motion and stability, atmospheric moisture, tornadoes, thunderstorms, and local winds. Hazards associated with weather, such as wind shear, turbulence, icing, instrument meteorological conditions (IMC), etc. are also covered, as are applications of weather knowledge, including aviation weather resources and weather evaluation for flight. Air and noise pollution are introduced. Pre/Co-requisite: AVSC 112.

- AVSC 232 Airport Management Credit 3**
The student is provided knowledge of airport administration, design, and planning. Airport operations and practices discussed include security, fire protection, facility maintenance, environment, public affairs, political, social and economical issues. Prerequisites: AVSC 231 or permission of instructor.
- AVSC 241 Aviation Safety Credit 3**
Aviation Safety is designed to promote sound practice, and an understanding of the safety-net for commercial and general aviation. This course provides the student with a foundation and framework in aviation and transportation safety. The course objectives are: to gain an understanding of the knowledge, skills, and abilities required in aviation; to enhance the student's safety awareness; to familiarize the student with hazards associated with the aviation environment; and to impart to the student a broad understanding of the United States' safety system. Some typical areas are: safety data, investigations, aviation maintenance, collision avoidance, Cockpit Resource Management (CRM), physiology, situation awareness, and human factors. Prerequisite: AVSC 112.
- AVSC 251 Commercial Pilot Ground Credit 3**
In this course, ground instruction to meet FAA Commercial Pilot aeronautical Knowledge requirements is provided. Subjects include all FAR's applicable to commercial pilot privileges, limitations, and flight operations; airplane performance, aerodynamics, performance prediction, weight and balance control; advanced airplane systems, including fuel injection, high performance power plants, environmental systems, complex aircraft systems, and commercial flight maneuvers. Training includes instruction necessary to complete the airmen knowledge requirements for the (FAA written exam) Commercial Pilot Airplane airmen knowledge test (written exam). Prerequisites: AVSC 152, AVSC 153, AVSC 161 and AVSC 253. Co-requisites: AVSC 201 and 241.
- AVSC 252 Commercial Pilot Flight I Credit 2**
This course is actual flight and simulator time for private pilots to learn commercial pilot operations. Emphasis is on advanced cross-country and night operations. Upon successful of this course the student will have mastered the VFR cross-country and night aeronautical knowledge and skill requirements for an FAA Commercial Pilot Certificate. Lab fee \$250. Prerequisite: AVSC162. Co-requisite: AVSC 251.
- AVSC 253 Commercial Pilot Flight II Credit 2**
This course is actual flight and simulator time for private pilots to learn commercial pilot operations. Emphasis is placed on more advanced aerodynamics, aircraft performance, and practical experience to pilot a complex aircraft. Upon successful completion of this course the student will have mastered the complex aircraft aeronautical knowledge and skill requirements for an FAA Commercial Pilot Certificate. Lab fee \$250. Prerequisite: AVSC 251 and AVSC 252.
- AVSC 254 Commercial Pilot Flight III Credit 2**
This course is actual flight and simulator time for private pilots to learn commercial pilot operations. Emphasis is on commercial flight maneuvers and practical experience to master the aircraft. Upon completion of this course, the student will have mastered the complex aircraft aeronautical knowledge and skill requirements for an FAA Commercial Pilot Certificate. Lab fee \$250. Prerequisite: AVSC 251, AVSC 252 and AVSC 253.
- AVSC 261 Aviation Organization and Leadership Credit 3**
This course is a study of the various organizational theories as they apply to the aviation industry. The course will cover the topics of human resources management, labor relations, classical and rational theories of organizational structure and management, the evolution of business organization and the economics of organizations. Prerequisites: AVSC 231.
- AVSC 301 Aircraft Dispatcher Credit 3**
This is a preparatory course for the FAA Aircraft Dispatcher written examinations. The course is a review of the aviation core concepts and technology as they apply to the Aircraft Dispatcher. Prerequisites: AVSC 152, AVSC 201, AVSC 202, AVSC 241, and either AVSC 251 or AVSC 112 and permission of the instructor.
- AVSC 302 Advanced Aircraft Systems Credit 3**
This course covers all aircraft systems, their theory of design, operations, trouble shooting and maintenance standards. Study includes propulsion systems, associated instruments, auxiliary systems, propeller and control; aircraft structure, aircraft electrical and lighting, hydraulic and pneumatic systems, avionics, brakes and tires, deicing, flight instrumentation, navigation systems, and ELT. This course covers an in-depth understanding of a typical turboprop commuter-type aircraft as well as an overview of the design and development process of commercial aircraft. Prerequisite: AVSC112 and AVSC 251 or permission of instructor.

- AVSC 305 Aviation Career Preparation Credit 1**
 This course is designed to prepare Aviation Science students for entry into the aviation career field. Topics and assignments will include resume writing, course portfolio creation, and development of interview skills through the use of mock interviews. This course will prepare students to enter an Internship and complete AVSC 380. Prerequisite: Junior Standing
- AVSC 311 Aerodynamics & Aircraft Performance Credit 3**
 Students in this course study the fundamentals and more advanced theory of flight, the standard atmosphere, and subsonic and supersonic aerodynamics. Topics include airfoils, the complete aircraft, various aerodynamic shapes, wind tunnels, elements of airplane performances, principles of stability and control, and propeller and jet propulsion. Prerequisite: AVSC 112, MATH 112 or BUAD 252, PHYS 121 or PHYS 161 or PHYS 181, and Junior standing.
- AVSC 312 Advanced Aerodynamics and Performance of Flight Vehicles Credit 3**
 This course is designed for Junior or Senior students who have interest in pursuing in-depth studies of aircraft performance, including stability, sonic and hypersonic propulsion, and an introduction into space mechanics and reentry techniques. Prerequisite: AVSC 311.
- AVSC 323 Sport Pilot Ground School Credit 1**
 This course is provides the requisite aeronautical knowledge to successfully pass the Federal Aviation Administration Sport Pilot Certificate Written Exam. Students will cover topics including aircraft design and basic aerodynamics, flight Instruments, Federal Aviation Regulations (FARs), meteorology, ground operations, flight planning and navigation techniques, and required endorsements.
- AVSC 331 Aviation Law Credit 3**
 This course is a study of the foreign and domestic legal system (federal, state, and local laws and regulations) concerning air transportation and implications as they relate to operations, contracts, insurance, liability, and regulatory status, in the field of aviation. Emphasis is on domestic and international legal aspects of air transportation. Prerequisites: AVSC 112, AVSC 131 and Junior standing.
- AVSC 342 Flight Physiology Credit 3**
 This course provides an understanding and overview of physiological situations that can interfere with safety. Topics include high altitude physiology, gas laws, human anatomy, hypoxia, fatigue, jet lag, stress, drugs, alcohol, spatial disorientation, vision, and the associated human factor issues. Prerequisite: AVSC 241 and Junior standing.
- AVSC 355 Airport Planning Credit 3**
 This course provides a step by step process of airport design, layout, construction and all planning aspects of a medium hub-sized commercial airport. The student is provided with the knowledge of zoning laws, environment considerations, blueprint design, etc. The student will design and complete his/her own airport layout. Prerequisites: AVSC 131 and AVSC 231 or permission of instructor.
- AVSC 361 Communication Electronics Credit 3**
 This course introduces the fundamentals of communication electronics. Topics introduced include signal, noise, FM/AM modulation, digital modulation, FSK, transmitting and receiving circuits, antenna, wave propagation, microwave devices, transmission lines, wave guides, radar systems, fiber optics, and practical applications. Prerequisites: PHYS122, MATH112, ENGE 170 and Junior standing.
- AVSC 365 Transportation Security Credit 3**
 This course will focus on Transportation Security Administration regulations covering aviation, railroad, highway, marine, and pipeline transportation. Requirements for all modes of transportation will be covered, with emphasis on aviation security. Personnel and the technology needed to provide a safe and secure environment for airports and airlines will be discussed. Advanced security technology and its use to significantly increase the level of security in transportation will be covered. Prerequisite: Junior Standing.
- AVSC 380 Cooperative or Internship Credit 1-3**
 Students are provided a cooperative or internship in the public or private sector to give the student an opportunity to gain experience and professional skills in an area related to aviation. Prerequisite: AVSC 305, Junior standing.
- AVSC 381 Cooperative or Internship II Credit 1-3**
 Students are provided a cooperative or internship in the public or private sector to give the student an opportunity to gain experience and professional skills in an area related to aviation. Prerequisite: AVSC 305, Junior standing.

- AVSC 382 Cooperative or Internship III Credit 1-3**
 Students are provided a cooperative or internship in the public or private sector to give the student an opportunity to gain experience and professional skills in an area related to aviation. Prerequisite: AVSC 305, Junior standing.
- AVSC 398 Aviation Studies Abroad Credit 3**
 This course will examine the historical, economic, and political events that shaped the National Airspace System of foreign nations. The goal of the course will be to understand the differences between U.S. operations domestically as compared to abroad. Students will study current trends in international aviation policy by examining foreign Civil Aviation Authority's regulations and discussing their impact on future operations worldwide. Students will study under a host institution as approved by the department. Fees: Will vary on the host site location. Prerequisite: Departmental Approval.
- AVSC 421 Aviation Psychology Credit 3**
 This course is designed to introduce students to human factors and crew resource management theory in aviation that relate to diverse areas such as engineering, psychology, physiology, aerospace safety and flight training. Special attention will be paid to the flight crew ergonomics, technology integration, human performance, pilot selection and training. Prerequisite: PSYC 200 or equivalent, AVSC 241 and Junior status.
- AVSC 431 Maintenance Management Credit 3**
 The aviation industries are concerned about the design and operation of maintenance control systems. The ratio of maintenance craftsmen to operators is higher than traditional industry standards. This fact leads to the realization that the effective management of production resources would yield more benefits to the organization. The emphasis of this course is placed on computer information systems. Seniors or Juniors will demonstrate the knowledge needed to set up and maintain a maintenance program. Prerequisite: Junior standing.
- AVSC 432 Airline Management II Credit 3**
 This course is a study of the business practices, operations, and management principles used by domestic and international airlines. The following topics are discussed: regional airlines, fleet planning, customer services, routing the efficient flow of air traffic, domestic and foreign airline competition, and fare structuring. Prerequisite: AVSC 261 or permission of instructor.
- AVSC 441 Human Factors In Aviation Credit 3**
 Human factors, an interdisciplinary subject, is an empirical science that deals with human capabilities and behavior as applied to a given system. Technical disciplines contributing to human factors are anthropometry, biomechanics, engineering, mathematics, and psychology. This course is a study of the interface and relationship between humans and machines in the aviation environment. The outcome adjusts the things or ways people use them and the environment for a better match of capabilities, limits, or needs. Human Factors in Aviation is designed to bridge the gap between theory and practical application in aviation. The course material will include: performance, design, human senses, information processing, workload, group interaction, fatigue, errors, memory allocation and introduction to controls and displays. Prerequisite: AVSC 421.
- AVSC 442 Safety Management Credit 3**
 This course is a design course. Students will design their own safety plan for the company of the student's choice. The course covers safety quantification, laws, regulations and policies. Topics include: OSHA, cost analysis, hazardous conditions, failure models, risk analysis, and performance measurements. Prerequisite: AVSC 241 and Junior Status.
- AVSC 451 Certified Flight Instructor Airplane - Ground Credit 3**
 This course provides ground instruction required by the FAA for the student to become a FAA certified flight instructor. This course includes fundamentals of instruction, including responsibilities and requirements for instruction of private and commercial airplane flight students. Training includes instruction necessary to complete the airmen knowledge requirements (FAA written exam) for Fundamentals of Instruction and Certified Flight Instructor-Airplane. Prerequisite: AVSC 163, AVSC 251.
- AVSC 452 Certified Flight Instructor Airplane - Flight Credit 2**
 Flight instruction required by the FAA for the student to become a FAA certified flight instructor is the focus of this course. The course includes: fundamentals of instruction; technical subject areas; preflight preparation; preflight lessons on a maneuver to be performed in flight; preflight procedures; airport and seaplane base operations; takeoffs, landings, and go-arounds; fundamentals of flight; performance maneuvers; ground reference maneuvers; slow flight, stalls and spins; basic instrument maneuvers; emergency operations; and post flight procedures. Successful completion of this course includes passing the FAA practical test for Certified Flight Instructor-Airplane. Lab fee \$250. Prerequisites: AVSC 254, AVSC 311. Co-requisite: AVSC 451.

AVSC 461 Certified Flight Instructor - Instrument (Ground) Credit 2
This course provides ground instruction and practice teaching dealing with flight operations pertinent to training students in the instrument flight environment. Training includes instruction necessary to complete the airmen knowledge requirements (FAA written exam) for the Certified Flight Instructor-Instrument (Airplane) rating, and simulator console instructor. Prerequisites: AVSC 254, AVSC 451.

AVSC 462 Certified Flight Instructor - Instrument (Flight) Credit 1
Flight instruction and practice teaching dealing with flight operations pertinent to training students in the instrument flight environment are provided in this course. Training includes instruction necessary to complete the aeronautical skill and experience requirements for the practical test for a FAA Certified Flight Instructor-Instrument (Airplane) certificate. Lab fee \$250. Prerequisite: AVSC 452. Co-requisite: AVSC 461.

AVSC 472 Multi-Engine Pilot Flight Credit 1
Students receive flight instruction necessary to provide the aeronautical skill and knowledge to meet the requirements for the addition of the multi-engine land class rating with instrument privileges. Lab fee \$250. Prerequisite: AVSC 254.

AVSC 490 Special Topics in Aviation Credit 3
This is the capstone course for all Aviation Science students. The course is a project/design or research course in an area of mutual interest to the student and faculty advisor. Prerequisite: Senior Standing.

AVSC 498 Special Topics in Aviation- Aerospace Credit 1-6
This is a reading or research course. Credits can vary with the workload of the research. This course may be repeated (with different topics) for a maximum of 12 credits. Prerequisite: Senior standing.

AVSC 499 Senior Seminar Credit 3
In this senior seminar course, topics vary from year to year. The purpose of this course is to expose Seniors to developing concepts and technology in aviation or aerospace. Prerequisite: Senior standing.

AEROSPACE

ENAE 342 Fluid Mechanics Credit 3
This course covers fluid properties; fluid statistics; conservation of mass, momentum, and energy in control volumes; steady and unsteady Bernoulli's equation; differential analysis of fluid flow; dimensional analysis and similitude; introduction to laminar and turbulent flow; Introduction to boundary layers; lift and drag. Prerequisite: MATH 321, ENGE 261

ENAE 345 Thermodynamics Credit 3
This course covers work and heat transfer; the study of classical thermodynamics approach to closed systems and control volumes; properties and processes of gases and vapors; zeroth, first, and second laws of thermodynamics for closed systems and control volumes; entropy; thermodynamic power and refrigeration/heat pump cycles. Prerequisite: ENGE 261

ENAE 389 Space Systems Design Credit 3
This course covers the design of a complete space system, systems analysis, trajectory analysis, entry dynamics, propulsion and power systems, structural design, launch vehicle integration, avionics, thermal and environmental control, human factors, support systems, and weight and cost estimates; and latest practices in space systems and design of a space mission. Prerequisite: ENGE 261, ENGE 362

ENAE 412 Space Navigation and Guidance Credit 3
This course covers fundamentals of astrodynamics; two-body orbital initial-value and boundary-value problems; celestial mechanics, Kepler's problem, Lambert's problem, orbit determination, multi-body methods, mission planning, and recursive algorithms for space navigation; applications to space vehicle navigation and guidance for lunar and planetary missions for both powered flight and midcourse maneuvers. Prerequisite: ENGE 261

ENAE 420 Aerodynamics Credit 3
This course covers the introduction to aerodynamics fundamental concepts such as lift, drag, moment, pressure distribution, boundary layers; potential theory of bodies; airfoil theory and applications; finite wing theory and applications; introduction to Navier-Stokes equations; laminar boundary layers; turbulent boundary layers; instability and turbulence/separation; introduction to airfoil design. Prerequisite: ENAE 342.

ENAE 430 Finite Element Analysis Credit 3
 This course covers the introduction to finite element method and application; relations between stresses, strains, displacements, temperature and material properties; discretization and meshing; force vector, displacement vector, stiffness matrix, assembly process, solution techniques; truss elements, beam elements; triangular and quadrilateral elements; iso-parametric formulation; plane stress and plane strain applications; penalty and Lagrangian methods; software applications. Prerequisite: ENGE 270, ENGE 362

ENAE 440 Mechatronics Credit 3
 This course covers physical and mathematical modeling of mechanical, electrical, electromechanical, thermal, fluid, and multidisciplinary physical systems; sensors and electronics for measurements of system; embedded/external feedback control using conventional and intelligent control algorithms; computer aided engineering tools for mechatronic system design and analysis; practical applications using mechatronic devices. Prerequisite: ENGE 370, ENGE 382

ENAE 442 Micro-Electro-Mechanical Systems Credit 3
 Basic integrated circuit manufacturing processes; electronics devices fundamentals; microelectromechanical systems fabrications including surface micromachining, bulk micromachining, and lithography; introduction to micro-actuators and microsensors such as micromotors, grippers, accelerometers and pressure sensors; physics of MEMS, scaling law, heat transfer, mechanics, electrostatics; introduction to micro-fluid systems; mechanical and electrical issues in micromachining; packaging techniques; CAD tools to design microelectromechanical structures. Prerequisite: ENGE 380

ENAE 462 Digital Control Systems Credit 3
 Introduction to techniques for the analysis and design of digital control systems; linearization; difference equations; z-transforms; design of linear controllers; digital implementation of control systems. Prerequisite: ENGE 382.

ENAE 464 Embedded System Design Lab Credit 2
 Fundamentals of embedded system hardware and firmware design; embedded processor selection; hardware/firmware partitioning; architecture and instruction set of a microcontroller; firmware architecture, design, and debugging; circuit design, layout, and debugging; development tools; a set of design experiments utilizing a popular microcontroller for practical applications. Prerequisite: ENGE 383.

ENAE 465 Remote Sensing and Image Processing Credit 3
 Passive remote sensing from aerial platforms; basic principles of photogrammetry; geospatial information technology, georeferencing, mosaicking, and rectification; RGB and CIR imagery, multi-spectral imagery; fundamentals of digital image processing; introduction to active remote sensing; applications of remote sensing in engineering and sciences. Prerequisite: ENGE 370

ENAE 467 Design of Autonomous Aerial Systems Credit 3
 Introduction to unmanned aerial vehicles, manned and unmanned aircraft design; conceptual unmanned aerial vehicles design based on concepts drawn from airplane aerodynamics, aircraft structure, stability and control, propulsion and compressible flows, navigation, guidance, communication, and design of control sensors; design for efficiency, design for performance, design for stability; introduction to ground, wind tunnel and flight testing. Prerequisite: ENAE 420

ENAE 472 Selected Topics in Engineering Credit 3
 This course covers selected topics on special or current topics and issues relating to engineering structured for students in engineering and other areas. Prerequisite: Permission of Instructor

ENAE 475 Engineering Seminar Credit 3
 This course covers a general seminar course that covers current topics in aerospace Engineering. Prerequisite: Permission of Instructor.

ENGINEERING - COMPUTER

ENCE 350 Computer Organization Credit 3
 This course provides an introduction to the structure and function of computers, digital computer organization, design of digital computer at the machine and microprogramming level, assembly language programming concepts, data and instruction formats, architecture of the central processing unit, input-output peripherals, registers, memory unit, addressing modes, subroutines and their linkages. Prerequisite: ENGE 250.

- ENCE 352 Microprocessors & Microcomputers Credit 3**
This course focuses on microprocessor architectures, instruction sets, and applications, bus structures, memory, and I/O interfacing. The course also covers assembly language programming, real-time system design, interrupt-driven system design, LSI peripheral configuration and drivers, and embedded-system design. Prerequisite: ENGE 250.
- ENCE 387 Simulation & Virtual Reality Credit 3**
This course offers an introduction to computer simulation and virtual reality; fundamental of 3-D simulation modeling; analysis of model output; interaction devices for virtual environments; physical based simulation; virtual prototypes; data exchange and data communication; user interfaces and interactive applications; complete virtual reality systems; using simulation and virtual reality software for modeling. Prerequisite: ENGE 370.
- ENCE 452 Artificial Intelligence Credit 3**
Introduction to theoretical and computational techniques related to human and machine intelligences, selection of data representations and algorithms useful in the design and implementation of intelligent systems, knowledge representation languages, problem-solving heuristics and machine learning are the focus of this course. Prerequisite: ENGE 370
- ENCE 454 Computer System Architecture Credit 3**
This course provides an overview of fundamentals of computer design; cost and performance models; evaluation methodologies; implementation techniques and tools; instruction set architectures; parallel and pipeline design; memory system design and basic concepts in storage systems. Prerequisite: ENCE 352.
- ENCE 456 Microprocessors Design Lab Credit 2**
Hardware designed experiments to provide practical experience in the design, construction, components selection, and interfaces of digital computers and data transmission systems are examined in this course. Prerequisite: ENCE 352. Co-requisite: ENCE 454
- ENCE 458 VLSI Design Credit 3**
This course focuses on the introduction to the concepts of large-scale integrated circuit design; device fabrication and modeling; designing CMOS combinational and sequential circuits; designing arithmetic building blocks and memory structures; interconnection and timing issues; testing and verification; simulation and use of current CAD tools. Prerequisite: ENGE 340
- ENCE 460 Digital Signal Processing Credit 3**
This course explores an introduction to digital signal processing; discrete-time description of signals; z-transform; digital filter structures; infinite and finite impulse response filter design techniques. Prerequisite: ENGE 330
- ENCE 462 Digital Control Systems Credit 3**
This course offers an introduction to techniques for the analysis and design of digital control systems; linearization; difference equations; z-transforms; design of linear controllers; and digital implementation of control systems. Prerequisite: ENGE 382.
- ENCE 464 Embedded System Design Lab Credit 2**
Fundamentals of embedded system hardware and firmware design, embedded processor selection, hardware/firmware partitioning, architecture and instruction set of a microcontroller, firmware architecture, design, and debugging, circuit design, layout, and debugging, development tools, and a set of design experiments utilizing a popular microcontroller for practical applications are examined. Prerequisite: ENGE 383.
- ENCE 468 Robotics Credit 3**
This course examines an introduction to industrial manipulator systems; Kinematic and dynamic models of robotic arms; homogeneous transformations; forward and inverse kinematics; motion control through coordinate transformations; and robotic vision and sensors. Prerequisite: MATH 321, ENGE 382.
- ENCE 469 Robotics and Automation Design Laboratory Credit 2**
This course continues the topics covered in ENCE 468 through laboratory experiments to design and develop flexible automation systems utilizing robot manipulators. Prerequisite: ENCE 468.
- ENCE 472 Selected Topics in Engineering Credit 3**
This course covers selected topics on special or current topics and issues relating to engineering structured for students in engineering and other areas. Prerequisite: Permission of Instructor.

- ENGE 260 Statics Credit 3**
 This course offers addition, subtraction, and multiplication of force and moment vectors, equilibrium of particles, planar, and 3-dimensional rigid bodies under the action of forces and moments, applications of equilibrium principles to simple trusses, frames, and machines, center of mass and centroids, moments of inertia; internal forces and moments; and shear force and bending moment diagrams. Prerequisite: MATH 112.
- ENGE 261 Dynamics Credit 3**
 This course covers kinematics and kinetics of particles and rigid bodies; relative motion, force acceleration, work energy, and impulse momentum relationships in Cartesian, normal tangential, polar, spherical, and cylindrical coordinate systems; and an introduction to design analysis involving dynamics principles. Prerequisite: MATH 211, ENGE 260.
- ENGE 270 Computer Aided Design Credit 3**
 This course is an introduction to 3-D solid modeling, engineering drawings, assembly modeling and computer animation based on parametric feature-based CAD systems such as Solid Works along with an overview on main geometric modeling theoretical concepts behind commercial CAD systems. Prerequisite: ENGE 150.
- ENGE 320 Statistics and Probability for Engineers Credit 3**
 This course examines probability, random variables and processes, discrete and continuous distributions and densities, collection and presentation of sample data, frequency distributions and histograms, confidence intervals, hypothesis testing, basic problems of statistical inference, linear regression and correlation, designing engineering experiments. Prerequisite: MATH 321.
- ENGE 340 Analog & Digital Electronics Credit 3**
 Conceptual operation of PN-junction diodes, bipolar junction transistors (BJTs), and mono-oxide semiconductor field effect transistors (MOSFETs); transistor circuits for inverters, NAND, and NOR gates; semiconductor memory; large and small signal characteristics of diodes and transistors; basic transistors configurations; DC bias and small signal analysis of BJTs and MOSFETs; multiple-transistor circuits such as operational and differential-amplifiers; frequency response of simple amplifiers. Prerequisite: ENGE 240. Co-requisite: ENGE 341.
- ENGE 341 Analog & Digital Electronics Lab Credit 1**
 This course provides laboratory experiments concerning topics taught in ENGE 340 analog and digital electronics course. Prerequisite: ENGE 241. Co-requisite: ENGE 340.
- ENGE 362 Mechanics of Materials Credit 3**
 Students will be introduced to stress, strain, materials properties, and Hooke's law; distortion of engineering materials in relation to changes in stress or temperature; torsion of circular rods and tubes; bending and shear stresses in beams; deflection of beams; thin wall pressure vessels; combined loading; stress and strain transformation; buckling of columns; engineering applications. Prerequisite: MATH 211, ENGE 260.
- ENGE 370 Computational Methods in Engineering Credit 3**
 Fundamentals of linear algebra and basic operations of vectors and matrices are discussed; students will also study error analysis, solution of a system of linear equations, iterative solution of nonlinear equations, numerical integration, and numerical solution of differential equations. An introduction to Matlab software programming and applications relating to the computational functions in Matlab is included. Prerequisite: MATH 211. Co-requisite: MATH321.
- ENGE 380 Instrumentations Credit 3**
 This course provides principles of measurement and instrumentation, transduction and calibration, noise measurement and signal conditioning, data acquisition, recording, and presentation, sensor selection to measure temperature, pressure, flow, level, force, and torque, transducers to measure translational displacement, velocity, acceleration, and vibration, rotational displacement, velocity, acceleration measurement and sensor application to measure different physical phenomena. Prerequisite: ENGE 240. Co-requisite: ENGE 340.
- ENGE 382 Control Systems Credit 3**
 Mathematical models of control system are discussed in addition to Laplace transform; signal flow graph; frequency and time domain characteristics of the system response; methods of linear control system analysis and designs, root locus, Bode, and Nyquist plots; stability theory; design specifications in time and frequency domains; compensator design; and PID controller design. Prerequisite: MATH 321. Co-requisite: ENGE 383.
- ENGE 383 Instrumentation & Control Lab Credit 1**
 This course involves experiments on topics covered in ENGE 380 Instrumentations and ENGE 382 Control Systems courses. Prerequisite: ENGE 380. Co-requisite: ENGE 382.

ENGE 476 Senior Design Project I Credit 2
Students are introduced to a design project to demonstrate their ability to engage in the practice of engineering as a profession. Students in consultation with the supervising professor and course coordinator must identify and implement a design project. The topic may be analytical, numerical, experimental, or field-oriented, utilizing knowledge gained from academic and research experiences integrated in the curriculum. A written proposal, literature search, and an oral presentation are required. Use of professional engineering standards and a design approach are required. Prerequisite: Senior Standing and Permission of Instructor.

ENGE 477 Senior Design Project II Credit 2
This course is a continuation of ENGE 476 Senior Design Project I, with the same standards and requirements. A progress report, a final report, and an oral presentation are required. Prerequisite: ENGE 476.

ENGINEERING – MECHANICAL

ENME 342 Fluid Mechanics Credit 3
This course explains fluid properties, fluid statistics, conservation of mass, momentum, and energy in control volumes, steady and unsteady Bernoulli's equation, differential analysis of fluid flow, and dimensional analysis and similitude. This course also provides an introduction to laminar and turbulent flow in addition to an introduction to boundary layers, lift and drag. Prerequisite: MATH 321, ENGE 261.

ENME 345 Thermodynamics Credit 3
This course offers insight into work and heat transfer, the study of classical thermodynamics approach to closed systems and control volumes, properties and processes of gases and vapors, zeroth, first, and second laws of thermodynamics for closed systems and control volumes, entropy, thermodynamic power and refrigeration/heat pump cycles. Prerequisite: ENGE 261.

ENME 346 Heat Transfer Credit 3
This course examines conduction, convection, radiation, heat storage, energy conservation, steady-state/transient conduction, thermal circuit modeling, multidimensional conduction, surface radiation properties, enclosure radiation exchange, surface convection/fluid streams over objects, non-dimensional numbers, laminar, turbulent, thermo buoyant flow, boiling and condensation and heat exchangers. Prerequisite: ENME 342.

ENME 422 Mechanisms and Machine Design Credit 3
This course focuses on Kinematic and dynamic analysis of motion of linkages, cams, and gears/gear trains, synthesis and analysis of motion in machines, visualizing motion in mechanisms and machinery using simulation software environments as well as exploration of machine/mechanism design solution for specified requirements. Prerequisite: ENGE 261, ENGE 370.

ENME 425 Rapid Prototyping and Product Development Credit 3
This is an introduction to rapid prototyping; product development process; materials for rapid prototyping; CAD solid model interaction with rapid prototyping systems; applications of rapid prototyping technologies to product development and design; rapid tooling process, rapid manufacturing process; reverse engineering. Prerequisite: ENGE 270, ENGE 362.

ENME 430 Finite Element Analysis Credit 3
This is an introduction to finite element method and application; relations between stresses, strains, displacements, temperature and material properties; discretization and meshing; force vector, displacement vector, stiffness matrix, assembly process, solution techniques; truss elements, beam elements; triangular and quadrilateral elements; iso-parametric formulation; plane stress and plane strain applications; penalty and Lagrangian methods; and software applications. Prerequisite: ENGE 270, ENGE 362.

ENME 440 Mechatronics Credit 3
In this course, emphasis is placed on physical and mathematical modeling of mechanical, electrical, electromechanical, thermal, fluid, and multidisciplinary physical systems; sensors and electronics for measurements of system; embedded/external feedback control using conventional and intelligent control algorithms; computer aided engineering tools for mechatronic system design and analysis and practical applications using mechatronic devices. Prerequisite: ENGE 370, ENGE 382.

ENME 442 Micro-Electro-Mechanical Systems Credit 3
This course offers basic integrated circuit manufacturing processes; electronics devices fundamentals; microelectromechanical systems fabrications including surface micromachining, bulk micromachining, and lithography; introduction to micro-actuators and microsensors such as micromotors, grippers, accelerometers and pressure sensors; physics of MEMS, scaling law, heat transfer, mechanics, electrostatics; introduction to micro-fluid systems; mechanical and electrical issues in micromachining; packaging techniques; and CAD tools to design microelectromechanical structures. Prerequisite: ENGE 380.

- ENME 462 Digital Control Systems Credit 3**
This is an introduction to techniques for the analysis and design of digital control systems; linearization; difference equations; z-transforms; design of linear controllers; and digital implementation of control systems. Prerequisite: ENGE 382.
- ENME 464 Embedded System Design Lab Credit 2**
Fundamentals of embedded system hardware and firmware design are the focus of this course. Students will also learn embedded processor selection, hardware/firmware partitioning; architecture and instruction set of a microcontroller, firmware architecture, design, and debugging, circuit design, layout, and debugging; development tools and a set of design experiments utilizing a popular microcontroller for practical applications. Prerequisite: ENGE 383.
- ENME 468 Robotics Credit 3**
This course provides an introduction to industrial manipulator systems, Kinematic and dynamic models of robotic arms, homogeneous transformations, forward and inverse kinematics, motion control through coordinate transformations, and robotic vision and sensors. Prerequisite: MATH 321, ENGE 382.
- ENME 469 Robotics and Automation Design Laboratory Credit 2**
This course involves laboratory experiments to design and develop flexible automation systems utilizing robot manipulators based on topics covered in ENME 468 Robotics course. Prerequisite: ENME 468.
- ENME 472 Selected Topics in Engineering Credit 3**
This course offers selected topics on special or current topics and issues relating to engineering structured for students in engineering and other areas. Prerequisite: Permission of Instructor.
- ENME 475 Engineering Seminar Credit 3**
This is a general seminar course that covers current topics in Mechanical Engineering. Prerequisite: Permission of Instructor.

DIRECTORY OF FACULTY

- Burrows-McElwain, J. Bryan** Lecturer
B.S., University of Maryland Eastern Shore; M.S., Embry Riddle Aeronautical University
- Dabipi, Ibibia K** Professor
B.S., Texas A&I University; M.S., Ph.D., Louisiana State University
- Eydgahi, Ali** Professor and Chair
B.S., Detroit Institute of Technology; M.S., Ph.D., Wayne State University
- Hartman, Christopher** Lecturer
B.S., University of Maryland Eastern Shore, M.S., Embry Riddle Aeronautical University
- Ibrahim, Mamoun Y** Lab Manager
B.S., University of Gezira; M.S., Tuskegee University
- Jin, Yuanwei** Assistant Professor
B.S., M.S., East China Normal University; Ph.D., University of California at Davis
- Matin, Payam H.** Assistant Professor
B.S., University of Science and Technology; M.S., University of Tehran; Ph.D., Oakland University
- Nagchaudhuri, Abhijit** Professor
B.S., Jadavpur University; M.S., Tulane University; Ph.D., Duke University
- Stockus, Anthony J.** Coordinator, Engineering
B.A., Chapman College; M.B.A., Central Missouri State University

DEPARTMENT OF HOTEL AND RESTAURANT MANAGEMENT

<http://www.umes.edu/SBT>

Ernest P. Boger, Chairperson

MISSION

The mission of the Department of Hotel and Restaurant Management (HRM) within the School of Business and Technology is to prepare entry level hospitality management professionals with essential skills for long term hospitality career success and industry leadership.

HRM also fosters research and service of direct application and benefit to the State of Maryland and the global hospitality industry. Exhibit #1

The essential skills referenced in the mission statement translate operationally into a six-point graduate success profile objective/outcome that holds that UMES/HRM graduates will possess:

- Hospitality Attitude
- Marketing Mindedness
- Quantitative Competence
- Technological Fluency
- Relevant Work Experience
- International/Multicultural Sensitivity

This profile is delivered across the HRM curriculum and measured via a Student Learning Outcome Assessment Process (SLOAP) with the expectation that students will be able to:

- identify and describe the fundamental principles and practices of restaurant management and hotel management operations;
- apply proper culinary terminology to professional communications;
- manage food production and service, design staffing schedules, plan and analyze menus;
- apply research theory and techniques, including survey design and analysis in verbal and written formats;
- identify, integrate and apply basic accounting, cost accounting, financial analysis and reporting necessary for effective decision-making in the hospitality industry;
- develop, organize and plan hospitality events and demonstrate the ability to evaluate, critique and prepare with summaries including recommendations

OBJECTIVES

The objectives of the Department of Hotel and Restaurant Management are to:

1. Demonstrate adequate knowledge in general and specific matters of communication, mathematics, computers, social and natural sciences, humanities, and health and physical education.
2. Explain the historical development and current market segmentation of the hospitality industry.
3. Plan, purchase and prepare meals in quantity and reflecting a variety of service styles in hospitality experience.
4. Demonstrate basic management skills of planning, organizing and controlling.
5. Demonstrate basic business administration skills of accounting, financial analysis and marketing.
6. Demonstrate basic knowledge and management skills related to front office, housekeeping and engineering departments of hotel operations.

DEGREES OFFERED

Bachelor of Science – Hotel and Restaurant Management

Bachelor of Science – PGA Golf Management

DEPARTMENTAL REQUIREMENTS

The admission of students to the undergraduate programs in the Department of Hotel and Restaurant Management is based upon the general admission requirements of the University.

Students wishing to pursue a major in Hotel and Restaurant Management must meet all University of Maryland Eastern Shore entrance requirements. Freshmen must take a Basic Skills Test during their first semester as a major and demonstrate ability at a determined grade level. In order to remain in good standing in Hotel and Restaurant Management Department Degree programs, the student must maintain a minimum GPA of 2.0 with no grade less than "C" in major coursework and general education courses, where required. Transfers into the major must present an overall GPA of not less than 2.0. All majors must show progress in major and professional course work, attend and actively participate in the Student Professional Association (Eta Rho Mu) and demonstrate interest in the hospitality industry.

All Hotel and Restaurant Management (HRM) majors are required to complete 1000 hours of hospitality work experience as a requirement for graduation.

Specific business attire, culinary uniform requirements and related requirements are available in the HRM Student Handbook.

Students majoring in Hotel and Restaurant Management must complete a total of 120 hours of University courses. This includes 41 credit hours of General Education requirements, 64 hours of major core requirements, 3 credit hours of supportive courses and 12 hours of departmental electives.

COMMON REQUIRED COURSES

FMGT 101	FMGT 211	FMCT 301	FMCT 371
FMCT 110	FMCT 212	FMGT 350	FMGT 372

REQUIRED MAJOR COURSES

HMGT 100 A/B	HMGT 200 A/B	HMGT 300 A/B	HMGT 401
HMGT 101	HMGT 220	HMGT 301	HMGT 402
HMGT 110		HMGT 303	HMGT 440
HMGT 120		HMGT 304	HMGT 445
HMGT 130		HMGT 305	HMGT 470
		HMGT 350	HMGT 475
			HMGT 480
			HMGT 488
			HMGT 490
			HMGT 491
			HMGT 497
			HMGT 498
			HMGT 499

CAREER OPPORTUNITIES

The Bachelors degree in Hotel and Restaurant Management at UMES prepares graduates for a wide variety of entry level management positions in the hospitality industry. These include Hotel Front Office, Housekeeping, and Marketing positions, as well as Banquet, Restaurant and Special event Management. Broader foodservice areas include contract operations, quick service to upscale free standing restaurant management, and private catering as lucrative career paths. The prevalence of major overlapping skill sets in the hospitality industry means that graduates will also be prepared for a selection of complimentary management career paths in travel/tourism, entertainment and related supportive industry services. While preparation for management is at the core of the HRM curriculum, sufficient emphasis is placed on entrepreneurship for those individuals who are motivated to own their own business and create long-term wealth.

CURRICULUM GUIDE FOR HOTEL AND RESTAURANT MANAGEMENT

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 101	3	ENGL 102	3
BUAD 132	3	MATH 102	3
BIOL 101	3	GEN ED CURR AREA III	3
BIOL 103	1	FMGT 101	2
HMGT 101	3	FMGT 110	2
GNST 100	1	HMGT 100B	.5
HMGT 100A	<u>.5</u>	HMGT 110	<u>0</u>
	14.5		13.5

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 203	3	EDHE 111	3
HRM Elective ¹	3	GEN ED CURR. AREA II	3
ECON 201 or		FMGT 212	3
ECON 202	3	GEN ED CURR. AREA I	3
FMGT 211	3	HMGT 220	4
HMGT 200A	.5	HMGT 200B	.5
GEN ED CURR AREA I	<u>3</u>	HMGT 120	<u>0</u>
	15.5		16.5

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HMGT 340	3	TMGT 306	3
ENGL 305 or		HMGT 303	3
ENGL 310	3	FMGT 301	3
FMGT 301	3	HMGT 350	3
HMGT 305	3	FMGT 371	2
HMGT 350	3	FMGT 372	1
HMGT 300A	<u>.5</u>	HMGT 130	<u>0</u>
	15.5	HMGT 130	15.5

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HMGT 402	3	HRM Elective	3
HMGT 440	3	HRM Elective	3
HMGT 404	3	HMGT 491	3
HRM Elective	3	HMGT 401	3
HMGT 490	3	HMGT 498	<u>1</u>
HMGT 497	<u>1</u>		13
	16		

Total Credit Hours: 120

¹Student must select TMGT 130 to satisfy this Elective.

MINOR PROGRAMS

The Department of Hotel and Restaurant Management offers minors for HRM majors only for the following area: Culinary Arts Restaurant Management (CARM) and Travel/Tourism Management (TMGT)

HRM majors can only earn the minor in Culinary Arts Restaurant Management (CARM) by completing the following 18 credit hour sequence of courses: CARM 301, CARM 303, CARM 401, CARM 403, CARM 405 and CARM 407

HRM majors only can earn the minor in Travel/Tourism Management (TMGT) by completing the following 18 credit hour sequence of courses: TMGT 130, TMGT 300, TMGT 309, TMGT 420 and TMGT 499

HRM also offers minors for Non-HRM majors only for the following area: Food and Beverage Management and Hotel Administration. Non-HRM majors can earn the minor in Food and Beverage Management by completing the following 18 credit hour sequence of courses in the following: FMGT 211, FMGT 212, FMGT 301, FMGT 350, FMGT 371 and FMGT 372.

Non-HRM majors can earn the minor in Hotel Administration by completing the following 18 credit hour sequence of courses in the following: HMG 101, HMG 301, HMG 340, HMG 350, HMG 401 and HMG 402.

COURSE DESCRIPTIONS FOR CULINARY ARTS

CARM 301 American Cuisine

Credit 3

In this course students examine the major culinary regions of North America; emphasis is placed on cultural habits, food availability, geographic locations, etc., and how those variables affect and influence each region cooking style and the actual cuisine. Students will prepare foods from the regions and display the appropriate cooking methods and techniques. Course is formatted as one 50 minute lecture and one four and one-half hour laboratory per week. Chef knives and uniforms are required.

CARM 303 International Cuisine

Credit 3

In this course, students are introduced to the techniques, ingredients, and spices unique to a variety of international cuisines. Students research and prepare representative regional menu items from the European and American continents. Timing, organization, mise en place, and plate presentation are stressed. The course format is a 50-minute lecture and one four-hour laboratory per week. Chef knives and uniforms are required.

CARM 401 Garde Manager

Credit 3

This course introduces students to the modern and traditional techniques in the preparation of cold entrees, pates, terrines, galantine chaud-froid, and ice carving. Students plan, organize, and direct buffets. This course also concentrates on the practical techniques of showpieces and centerpieces. The course format is a 50-minute lecture and one four-hour laboratory per week.

CARM 403 Baking Basic Breads

Credit 3

This course introduces students to the basic fundamentals of bread baking. Different types of breads will be discussed and produced: quick, traditional, regional and international breads. The components of bread baking will be applied; also, different mixing, leavening agents and baking techniques will be discussed and executed. Course is formatted as one 50 minute lecture and one four and one-half hour laboratory per week. Chef knives and uniforms are required.

CARM 405 Pastry Shop

Credit 3

In this course, emphasis is placed on pastry work and management, such as the production of specialty breads, including brioche, puff pastry, Danish, and croissants. Cookie and tart dough, torts and specialty cakes are covered. This course also introduces the student to chocolate ganache, piping with gelee, Bavarian, and marzipan. The course format is a 50-minute lecture and one four-hour laboratory per week. Chef knives and uniforms are required.

CARM 407 Classical Kitchen

Credit 3

In this course, students examine the history and terms relating to classical menus, food preparation, and presentation. Students prepare a classical French menu each day following the principles and techniques of Auguste Escoffier. Emphasis is placed on organization, timing, and platter and plate presentation. The course format is a 50-minute lecture and one four-hour laboratory per week. Chef knives and uniforms are required.

FOOD AND BEVERAGE MANAGEMENT

FMGT 101 Applied Food Service Sanitation

Credit 2

This course covers, in detail, the principles and practices of sanitation and hygiene as applied to the food service industry. Successful completion of the course qualifies students for a National Restaurant Association Educational Foundation Sanitation Certificate. The emphasis of the course is on the training of supervisory personnel in sanitation procedures.

FMGT 110 Restaurant and Table Service

Credit 2

In this introductory class to the organization and management of the front of the house, students learn to plan service, write standards, schedule labor, and execute service for up to 50 customers. The course format is a 50-minute lecture and two three-hour laboratory periods per week. A uniform is required.

FMGT 211 Food Production I

Credit 3

This introductory course in food production includes basic foods nutrition, overview of the kitchen brigade, culinary terminologies, products identification, cooking techniques, knives skills, utensils and equipment usage and sanitary care. Also, produce, present and evaluate cooked products. The course format is two 50 – minutes lectures and two – hour laboratory periods per week. Chef knives set and appropriate commercial kitchen uniforms are required.

FMGT 212 Food Production II Credit 3
In this course students are introduced to leadership/management, while continuing to advance their culinary and production knowledge by executing upscale luncheons for 50 paying guests. Also students learn to plan and organize commercial kitchen: staffing, menu planning, recipes, and production schedules and communicate using culinary terminologies. One 50 – minute lecture and one 5 hour laboratory per week is class format. Chef knives set and appropriate commercial kitchen uniforms are required. Prerequisite: FMGT 211 with minimum passing grade “C”.

FMGT 301 Food & Beverage Cost Accounting Credit 3
This course emphasizes cost accounting and budget and pricing techniques for the hospitality industry. Recipe costs, portion control, product yields, inventory methods and valuation, and menu engineering are studied. HRM Department Major, HMGT 340, Curriculum Area II (ECON 201 or 202), and Curriculum Area IV (Mathematics) requirements must be met.

FMGT 350 Commercial Food Production Credit 3
This upper level production course emphasizes equipment, foods, staffing, schedule, planning, and kitchen brigade organization management. The class also, produces and present 4 gourmet dinners for 50 paying guests; emphasizing Haute Cuisine, Bridging, Foods and Wine Pairing. Other major areas of concentration include cost awareness and control, profitability and staff management. Also, Front of the House – Service Management, Middle of the House – Production and Back of the House – Stewarding/Sanitation Management are highlight. This course meets two 50 – minute lectures and one 5 hour laboratory per week. Prerequisite: FMGT 212 with minimum passing grade “C”.

FMGT 371 Hospitality Purchasing Credit 2
This course emphasizes the managerial principles of the purchasing function and covers fundamental concepts, supplier selection, best practices, purchase specifications and purchase orders, product yield, and the receiving, storing, and issuing of hospitality products. An application research project is required. Co-requisite: FMGT 372. Prerequisite: HRM Department Major, Curriculum Area II (ECON 201 or 202), and Curriculum Area IV (Mathematics) requirements must be met.

FMGT 372 Purchasing Laboratory Credit 1
This lab emphasizes the development and use of knowledge related to hospitality supplier selection, purchase specifications and purchase orders, product yield, and best practices. Co-requisite: FMGT 371. Prerequisite: HRM Department Major, Curriculum Area II (ECON 201 or 202), and Curriculum Area IV (Mathematics) requirements must be met.

HOTEL AND RESTAURANT MANAGEMENT

HMGT 100A/B, 200A/B, 300A/B Professional Development Credit 5
This course provides students the opportunity to view aspects of the hospitality industry and related areas that are not available in regularly scheduled courses. It includes, but is not limited to, professional conduct, guest speakers, industry visitations, student presentations, and films. It is required of all majors, each semester (A –fall, B –spring) of their freshman, sophomore and junior years. Grading will be satisfactory/ unsatisfactory depending on the student's end-of-semester status in Eta Rho Mu.

HMGT 101 Introduction to the Hospitality Industry Credit 3
The course provides the student with an understanding of the scope and complexity of the hospitality industry. The student is introduced to the opportunities available and the training necessary to achieve a successful hospitality management career. Laboratory sections are scheduled as needed.

HMGT 110, 120, 130 Hospitality Experience Credit 0
Students are required to obtain a total of 1000 hours of acceptable hospitality experience during their freshman (110), sophomore (120) and junior (130) years. It is recommended that the student works a minimum of nine weeks per summer. The 1000-hour hospitality experience requirement may be obtained prior to enrollment, during studies or after completion of course work, but must be completed before graduation.

HMGT 220 Technology Management in the Hospitality Industry Credit 4
This course provides an introduction to basic computing concepts and functions and the use of computers and application-specific software in the hospitality industry, including Microsoft Office 2007, point-of-sale, enterprise management, sales and catering, and property management systems. Prerequisite: HRM Department Major.

- HMG T 301 Front Office Management Credit 3**
 In this detailed study of the management systems in the hotel front office, students are able to identify and evaluate the information systems used in the hotel to facilitate management decision making. The course includes inter-departmental communications, managerial reporting, computer applications, and a review of future trends. Laboratory sections are scheduled as needed.
- HMG T 303 Hospitality Facilities, Operations, and Maintenance Credit 3**
 This course includes a study of basic engineering, public safety, building codes, equipment selection, and design procedures related to the hospitality industry. In addition, all hotel operating departments are reviewed and discussed.
- HMG T 305 Business and Entrepreneurial Credit 3**
 This class addresses the unique entrepreneurial experience of conceiving, evaluating, creating, managing and potential selling a business. The goal is provide a solid background with practical application of important concepts applicable to entrepreneurial environment. In addition to creative aspects, key business areas of finance, accounting, marketing and management will be addressed from an entrepreneurial perspective. The Dynamic Marketing Triangle philosophy comprehensive course delivery structure.
- HMG T 309 Beer, Wine and Spirits Credit 3**
 This course provides a comprehensive study of alcoholic beverages, with an emphasis on the origin, production, classification, and service of beer, wine, and spirits; bartending basics; alcohol awareness, liability, and the responsible serving of alcoholic beverages. An application research project is required. Prerequisite: HRM Department Major and students must be 21 years old.
- HMG T 340 Hospitality Industry Accounting Credit 3**
 This course focuses on accounting practices, concepts, principles, and legal and ethical issues in the hospitality industry. The accounting cycle, adjusting entries, corporate transactions, and the preparation and analysis of financial statements are emphasized. Prerequisite: HRM Department Major, Curriculum Area II (ECON 201 or 202), and Curriculum Area IV (Mathematics) requirements must be met.
- HMG T 350 Marketing Hospitality and Leisure Services Credit 3**
 Focusing on the application of marketing principles and techniques to the hospitality and travel industries, this course examines how the marketing concepts of product, place, price and promotion, can be effectively utilized in the hospitality industry. Practical applications of promotion publicity, public relations, and advertising are demonstrated in case studies and class assignments.
- HMG T 401 Law and the Hospitality Industry Credit 3**
 A study of laws applicable to the hospitality industry, this course includes the host's responsibility, negligence, liability, contract, torts, regulations, and insurance.
- HMG T 402 Human Resources Management Credit 3**
 Supervisor and employee relations with emphasis on human relations, organization, and manpower planning and development, are the foci of this course. Also, employee compensation and benefits in the hospitality industry, as well as, ethics and policies, are included. Laboratory sections are scheduled as needed.
- HMG T 404 Hospitality Facilities Design Project Credit 3**
 In this course the student completes a hospitality facilities design project. The project draws on previous work and includes facility design, market analysis, and budgetary control. Prerequisite: FMGT 301, HMG T 303 and HMG T 350.
- HMG T 405 Resort & Convention Management Credit 3**
 A study of resort and club planning, development, operation, and management, this course includes the planning and servicing of meetings, conventions, and other group business functions.
- HMG T 440 Financial Analysis for the Hospitality Industry Credit 3**
 This course provides a comprehensive study of financial analysis concepts and techniques necessary for managerial decision making. Ratio analysis, operations budgeting, cost approaches to pricing, capital budgeting and investment, managing working capital, and feasibility studies are emphasized. Prerequisite: HRM Department Major, FMGT 301, HMG T 340, Curriculum Area II (ECON 201 or 202), and Curriculum Area IV (Mathematics) requirements must be met.

HMGT 470, 475 480 Hospitality Management Internship Credit 1-6

A fall (spring, summer) based course designed to permit the student to obtain an applied management internship in a specialized area of the hospitality industry, this course is structured to meet the needs of both the student and the hospitality operation offering the management internship. The enrolled student is assigned an HRM faculty member with whom he/she will work out a specific plan of study. Credit hours vary in accordance with the type and amount of work assigned. Prerequisites: FMGT 301, HMGT 301, HMGT 303, HMGT 340, and written permission of HRM Department Chairman.

HMGT 488 Hospitality Co-op Credit 3

A summer semester field-based course designed to permit the student to obtain applied experience in a specialized area of the hospitality industry, this course is structured to meet the needs of both the student and the hospitality operation offering the co-op. The enrolled student is assigned an HRM faculty member with whom he/she will work out a specific plan of study. Prerequisites: Written permission of HRM Department Chairman and BUAD 132, FMGT 101, FMGT 211, FMGT 212, HMGT 101.

HMGT 490 Hospitality Research I Credit 3

This first semester of a two-semester senior-level, project-based hospitality course requires departmental approval and close liaison with the course instructor. The students are assigned an approved project designed to synthesize the learning of other departmentally offered classes. Students write term papers, manage hospitality activities, perform accounting and financial analysis, and develop new operating procedures. Prerequisite: Senior level HRM major or written permission of HRM instructor.

HMGT 491 Hospitality Research II Credit 3

This course is the second semester of the senior-level hospitality projects-based class (see HMGT 490). Prerequisite: HMGT 490 or written permission of HRM instructor.

HMGT 497 Professional Development Credit 1

This course is an extension of HMGT 100A, 200A, and 300A- Professional Development. In addition, each student is expected to organize, chair, and successfully accomplish the objectives of one Eta Rho Mu committee. Prerequisite: Senior-level HRM major or written permission of HRM Department Chairman.

HMGT 498 Professional Development Credit 1

This course is an extension of HMGT 100B, 200B, and 300B- Professional Development. In addition, each student is expected to organize, chair, and successfully accomplish the objectives of one Eta Rho Mu committee. Prerequisite: Senior-level HRM major or written permission of HRM Department Chairman.

HMGT 499 Independent Study in Hotel and Restaurant Management Credit 1-3

The course is designed to permit the student to obtain directed study in a specialized area of the hospitality industry. The course is structured to meet the needs of the student. The enrolled student is assigned a faculty member with whom he will work out a specific plan of study. The course is similar to tutorials in structure. The student has the primary responsibility of completing the assignments. Credit hours may vary in accordance with the need and amount of work assigned. Prerequisite: Written permission of HRM Department Chairman, 3.0 GPA, and Junior/Senior status.

TRAVEL AND TOURISM MANAGEMENT

TMGT 130 Analysis of Travel and Tourism Credit 3

In this study of the components of the tourism industry and their interrelationships, the roles of the tour companies, travel agencies, government bureaus, tourism associations, and others who assemble, promote, and sell tourism services will be investigated.

TMGT 300 Tourism Transportation Systems Credit 3

An analysis of major land, sea, and air transportation systems supporting travel will be undertaken. Key components include airlines, cruise ships, buses, rail, and transportation packages.

TMGT 306 Eco & Cultural Tourism (Emerging Issue) Credit 3

This course is a study of purposeful travel to natural habitats to create an understanding of the cultural and natural history pertaining to the environment. The course emphasizes the philosophy of not altering the ecosystem, while producing economic benefits to local people and governments that encourage the preservation of the inherent resources of the environments locally and elsewhere. The cultural aspects emphasize African-American history and heritage.

- TMGT 309** **Tourism Economics** **Credit 3**
This course includes the application of economic principles and research methods to tourist and tourism industry behavior.
- TMGT 420** **Marketing of Tourism Destinations** **Credit 3**
This course includes procedures for analyzing the tourism and travel resources of a region and guidelines for formulating destination-oriented marketing goals and strategies.
- TMGT 499** **Independent Study** **Credit 1-3**
This course provides an opportunity for comprehensive review of the tourism planning and policy process used to develop or modify major travel destination areas.

DIRECTORY OF FACULTY

Binns, Karl V...... **Lecturer**
B.S., Morris Brown College; M.B.A. Morgan State University

Boger, Ernest P. **Chair & Associate Professor**
B.A., University of South Florida; M.B.A., University of North Texas; D.Mgt., Revans University

Callahan, Susan..... **Chef, Lecturer, Universities of Shady Grove**
B.S., Mount Saint Mary College

Dillon, William **Assistant Professor & Director**
B.S., Winthrop University; M.S., Southern Wesleyan University **PGA Golf Management Program**

Gormley, Richard **Assistant Professor**
B.S., University of Washington; M.B.A., Loyola University

Prosser, Christopher..... **Lecturer/PGM Internship Coordinator**
B.S. Campbell University, M.B.A., Benedictine University

Quinn, Katherine A **Assistant Professor**
B.S., University of Maryland College Park; M.B.A., University of Maryland College Park, PH.D, University of Maryland Eastern Shore

Streeter, Judith **Director, Universities of Shady Grove**
B.S., Loyola University; M.S. Mount Saint Mary College

Whittingham, Ralston G **Chef/Lecturer**
A.A., Culinary Institute of America; B.S. University of Maryland European Division; B.S. University of Maryland Eastern Shore

PGA GOLF MANAGEMENT

www.umes.edu/SBT/

William C. Dillon, Director

MISSION

The PGA Golf Management Program at the University of Maryland Eastern Shore prepares students for a career in the golf industry as members of the Professional Golfer's Association of America. In partnership with the PGA, UMES provides quality education to our students by assisting them in understanding the business and playing aspects of the game of golf.

OBJECTIVES

A degree in PGA Golf Management with the Professional Golfers' Association of America (PGA) accreditation represents a career field emphasis that enjoys specific synergies with University of Maryland Eastern Shore (UMES) academic and physical assets. Students who satisfactorily complete the major in PGA Golf Management will receive a Bachelor of Science (B.S.) degree and be prepared to:

1. Begin a career with a major golf resort or independent golf course operation.
2. Assume a supervisory role with a major golf course management company.
3. Represent leading golf equipment and golf fashion manufacturers and merchandisers.
4. Provide leadership in golf tournament and related special event planning including banquet or other food & beverage requirements.
5. Commence a professional golf teaching career.
6. Obtain membership within The Professional Golfers' Association of America.

DEGREES OFFERED

Bachelor of Science - PGA Golf Management

DEPARTMENTAL REQUIREMENTS

The admission of students to the undergraduate programs in the Department of Hotel and Restaurant Management is based upon the general admission requirements of the University. Students are admitted into the UMES PGA Golf Management Program on a competitive basis. Prospective students must first apply for entrance into UMES. Once admitted to the University, they then petition for admittance into the PGA Golf Management Program. A verification of a USGA handicap of 12 or less will be required. This must be verified by handicap card or equivalent. All PGA Golf Management majors will take 41 credit hours in General Education. The GNST 100 one-credit requirement will be met with PGMT 122-Orientation to Professional Golf Management. The EDHE 111 three-credit requirement will be satisfied when the student successfully passes the PGA Player Ability Test (PAT). The major core requirement of 74 credit hours for PGM majors includes courses that have a significant impact on the day-to-day professional operations and activities of golf courses, pro shops, club houses, related supportive services and golf product/image marketing. Six hours of supportive courses are required. Nine additional hours of major electives must be completed including HMGT 405-Resort, Club and Convention Management, and TMGT 130-Analysis of Travel & Tourism. 130 earned credit hours are required for the degree in PGA Golf Management.

Transfers are accepted on a case-by-case basis. Transfer students will be required to meet all the PGA Golf Management Program graduation requirements of the University and the PGA of America.

Handicap Verification includes:

1. A copy of a current USGA handicap index card indicating a handicap of 12 or less.
2. The Confirmation of Playing Ability Form filled out by a PGA Professional or High School Golf Coach.
3. Successful completion of the PGA's Playing Ability Test.

DESCRIPTION OF PROGRAM

The PGA Golf Management Program at the University of Maryland Eastern Shore prepares students for a career in the golf industry. The PGA Golf Management program attracts and educates bright, highly-motivated men and women to service all aspects of this developing industry while working toward membership in the Professional Golfer's Association of America. It is a comprehensive degree program that integrates all the curriculum requirements of a Hotel & Restaurant Management major with the knowledge base of the PGA Golf Management Program including sixteen month of structured internship experience and a Playing Ability Test (PAT).

PGA GOLF MANAGEMENT PROGRAM REQUIREMENTS

The goal of the PGA Golf Management Program at the University of Maryland Eastern Shore is to attract and educate bright, highly-motivated men and women to service all aspects of this developing industry and to produce PGA Members. It is a comprehensive degree program that integrates all the curriculum requirements of a Hotel & Restaurant Management major with the knowledge base of the PGA Golf Management Program including sixteen months of structured internship experience and a Playing Ability Test (PAT) which include:

1. Sixteen (16) months of full time cooperative/internship work at three different types of qualifying facilities (one of which must be a green grass facility).
2. The passing of the PGA's Playing Ability Test (met prior to attending the Level 3 Checkpoint).
3. Completion of all three levels of the PGA/PGM educational courses and checkpoints.
4. A PGA Golf Management student has 8 years to obtain PGA membership from the first day of registration into the PGA Golf Management Program.

PGA MEMBERSHIP REQUIREMENTS

1. Twelve (12) membership credits for college degree.
2. Sixteen (16) membership credits for completion of the PGA Golf Management Program.
3. Six (6) membership credits for completion of all membership requirements.
4. Two (2) membership credits for attending 2 national workshops hosted by the PGA Career Services Department.
- 5.

PROBATIONARY STANDARDS

Members of the UMES PGA Golf Management Program will be placed on PGA Golf Management Probation at the beginning of an academic semester due to any one of the following:

1. Cumulative grade point average less than 2.0
2. Failure to hand in appropriate work experience activities on due dates.
3. Failure to attend PDP as required.
4. Not attempting the PAT a minimum of one time per semester.
5. "No-Show" at a PAT
6. Not completing the required 9-holes per week in the PDP.
7. Missing two or more PGMSA meetings.
8. Outstanding Fees
9. Disruptive or disrespectful behavior.
10. Failed Checkpoints

DISMISSAL FROM THE PGA GOLF MANAGEMENT PROGRAM

The following reasons are grounds for dismissal from the PGA Golf Management Program:

1. Less than a 2.0 cumulative GPA for two consecutive semesters.
2. Probation within the PGM Program for two consecutive semesters.
3. Not participating in a PAT a minimum of two times per year until it has been passed.
4. Failure to pass the PGA PAT by Level 3 Checkpoint.
5. Committing a grievous act while on internship which results in termination.
6. Students who fail a checkpoint a total of three times.
7. Any behavior which is considered unethical by the PGA of America or to be a violation of the Code of Ethics as found in the PGA Constitution.

REQUIRED MAJOR COURSES

ENGL 305 FMGT 301 HMGY 305¹

¹Course will include the Business Planning Seminar and provide an introduction to merchandising and inventory control..

CURRICULUM GUIDE FOR PROFESSIONAL GOLF MANAGEMENT

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 101	3	ENGL 102	3
PGMT 122	3	FMGT 101	2
PGMT 210	3	FMGT 110	2
MATH 102	3	PGMT 230	3
PLSC 184	3	GEN ED CURR AREA III ¹	3
PLSC 185	<u>1</u>	GEN ED CURR AREA III ²	<u>1</u>
	16		14
SUMMER			
PGMT 170	1		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 203	3	HMGT 220	4
TMGT 130	3	FMGT 212	3
PGMT 222	3	PGMT 330	3
FMGT 211	3	ENGL 305	3
HMGT 430	3	GEN ED CURR AREA I ³	<u>3</u>
Supportive Course	<u>3</u>		16
	18		
SUMMER			
PGMT 270	1		

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PGMT 353	3	HMGT 350	3
HMGT 301	3	HMGT 303	3
ECON 201 or		HMGT 401	3
ECON 202	3	Supportive Course	3
HMGT 305	3	PGMT 355	<u>3</u>
HMGT 402	3		15
PGMT 322	<u>3</u>		
	18		
SUMMER			
PGMT 370	1		

SENIOR YEAR I

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
HMGT 405	3	FMGT 301	3
PGMT 430	3	PGMT 422	3
TGMT 306	3	GEN ED CURR AREA I ³	3
Major Elective	<u>3</u>	TGMT 306	3
	12	Playing Ability Test	<u>3</u>
			15

¹Student must select one science course.

²Student must select one science laboratory course.

³Student must select a course from either discipline to satisfy as an Elective.

SUMMER
PGMT 470

1

First Semester
PGMT 475

Credit
2

SENIOR YEAR II

Total Credit Hours: 130

COURSE DESCRIPTIONS FOR PROFESSIONAL GOLF MANAGEMENT

PGMT 100 Professional Development Credit 0
It is designed to provide monitoring and structure for the student's completion of the Level 1 Professional Golfers' Association (PGA), written exam and work experience requirement. The PGA provides a series of textbooks, work manuals, CD/DVDs, computer software, seminars and examination procedures. This course provides instructional supervision for this phase of the unique PGA qualification process. (This course is generally offered in Winter Session before taking Level I Checkpoint).

PGMT 122 Orientation to PGA Gold Management Credit 3
This course is the first in a series of four. This course follows the history of golf from Europe to the United States and will include the PGA Constitution, the history and structure of the PGA, and the PGA Code of Ethics. Topics in career enhancement will be covered and students will complete their initial cover letters and resumes that will be used throughout the program. A comprehensive orientation to the PGA Golf Management program and process will also be provided.

PGMT 170 Professional Golf Management Internship I Credit 1
A twelve-week supervised and paid internship at a PGA-approved golf facility is the centerpiece of this "hands-on" experience. This is the first of three internships, normally offered during summer months. Duties and responsibilities are approved by the faculty member and supervised by the PGA professional at the site. Evaluation is conducted by the faculty member and the on-site professional. Written reports and evaluations are required at the completion of each phase of instruction. The actual site location and thereby placement is contingent on the availability of PGA-sanctioned courses in and around areas where students are able to acquire housing. PGM Faculty, the student and the PGA collaborate on the final placement decision. A minimum cumulative GPA of 2.0 is required for each internship. PGMT 170 internships will emphasize the following skill sets: golf car fleet management, customer relations, rules of golf, tournament operations, golf club design and repair, career enhancement, introduction to teaching, and player development. Prerequisite: PGMT 122.

PGMT 200 Professional Development Credit 0
It is designed to provide monitoring and structure for the student's completion of the Level 2 Professional Golfers' Association (PGA), written exam and work experience requirement. The PGA provides a series of textbooks, work manuals, CD/DVDs, computer software, seminars and examination procedures. This course provides instructional supervision for this phase of the unique PGA qualification process. (This course is generally offered in Winter Session before taking Level 2 Checkpoint).

PGMT 210 Tournament Operations, Rules of Golf, and Golf Car Fleet Management Credit 3
The centerpiece of this three-part course is USGA *The Rules of Golf*. In addition to basic understanding of the rules and their history, students learn how rules are made and changed. The make-up, format and layout of the Rulebook are thoroughly explored in order to support the instant location of appropriate rules for all playing and etiquette situations. The second course segment, Golf Car, Fleet Management, covers all aspects of fleet planning and management. Students learn the importance of fleet operations for player comfort and convenience as well as for facility profitability. The third segment, addresses tournament operations which consume a major part of the Professional Golf Manager's schedule in most working environments. Topics for this segment include: roles and responsibilities in tournament operations; tournament development; scoreboard layout and design; budgets; organization of staff and volunteers; tournament promotion and evaluation; and the use of computer software.

PGMT 220 Golf Club Design and Repair Credit 3
Students are presented with the technical content required to custom fit and merchandise equipment. This course incorporates a hands-on-training component which produces a work product output of one or more custom-fitted clubs for the student. Prerequisite: PGM Major

PGMT 222 Professional Golf Management I Credit 3
This course is the second in a series of four. Students are presented with the technical content required to custom fit golf clubs to the customer. In addition, fundamentals of customer relations and business planning will be introduced. Basic golf club repair will be covered in this course including re-gripping for size, re-shafting and measuring swing and overall weight of golf clubs.

PGMT 230 Introduction to Teaching Principles Credit 3
It is important to be able to articulate the reasons for player development programs and their relationship to the golf professional's job. Course material will include an introduction to fundamentals of golf science, teaching terminology, swing fundamentals, and teaching methodology. In addition, an introduction to analysis of the swing will cover basic equipment selection and club fitting that will be a foundation for golf club design and repair. This course is required during the freshman or sophomore year. Prerequisites: PGMT 122, PGMT 210.

PGMT 270 Professional Golf Management Internship II Credit 1
A twelve-week supervised and paid internship at a PGA-approved golf facility is the centerpiece of this “hands-on” experience. This is the second of three internships, normally offered during summer months. Duties and responsibilities are approved by the faculty member and supervised by the PGA professional at the site. Evaluation is conducted by the faculty member and the on-site professional. Written reports and evaluations are required at the completion of each phase of instruction. The actual site location and thereby placement is contingent on the availability of PGA-sanctioned courses in and around areas where students are able to acquire housing. PGM Faculty, the student and the PGA collaborate on the final placement decision. A minimum cumulative GPA of 2.0 is required for each internship. PGMT 270 internships will emphasize the following skill sets: customer relations, business planning and operations, analysis of the swing, and golf club design and repair. Prerequisite: PGMT 170.

PGMT 322 Professional Golf Management II Credit 3
This course, the third in a series of four, provides an opportunity to practice basic customer relations concepts, interaction skills and interpersonal skills. These skills will be extended by providing an introduction of extending these skill sets by supervising the personnel at a golf facility and understanding the business of golf. Prerequisites: PGMT 222.

PGMT 330 Intermediate Teaching Credit 3
In this class, students are given an opportunity to learn principles of golf class management, as well as actual scientific swing analysis and club fitting. Additionally, a requirement to shadow a teaching professional and then to personally deliver instruction to an actual class reinforces the process. As preparation for the PGM philosophy & swing seminar, students are guided in developing an overall philosophy and approach to teaching, including short game and full swing. Recognition of individual success factors, including fitness, is emphasized. Prerequisites: PGMT 220.

PGMT 350 Golf Shop Operations Credit 3
This course is an in-depth study of the business of golf and all aspects of managing the business of golf to include planning, organizing, staffing, directing and controlling. Marketing aspects of merchandising and inventory control are highlighted. Students learn how to develop, retain and lead staff within a high performance work environment. Other topics will include open-to-buy plans, merchandise assortment plans, vendor relations, inventory management and merchandise display and promotion. Prerequisite: PGMT 122 and HMG 305.

PGMT 353 Agronomy and Turf Grass Management Credit 3
This is an introduction to turf grasses and maintenance procedures necessary for meeting modern golf course playability standards. Accordingly, students learn how to identify, select, establish and manage turf for specific recreational and competitive use in golf course settings. Technical knowledge obtained will also have applications for commercial and residential use. Emphasis is placed during the class on communicating with golf course superintendents and the customers about regular practices and protocol. Specific topics include basic plant physiology, Integrated Pest Management strategy, turf grass identification, fertility requirements, cultural practices, as well as environmental concerns. Campus facilities will be used to support a minimum 4-week laboratory experience. Human resource, financial, and governmental issues are also discussed.

PGMT 355 Merchandising and Inventory Credit 3
This course provides the important skills and tasks required to run a successful merchandising operation within a PGA approved golf shop. Emphasis will be placed on particular customer needs and wants within individual golf shop environment. Creative and cost effective inventory management to maximize financial health of the business will be stressed. Understanding of the individual golf shop manager’s role as a valued added consultant will be highlighted as a competitive advantage as discounters and management companies continue to proliferate. Prerequisites: HMG 305.

PGMT 370 Professional Golf Management Internship III Credit 1
This twelve-week golf-facility-based exercise is number three in a coordinated series of three supervised internships. It is designed to provide a broad base of exposure to all aspects of golf management. Specific duties and assignments are approved on site by the responsible faculty member and the PGA Professional. The student will complete assigned duties and responsibilities as approved by the faculty member and supervised by the PGA professional at the site. Written reports and evaluations are required at the completion of each phase of instruction. A minimum cumulative GPA of 2.0 is required for each internship. Site locations are determined by the availability of PGA-approved sites and student preference, with faculty member approval. PGMT 370 internships will emphasize the skill sets of philosophy and swing concepts, merchandising and inventory, supervising and delegating, and food and beverage. Prerequisite: PGMT 270.

PGMT 422 Professional Golf Management III

Credit 3

As a true manager, PGM graduates will be required to motivate employees and associates for sustained peak performance. Accordingly, this course focuses on the proven behavioral science based approaches of delegation and supervision to structure a work environment that encourages maximum team productivity. Emphasis is placed on resolving difficult situations and interpersonal problem solving. This course is the fourth in a series of four. Prerequisite: PGMT 322

PGMT 430 Advanced Teaching Methods

Credit 3

This class begins with ball flight laws, preferences and principles. Students are given the opportunity to learn scientific laws and principles particularly relating to cause and effect with application to the model golf swing which are explored and mastered. Professional terminology and phraseology for effectively presenting golf instruction is introduced. Private and group lesson techniques plus the importance of directed practice, drills and use of teaching aids especially technology bases are thoroughly covered. Lab requirement: Students must teach a five-series lesson program to an assigned student. Prerequisites: PGMT 230 and PGMT 330.

PGMT470 Professional Golf Management Co-Op I

Credit 1

PGMT 470 is an intense extended and supervised 7-month paid work experience at a PGA certified site. The Co-Op is only available after all academic requirements are met. It is the final work experience incorporating academic learning with the everyday practical application of the golf business. The Co-op will include a culmination of all experiences to date. Emphasis will be on preparing student's professional portfolios and preparing for the Level III Challenge/Response preparation. Graduation requirements (except Level 3) must be met prior to registering for PGMT 470.

PGMT 475 Professional Golf Management Co-op II

Credit 2

PGMT 475 is an intense extended and supervised 4-month paid work experience at the PGA certified site. The Co-op is only available after all academic requirements are met. It is the final work experience incorporating academic learning with the everyday practical application of the golf business. The Co-op will include a culmination of all experiences to date. Emphasis will be on preparing student's professional portfolios and preparing for the Level III Challenge/Response preparation. Graduation requirements must be met prior to registering for PGMT 475, except completion of Level III.

DIRECTORY OF FACULTY

Dillon, William **Assistant Professor & Director**
B.S., Winthrop University, M.S., Southern Wesleyan University

Prosser, Christopher **Lecturer/Internship Coordinator**
B.S., Campbell University, M.B.A., Benedictine University

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

<http://www.umes.edu/SBT>

Dr. Gurdeep S. Hura, Chairperson

MISSION

The Department of Mathematics and Computer Science serves the university community with service courses in Mathematics and in Computer Sciences for all university undergraduates.

Computer Resources: The Department has a Sun Lab consisting of 21 Sun Blade 150 workstations and Sun V1280 server and two Computer Laboratories consisting of high-end Pentium computers. Users have access to a wide variety of Windows and UNIX Microcomputers, plus special purpose facilities for graphics. These computer facilities and several other campus wide computer facilities are available for all students.

Students in both the undergraduate and graduate Computer Science courses benefit from the wide variety of computing resources made available at the University of Maryland Eastern Shore as a member of the University System of Maryland. Both Unix-based and Windows-based systems provide a rich computing environment both for majors and for students in service courses.

Library facilities: These facilities are extensive and are supplemented each year. Opportunities exist for student participation in faculty research projects. While computer laboratory facilities are open and available all day and evening, most graduate courses are scheduled in the early evening so that those working during the day can participate.

The large number of international students both in the graduate and undergraduate major programs of the Department help present all students in our programs with experience in working with students that represent a wide diversity of educational and cultural backgrounds. The instructional work of the twenty-two full time faculty members in the Department is supplemented each year by adjunct faculty who apply their experiences to the teaching of introductory Mathematics courses.

OBJECTIVES

The objectives for all programs in Mathematics and Computer Science are as follows:

1. Students will have necessary knowledge and skills to pursue a career in industry and/ or continue their education in a graduate program.
2. Students will have necessary knowledge and skills (both theoretical and practical) that enable them to analyze and solve real life problems and to adapt to a rapidly evolving technology environment.
3. Students will have necessary knowledge and skills in basic qualitative, algorithmic, and mathematical modeling to support clear and critical thinking.
4. Students will have general knowledge and experience in design, implementation and application of software systems applied to real life problems.
5. Students will have general knowledge and experience using knowledge of statistics and actuarial science in modeling applications of software systems to real life problems.
6. Faculty will remain current in their fields of instruction and research.
7. Faculty will spend adequate time in pursuing their research and professional development.
8. Faculty will develop skills for counseling students, colleagues and community members in the planning of their academic career and participate actively in recruitment and retention.
9. The Department will maintain up-to-date curricula that reflect current trends and best practices.
10. Students will have opportunities to participate in professional student organizations and pre-professional employment.
11. All qualified students in our service community recognize our Mathematics and Computer Science programs as competitive and attractive.

12. The Department maintains and retains contacts, offers support and establishes strong networked connections with its alumni.

DEGREE OFFERED

Bachelor of Science - Mathematics (Non-Teaching)
Bachelor of Science - Mathematics Education
Bachelor of Science - Computer Science toward Business
Bachelor of Science - Computer Science toward Science
Master of Science – Applied Computer Science¹

GENERAL PROGRAM REQUIREMENTS

Prospective freshmen students must have earned a high school diploma from an accredited school or the GED and must have successfully completed the following: four years of English; three years of Social Science/ History; two years of laboratory based science; three years of mathematics, including Algebra I, II and Geometry; and, two years of a foreign language.

DEPARTMENTAL REQUIREMENTS

Mathematics Non-Teaching – The content of this program covers a broad spectrum of pure and applied mathematics. Courses are offered in a variety of topics including Calculus, Real and Complex Analysis, Number Theory, Topology, Linear Algebra, Modern Algebra, Statistics, and Probability. It is designed for persons who wish to pursue careers in statistics, actuarial science, mathematical modeling, and graduate study in mathematics or statistics. It is advisable that students take 300 and 400 upper level computer science, natural sciences, engineering and technology courses relevant to the field of interest. The program requires 120 credit hours with a grade of “C” or better in required major and other mathematics courses.

Mathematics Education - The content of this program is similar to that of Mathematics Non-teaching. It is supplemented by professional education coursework. This program is designed for persons who wish to pursue careers in secondary mathematics education. The program requires 129 credit hours with a grade of “C” or better in the required major courses and required professional education courses. Students should consult the Department of Education about the minimum GPA requirement for education

Computer Science - The content of this degree program is designed to train students in the theory and application of computer science and the application in a variety of disciplines. Courses are offered in a variety of topics including programming languages, data structures, computer organization and architecture, software engineering, operating systems, and other computer science topics. The Computer Science program is ideal for persons who wish to pursue their careers in government agencies or private corporations or graduate study in computer science-related multi-disciplines. It is advisable that students take 300 and 400 upper level computer science, natural sciences, engineering and technology courses relevant to the field of interest. Completion of the B.S. degree in Computer Science requires 120 credits, with a grade of “C” or better in required major and advanced computer science courses and courses in mathematics.

Computer Science with Business Focus - The content of this program is designed to train students in the theory and application of computer science and its application in business disciplines. Courses include Software Engineering, Operations Research, Computer Organization, Data Structures and Algorithms, Theory of Computation, Programming Languages, Databases and Operating Systems. Courses in accounting and other business areas augment the Computer Science curriculum. This program is designed for persons who wish to pursue careers in information systems, operations research, and database management. It is advisable that students take 300 and 400 upper level computer science, natural sciences, engineering and technology courses relevant to the field of interest. The program requires 120 credit hours, with a grade of “C” or better in the common required courses, the required major and advanced courses in the electives and in the mathematics courses.

CAREER OPPORTUNITIES

Career opportunities for each degree program is identified within the specific degree course information.

¹Please consult the UMES Graduate Catalog for additional information.

MATHEMATICS NON-TEACHING

DEPARTMENTAL REQUIREMENTS

This Program covers a broad spectrum of pure and applied mathematics. Courses are offered in a variety of topics including Calculus, Real and Complex Analysis, Number Theory, Topology, Linear Algebra, Modern Algebra, Statistics, and Probability. It is designed for persons who wish to pursue careers in statistics, actuarial science, mathematical modeling, and graduate study in mathematics or statistics. It is advisable that students take 300 and 400 upper level computer science, natural sciences, engineering and technology courses relevant to the field of interest. The program requires 120 credit hours with a grade of "C" or better in required major and other mathematics courses.

REQUIRED MAJOR COURSES

MATH 211	MATH 309	MATH 411	CSDP 221
MATH 212	MATH 310	MATH 412	CSDP 222
MATH 232	MATH 321	MATH 442	CSDP 341
	MATH 322	MATH 443	
	MATH 342	MATH 490	

Mathematics¹

MATH 301	MATH 413 ²	MATH 498
MATH 302	MATH 440	MATH 499
	MATH 444	

Applied Mathematics¹

MATH 302	MATH 410	MATH 498
MATH 350 ²	MATH 442	MATH 499
	MATH 455	

CAREER OPPORTUNITIES

A B.S. degree in Mathematics Non-Teaching will offer opportunities in academia, research organizations, public and private industry and government.

¹Other 300 and 400 level courses in Mathematics and Computer Science may be substituted for these electives.

CURRICULUM GUIDE FOR MATHEMATICS NON-TEACHING

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 112	4	MATH 211	4
ENGL 101	3	ENGL 102	3
EXSC 111 ¹	3	GEN ED CURR AREA III ²	3
GNST 100	1	GEN ED CURR AREA III ³	1
GEN ED CURR AREA III ²	3	CSDP 221	<u>4</u>
GEN ED CURR AREA III ³	<u>1</u>		15
	15		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 212	4	MATH 321	4
ENGL 203	3	ENGL 305	3
CSDP 222	4	FREN 102 or	
FREN 101 or		SPAN 102	3
SPAN 101	3	GEN ED CURR AREA II ⁴	3
MATH 322	<u>3</u>	MATH 232	<u>3</u>
	17		16

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 342	3	MATH Elective	3
PHYS 181H	3	PHYS 182H	3
PHYS 183H	1	PHYS 184H	1
MATH 309	3	MATH 411	3
GEN ED CURR AREA II ⁵	<u>3</u>	MATH 310	3
	13	Free Elective	<u>3</u>
			16

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 443	3	MATH 442	3
MATH 412	3	MATH 490	1
CSDP 341	3	MATH Elective	3
MATH Elective	3	Free Elective	3
Free Elective	<u>3</u>	Free Elective	<u>3</u>
	15		13

Total Credits Hours: 120

¹Course cannot be repeated for credit.

²Student must select one science course from GEN ED CURR AREA III.

³Student must select one science lab course from GEN ED CURR AREA III.

⁴Student must select from GEN ED CURR AREA II:A.

⁵Student must select from GEN ED CURR AREA II:B.

MATHEMATICS EDUCATION

The content of this program is similar to that of Mathematics Non-teaching. It is supplemented by professional education coursework. This program is designed for persons who wish to pursue careers in secondary mathematics education.

DEPARTMENTAL REQUIREMENTS

The program requires 129 credit hours with a grade of “C” or better in the required major courses and required professional education courses. Students should consult the Department of Education about the minimum GPA requirement for education majors.

CAREER OPPORTUNITIES

A B.S. degree in Mathematics Education provides entry level employment in Middle School/High School teaching, and curriculum development and supervision roles in public school systems.

REQUIRED MAJOR COURSES

MATH 211	MATH 301	MATH 411	CSDP 221
MATH 212	MATH 302		CSDP 222
MATH 232	MATH 304		
	MATH 309		
	MATH 310		
	MATH 321		
	MATH 322		
	MATH 342		

REQUIRED PROFESSIONAL EDUCATION COURSES

EDCI 200	EDCI 400	PSYC 307
EDCI 201 ¹	EDCI 406	EDSP 428
EDCI 311	EDCI 409	
	EDCI 410	
	EDCI 425C	
	EDCI 480	
	EDCI 490	

¹Course does not count toward graduation.

CURRICULUM GUIDE FOR MATHEMATICS EDUCATION

FRESHMAN

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 112	4	MATH 211	4
ENGL 101	3	ENGL 102	3
FREN 101 or		FREN 102 or	
SPAN 101	3	SPAN 102	3
GEN ED CURR AREA II ¹	3	CSDP 221	4
EDCI 100	1	GEN ED CURR AREA II ¹	<u>3</u>
EXSC 111 ²	<u>3</u>		17
	17		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 212	4	MATH 232	3
ENGL 203	3	ENGL 305 or	
PHYS181H	3	ENGL 310	3
PHYS183H	1	CSDP 222	4
EDCI 200	3	PHYS182H	3
EDCI 201 ³	1	PHYS184H	1
MATH 322	<u>3</u>	GEN ED CURR AREA II ¹	<u>3</u>
	17		17

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 342	3	EDCI 406	3
MATH 321	4	EDCI 409	3
EDCI 311	3	MATH 302	3
MATH 309	3	MATH 411	3
PYSC 307	<u>3</u>	MATH 310	<u>3</u>
	16		15

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
MATH 301	3	EDCI 400	3
MATH 304	3	EDCI 480	6
EDCI 410	3	EDCI 490	<u>6</u>
EDCI 425C	3		15
EDSP 428	<u>3</u>		
	15		

Total Credits Hours: 129

¹Student must select course from GEN ED CURR AREA II:A or B.

²EXSC 111 cannot be repeated for credit.

³Course does not count toward graduation.

COMPUTER SCIENCE

The content of this degree program is designed to train students in the theory and application of computer science and the application in a variety of disciplines. Courses are offered in a variety of topics including programming languages, data structures, computer organization and architecture, software engineering, operating systems, and other computer science topics. The Computer Science program is ideal for persons who wish to pursue their careers in government agencies or private corporations or graduate study in computer science-related multi-disciplines. It is advisable that students take 300 and 400 upper level computer science, natural sciences, engineering and technology courses relevant to the field of interest.

DEPARTMENTAL REQUIREMENTS

Completion of the B.S. degree in Computer Science requires 120 credits, with a grade of "C" or better in required major and advanced computer science courses and courses in mathematics.

COMMON REQUIRED COURSES

BIOL 111 ¹	or	CHEM 111 ¹	or	PHYS 181H or above
BIOL 113 ¹	or	CHEM 113 ¹		
BIOL 112 ¹	or	CHEM 112 ¹		
BIOL 114 ¹	or	CHEM 114 ¹		

REQUIRED BROADING COURSES²

See Footnote 2

REQUIRED MAJOR COURSES

COMPUTER SCIENCE

CSDP 221	CSDP 301	CSDP 390	CSDP 401
CSDP 222	CSDP 305	CSDP 398	CSDP 403
CSDP 250	CSDP 332	CSDP 399	CSDP 404
	CSDP 351		CSDP 450
			CSDP 490

ADVANCED COMPUTER SCIENCE³

CSDP 309	CSDP 402	CSDP 442	CSDP 498
CSDP 331	CSDP 405		CSDP 499
CSDP 341	CSDP 406		
	CSDP 407		

MATHEMATICS

MATH 211	MATH 309	MATH 323	MATH 360
MATH 232			

CAREER OPPORTUNITIES

Career opportunities in computer science include: Software Engineering, Systems Analysts, Computer Programming, Project Management, Government, Public, and Private Organizations, Academia, and Research Organizations.

¹To satisfy the Science core requirement, students must select one additional science course in addition to General Education Requirements offered in the Biology or Chemistry 111 level or above or the Physics 181H level or above.

²To satisfy the broadening course requirement, students must select two additional courses in addition to General Education Requirements offered in the Arts, Humanities, Social or Behavior Science.

³Student must select one course as an elective.

CURRICULUM GUIDE FOR COMPUTER SCIENCE

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 111	3	BIOL 112	3
BIOL 113 or	1	BIOL 114 or	1
CHEM 111	3	CHEM 112	3
CHEM 113	1	CHEM 114	1
ENGL 101	3	ENGL 102	3
CSDP 100	1	CSDP 221	4
EXSC 111 ¹	3	MATH 112	<u>4</u>
GEN ED CURR AREA III	3		15
FREE Elective	<u>1</u>		
	15		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 203	3	CSDP 250	3
MATH 211	4	BIOL or CHEM or PHYS ²	4
CSDP222	4	MATH 323	3
FREN 101 or		MATH 309	3
SPAN 101	<u>3</u>	FREN 102 or	
	14	SPAN 102	<u>3</u>
			16

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CSDP 301	3	CSDP 305	3
CSDP 398	3	CSDP 399	3
CSDP 403	3	CSDP 390	3
MATH 232	3	MATH 360	3
ENGL 305	<u>3</u>	CSDP 332	<u>3</u>
	15		15

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CSDP 404	3	CSDP 401	3
CSDP 450	3	CSDP Elective	3
CSDP 351	3	CSDP 490	3
GEN ED CURR AREA II	3	GEN ED CURR AREA ³	3
GEN ED CURR AREA ³	<u>3</u>	FREE Elective	<u>3</u>
	15		15

Total Credits Hour: 120

¹EXSC 111 cannot be repeated for credit.

²Student must take one course in addition to GEN ED CURR AREA III.

³Student must take two courses in addition to GEN ED CURR AREA II.

COMPUTER SCIENCE WITH BUSINESS FOCUS

The content of this program is designed to train students in the theory and application of computer science and its application in business disciplines. Courses include Software Engineering, Operations Research, Computer Organization, Data Structures and Algorithms, Theory of Computation, Programming Languages, Databases and Operating Systems. Courses in accounting and other business areas augment the Computer Science curriculum. This program is designed for persons who wish to pursue careers in information systems, operations research, and database management. It is advisable that students take 300 and 400 upper level computer science, natural sciences, engineering and technology courses relevant to the field of interest.

DEPARTMENTAL REQUIREMENTS

The program requires 120 credit hours, with a grade of "C" or better in the common required courses, the required major and advanced courses in the electives and in the mathematics courses.

COMMON REQUIRED COURSES

ECONOMICS AND BUSINESS¹

ACCT 201	ACCT 202	ECON 201	ECON 202
----------	----------	----------	----------

BUSINESS ELECTIVE²

BUAD 302	FINA 340	MKTG 408
----------	----------	----------

ADVANCED BUSINESS ELECTIVE³

BUAD 303	FINA 341	MKTG 310	MKTG 401
BUAD 412	FINA 440	MKTG 312	MKTG 404
BUAD 420	FINA 441	MKTG 314	
		MKTG 315	

REQUIRED BROADENING COURSES⁴

REQUIRED MAJOR COURSES

INFORMATION SYSTEMS

CSDP 221	CSDP 240	CSDP 301	CSDP 331
CSDP 222	CSDP 241	CSDP 305	CSDP 332
	CSDP 250		

ADVANCED

CSDP 309	CSDP 402	CSDP 405	CSDP 490
CSDP 390	CSDP 404		

ELECTIVES⁵

CSDP 398	CSDP 406	CSDP 498	MATH 350
	CSDP 407	CSDP 499	

MATHEMATICS

MATH 210	MATH 232	MATH 323
----------	----------	----------

¹Student must select one course.

²Student must select one course.

³Student must select one course.

⁴To satisfy the broadening course requirement, students must select two additional courses in addition to General Education Requirements offered in the Arts, Humanities, Social or Behavior Science.

⁵Student must select one course.

CURRICULUM GUIDE FOR COMPUTER SCIENCE WITH BUSINESS FOCUS

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BIOL 111	3	BIOL 112	3
BIOL 113 or	1	BIOL 114 or	1
CHEM 111	3	CHEM 112	3
CHEM 113	1	CHEM 114	1
ENGL 101	3	ENGL 102	3
CSDP 100	1	CSDP 221	4
EXSC 111 ¹	3	MATH 112	<u>4</u>
SOCI 101	<u>3</u>		15
	14		

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ACCT 201	3	PYSC 200	3
ECON 201	3	ACCT 202	3
ENGL 203	3	ECON 202	3
CSDP 222	4	FREN 102 or	
FREN 101 or		SPAN 102	3
SPAN 101	<u>3</u>	CSDP 250	<u>3</u>
	16		15

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>First Semester</i>	<i>Credit</i>
MATH 210	3	CSDP 241	3
CSDP 240	3	CSDP 305	3
MATH 232	3	CSDP 332	3
Business Elective ²	3	CSDP 390	3
ENGL 305	<u>3</u>	MATH 323	<u>3</u>
	15		15

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CSDP 301	3	Advanced Business Elective ³	3
CSDP 404	3	CSDP 490	3
CSDP 405	3	Advanced Information System ⁴	3
CSDP 402	3	CSDP 331	3
GEN ED CURR AREA ⁵	<u>3</u>	GEN ED CURR AREA ⁵	<u>3</u>
	14		15

Total Credits Hours 120

¹EXSC 111 cannot be repeated for credit.

²Student must select Business Elective.

³Student must select an Advanced Business Elective

⁴Student must select an Advanced Information Systems Elective

⁵Student must take two courses in addition to GEN ED CURR AREA II.

MINOR PROGRAMS

The Department offers a minor in both Computer Science and in Mathematics as well as a graduate program leading toward an M.S Degree in Applied Computer Science¹ (unique in the state of Maryland).

A grade of “C” or better is required in the courses taken to satisfy the minor. In accordance with the particular guidelines given below, specific minor programs for individual students will be set up and approved by the Chair of the Department, or a designee, in consultation with the student involved. Students in a program (like computer science directed toward science or business) that requires Calculus I or the first computer course cannot do any of our minors since all these specifically require MATH 112 or CSDP 221.

For double majors, students are allowed to substitute other upper-level courses, approved by the chair, for such duplicate required courses.

A student may Minor in Computer Science by taking the following courses of twenty-three (23) credits: CSDP 222; CSDP 250; CSDP 332; and two 3-credit 400 level computer science courses.

A student may minor in Computer Science with business focus by taking the following courses of nineteen (19) credits: CSDP 221; CSDP 222; CSDP 250; CSDP 332; CSDP 331; CSDP 404; and CSDP 407.

A student can minor in Mathematics by taking 21 credits in Mathematics including MATH 112, MATH 211 and at least three 3-credit 300 and 400 level courses in mathematics. A 3-credit 300 or 400 level computer science course may be used in place of one of the 300 or 400 level mathematics courses.

COURSE DESCRIPTIONS FOR COMPUTER SCIENCE

CSDP 100 Computer Science Orientation

Credit 1

This course is a survey of Computer Science with special emphasis on topics of importance to computer scientists. It also provides an exploration of skills required and resources available to students majoring Computer Science. Topics include nature of problems, hardware, human factors, security, social, ethical and legal issues, familiarization of various aspects of computing and networks. This course must be taken by all Computer Science major and minor students. Prerequisite by topic: Students are expected to have declared computer science as their major or intended to do so. No prerequisite is needed.

CSDP 120 Introduction to Computing

Credit 3

This course is for students new to Computer Science. The goal is to introduce students to different general computing aspects of the computer systems. Course topics include overview of the history of computing machines, computing codes and ethics, computing algorithms, programming languages, and mathematical software packages. **Prerequisite:** High school mathematics. **CSDP 120 does not satisfy the General Education Area III Requirement.**

CSDP 121¹ Microcomputer Applications

Credit 3

This course is designed for non-technical majors in different applications of modern computing systems. The course surveys computing hardware and software systems and introduces students to the present state-of-the-art word processing, spreadsheet, and database software. Applications to other disciplines, such as medicine, administration, accounting, social sciences and humanities, will be considered. Prerequisite: High School Mathematics. CSDP 121 does not satisfy the General Education Area III Requirement.

CSDP 150¹ Office Automation Workshop

Credit 1

This course is an introduction to current progress in word processing and/or office automation. The course involves considerable hands-on work with current equipment. This course may be repeated (with different topics) for a maximum of six credits. Prerequisite: Variable, depending on topic selected. CSDP 150 does NOT satisfy the General Education Area III Requirement.

CSDP 151¹ Special Software Workshop

Credit 1

This course is an intensive introduction to various commercially available software packages, such as spreadsheet and database packages. The course involves considerable hands-on work with current software tools. The course may be repeated for a maximum of six credits. Prerequisite: Variable, depending on the topic selected. CSDP 151 does NOT satisfy the General Education Area III Requirement.

CSDP 152¹ Programming Techniques Workshop

Credit 1

This course is an intensive introduction to special programming techniques, e.g., handling disk files on computers and writing computer-assisted instruction materials. This course involves considerable hands-on experience in the area chosen. The course may be repeated (with different topics) for a maximum of six credits. Prerequisite: Variable, depending on the topic selected. CSDP 152 does NOT satisfy the General Education Area III Requirement.

CSDP 153¹ Programming Language Workshop

Credit 1

This course is an intensive introduction to special implementations of programming languages, e.g., hypertext and operating systems languages. The course involves considerable hands-on experience in the area chosen. This course may be repeated (with different topics) for a maximum of six credits. Prerequisite: Variable, depending on the topic selected. CSDP 153 does NOT satisfy the General Education Area III Requirement.

CSDP 154¹ Computer Hardware Workshop

Credit 1

This course is an intensive introduction to new hardware and hardware methodology in special areas, e.g., microcomputer interaction with analogue devices, small-system data communications, etc. The course involves considerable hands-on experience in the area chosen. The course may be repeated for a maximum of six credits. Prerequisite: Variable, depending on the topic selected. CSDP 154 does NOT satisfy the General Education Area III Requirement.

¹Course does not satisfy the GEN ED CURR AREA III Requirement.

- CSDP 404 Database Management Systems Credit 3**
 This course covers database management and the different data models currently used to structure the logical view of databases. It provides an introduction to concepts and design principles used in database management systems, including entity-relationship data models, physical and logical database design, relational databases, query language, transaction management, reliability, and security, and considers the social and ethical implications of computing. This course has a significant writing component. Prerequisite: CSDP 250.
- CSDP 405 Software Engineering II Credit 3**
 This course is designed to expand software engineering skills using structured programming methodologies with object-oriented design. State of the art technique in software design and development of laboratory experience in applying the techniques are covered. Topics may include structured design, structured programming, top-down design and development, segmentation and modularization techniques, iterative enhancement, design and code inspection techniques, correctness, and chief-programmer teams. Software engineering metrics, including measures of size, reuse, functionality, complexity, and quality, will be taught. Critical human factor issues involving software design, reliability, team productivity, and project management are addressed for a clearer understanding of software engineering. Prerequisite: CSDP 305.
- CSDP 406 Introduction to Artificial Intelligence Credit 3**
 This course is designed to provide an introduction to the different topics of Artificial Intelligence as well as the basic principles that Artificial Intelligence application areas are based on. Topics covered include automated reasoning, knowledge representation, automated interpretation systems and automated behavior. Prerequisite: CSDP 250
- CSDP 407 Advanced Database Credit 3**
 This course is intended for computer science students and professionals who have already acquired a basic background on databases. The objective of the course is to introduce the students to the most advanced concepts and recent issues in several areas of database technology, including the following: advanced database design and implementation, transaction management and concurrency control, distributed database management systems, object-oriented databases, and client/server systems. The course includes lab work and individual database application projects. Prerequisites: CSDP404
- CSDP 442 Numerical Analysis II Credit 3**
 This course extracts numerical solutions of systems of equations by direct and iterative methods, ordinary differential equations, optimization, evaluation of determinants, matrix inversion, and calculation of eigenvalues and eigenvectors, and partial differential equations. This course makes use of the powerful MATLAB software utilizing a more practical approach to link every method to real engineering and/or science problems without deriving theoretical concepts. **Prerequisite:** CSDP 341 and MATH 212.
- CSDP 450 Algorithms and Data Structures Credit 3**
 This course will focus on the design and analysis of algorithms. Topics include: review of data structures, analysis of algorithms, brute force algorithms, searching techniques, divide-and-conquer, sorting and selection, dynamic programming, graph algorithms, greedy algorithms, P and NP, and coping with NP-completeness. Prerequisites: CSDP250 and MATH 323.
- CSDP 490 Senior Design Project Credit 3**
 This course deals with formal software development techniques applied to the definition, design, coding, testing and documentation of a computer programming project. Each student completes an individual project. **Prerequisite:** Must be at senior status.
- CSDP 498 Selected Topics in Computer Science A Credit 3**
 This is a reading/research course recommended for all computer science majors. The grade for this course will be based primarily on a research project in an area of computer science chosen together by the student and the instructor. This course may be repeated (with different topics) for a maximum of 12 credits. Advanced undergraduate students may also enroll in graduate-level computer science courses below CSDP 610 with permission of the Department.
- CSDP 499 Selected Topics in Computer Science B Credit 3**
 This is a reading/research course recommended for all computer science majors. The grade for this course will be based primarily on a research project in an area of computer science chosen together by the student and the instructor. This course may be repeated (with different topics) for a maximum of 12 credits. Advanced undergraduate students may also enroll in graduate-level computer science courses below CSDP 610 with permission of the Department

MATHEMATICS

MATH 101¹ Intermediate Algebra

Credit 3

Topics in this intermediate algebra course include the algebra of signed numbers, solving linear equations and inequalities, quadratic equations, operations on algebraic expressions, and graphing. This course requires the successful completion of the Arithmetic Basic Skills Test administered by the Department. Students not receiving a satisfactory grade on this examination at entrance are required to attend special arithmetic skills laboratory sessions, in addition to their regular class work, until they do pass this test with a satisfactory score. This course does not satisfy the General Education Requirement in Mathematics and does not count towards graduation requirements.

MATH 102 Applications of College Mathematics

Credit 3

This course reviews sets and logic, functions and graphing, and solution of sets of linear equalities and inequalities. It includes an introduction to linear programming, combinatorial principles, and counting, with applications in the development of probability theory and statistics, numeration systems, and computer mathematics. All topics are covered making use of current educational technology, both from the point of view of their significance within mathematics and of their applicability in modeling the world using mathematics. In addition to regular class work, this course requires the successful completion of the Arithmetic Basic Skills Test administered by the Department. Students not receiving a satisfactory grade on this examination at entrance are required to attend special arithmetic skills laboratory sessions, in addition to their regular class work, until they do pass this test with a satisfactory score. **Prerequisites:** MATH 101 with a grade of at least "C" or two years of high school mathematics (Algebra I or higher) plus permission of the Department (obtained by receiving a satisfactory score on the placement test).

MATH 109 College Algebra

Credit 3

The purpose of this course is twofold: for students requiring quantitative mathematical skills but not trigonometry or calculus, it may be viewed as a terminal course; it also provides the algebraic and graphing skills necessary for satisfactory performance involving relations and functions, graphing, solving systems of linear equations, and the logarithmic and exponential functions. **Prerequisites:** MATH 101 with a grade of at least "C"; or two years of high school algebra, plus permission of the Department (obtained by receiving a satisfactory score on the placement test).

MATH 110 Trigonometry and Analytic Geometry

Credit 3

This course is intended for students majoring in mathematics, computer science, science, technology, or engineering, or for students preparing to take calculus. Topics covered include the unit circle and graphs of the trigonometric functions, trigonometric identities, trigonometric equations, inverse trigonometric functions, complex numbers, and polar coordinates. **Prerequisites:** MATH 109 with a grade of at least "C", or three years of high school mathematics (Algebra I or higher) plus permission of the Department (obtained by receiving a satisfactory score on the placement test).

MATH 111H Honors Elementary - Mathematical Analysis

Credit 4

This course covers the content of both MATH 109 and MATH 110 in one semester. As such, it is limited to those students with three (3) years of secondary school mathematics (including Trigonometry).

MATH 112 Calculus I

Credit 4

This course covers differential calculus of functions of one variable, graphing, and differentiating algebraic and transcendental functions. It also covers limits, continuity, and Mean Value Theorem and applications, as well as maximizing and minimizing functions, related rate, and approximation applications. An introduction to integration is also included. **Prerequisites:** MATH 110 or MATH 111H with a grade of at least "C" or better.

MATH 210 Elementary Statistics

Credit 3

The course covers frequency and graphs of distributions; calculation of averages from raw data and grouped data; the standard deviation; the Binomial, Poisson, and normal distribution and their properties; Bayes Theorem and Bayesian inference; Regression and correlation in two variables; and Times Series Analysis and applications. **Prerequisite:** MATH 109 or MATH 110 or MATH 111H.

¹MATH 101 does not satisfy the General Education Requirement and does not count towards graduation.

MATH 211 Calculus II Credit 4
This course covers Integral calculus of functions of one variable; techniques and theory of the Riemann integral, including the fundamental theorem and its application; applications to area, volume, surface area work, centroids, arc length, and polar coordinates; advanced work with transcendental functions; and an introduction to series and sequences. Prerequisite: MATH 112.

MATH 212 Calculus III Credit 4
This course covers multivariable differential and integral calculus, which includes the chain rule and inverse function theorems for several variables, with applications to maxima and minima; integration in polar, cylindrical, and spherical coordinate systems; Taylor's Theorem, infinite series; convergence tests; and applications. Prerequisite: MATH 211.

MATH 232 Introduction to Linear Algebra Credit 3
This course covers vector spaces, matrices, and their algebra; linear transformations; and normal forms. Also, systems of linear equations using the Gaussian Elimination method, Cramer's rule, LU decomposition, and the inverse matrix are studied. The reduction of a matrix to row-echelon form and the use of the reduced matrix to calculate the rank of the matrix, determine the solvability of a system of linear equations and the dependence and independence of rows and/or columns of the original matrix are also included. Prerequisite: MATH 112.

MATH 241 Elements of Differential Equations for Engineers Credit 3
This course is an introduction to ordinary differential equations which presents basic techniques for solving first and second order differential equations, both linear and nonlinear, and systems of differential equations. Emphasis is placed on qualitative and numerical methods, as well as on formula solutions. Prerequisite: Math 211

MATH 301 College Geometry Credit 3
This course covers basic concepts of Euclidean geometry, such as distance congruence, similarity, triangles, parallelism, Pythagorean theorem, axiomatic geometry, Non-Euclidean geometry, and comparison with Euclidean geometry. This course is also essential as a part of the training of prospective teachers of secondary school mathematics. Prerequisite: MATH 110 or MATH 111H.

MATH 302 Number Theory Credit 3
This course covers integers, divisibility, the Euclidean algorithm and its application, solution of Diophantine equations, prime numbers, congruencies, quadratic residues, number theoretic functions, and Moebius inversion and its applications. Prerequisite: MATH 110 or MATH 111H.

MATH 304 History of Mathematics and Computer Science Credit 3
This course covers the historical and cultural development of mathematics and computer science from ancient times to the present. Emphasis is placed on the development of mathematical reasoning, style, philosophy, and techniques within cultural settings, growth of computer hardware and software; and developmental styles of applications. Prerequisite: MATH 109 or MATH 110 or MATH 111H.

MATH 309 Introduction to Probability Credit 3
This course covers sample spaces, axioms, and elementary theorems of probability; it also covers combinatorics, dependence, conditional probability, random variables, probability distributions which include the Binomial, Geometric, Poisson, Negative Binomial, Hypogeometric, Uniform, Normal, Gamma, and Chi-Square, expectation, mean variance, and moment generating functions, Chebychev's inequality; examples of stochastic processes are also studied. Prerequisite: MATH 211.

MATH 310 Mathematical Statistics I Credit 3
This course covers bivariate and multi-variate distributions of random variables and their properties, limit theorems (law of large numbers and the central limit theorem) transformation of variables for the discrete and continuous types, and T and F distributions; point and interval estimation; the maximum likelihood; unbiasedness; efficiency; sufficiency; MVU of estimators and other characteristics of point estimators; Cramer and Rao Blackwell Theorems, testing of hypotheses, and Neyman Pearson Lemma. Prerequisites: MATH 211 and MATH 309.

MATH 321 Differential Equations Credit 4
This course covers first-order equations for which exact solutions are obtainable with applications. Higher order linear differential equations, systems of linear differential equations, Laplace transforms, non-linear differential equations, and numerical applications are also included. Prerequisite: MATH 212.

MATH 322 Foundations of Mathematics Credit 3
This course covers sets, relations, propositional calculus, first order theory and its model theory, completeness, incompleteness and independence theorems. Also, applications to axiomatic systems, number theory, geometry, set theory or computer science are included. Prerequisite: MATH 112.

MATH 323 Introduction to Discrete Structures Credit 3
Topics covered in this course include group, graph, Boolean, propositional, and other algebraic structures through detailed study of automata and their relationship to formal languages. This course requires teams creating relatively large application programs. Prerequisites: CSDP 222.

MATH 342 Advanced Calculus Credit 3
This course includes a review of the real numbers, topology of Cartesian spaces, limits, convergence, continuity, differentiability, integration, infinite series and products, Fourier series, and Laplace transforms. Prerequisite: MATH 212.

MATH 350 Linear Programming Credit 3
This course introduces the concepts of Models, model-building and operations research methods. It includes a review of linear algebra and convexity, mathematical background; graphic method, simplex computation procedures, special cases, degeneracy, duality and its applications; transportation, production, scheduling and inventory control problems; PERT Network Analysis Techniques and game theory and software application to the solution of linear programming problems. (LINDO and MATHLAB). Prerequisites: CSDP 222

MATH 360 Statistics for Scientists Credit 3
This course, available for departmental majors and intermediate between MATH 210 and the three-semester probability and statistics sequence, is a one-semester introduction to the methodology and application of statistics. Emphasis is placed on statistical methods commonly used in scientific and technical applications and their theoretical justification and limitations. Prerequisite: MATH 211 and MATH 309.

MATH 410 Mathematical Statistics II Credit 3
Correlation, linear and multiple regression techniques are covered mathematically as well as using available statistical software. In addition, design of experiments, analysis of covariance techniques; analysis of categorical data including the chi-square and goodness-of-fit tests, contingency tables and non-parametric statistics are covered. Prerequisite: MATH 211, MATH 309 and MATH 310 and MATH 212.

MATH 411 Modern Algebra Credit 3
This course takes an axiomatic approach to studying the structures: groups, rings, and fields. Quotient structures, sub-structures, homomorphism and isomorphism are also included. In addition to abstract structures, numerous examples of well-known structures are investigated from the axiomatic point of view. Prerequisite: MATH 211.

MATH 412 Linear Algebra Credit 3
This course covers matrix algebra and determinants, vector spaces, subspaces, basis and dimension, inner product, orthogonal and orthonormal vectors and sets, Gram-Schmidt orthogonalization process, linear transformations, eigenvalues and eigenvectors, kernel and range, diagonalization of matrices, and quadratic forms. Also, application of linear algebra to Error-Correcting Codes and linear programming are covered. Prerequisite: MATH211.

MATH 413 Modern Algebra II Credit 3
This course is a continuation of Math 411. Specific topics include Sylow's Theorems and Free Abelian Groups from Group Theory; Fundamental Homomorphisms/Isomorphisms Theorems and Ideals (Maximal) from Ring Theory; and Extension Fields leading to the study of Galois Theory. Prerequisite: Math 411.

MATH 440 Topology Credit 3
This is a beginning course in topology with emphasis on the development of mathematical maturity in the area. Open and closed sets, connectedness, compactness, continuous functions and homomorphisms, separation properties, and pathologies are included. Prerequisite: MATH 212 or MATH 411 or permission of instructor.

MATH 442 Numerical Analysis II Credit 3
This course extracts numerical solutions of systems of equation by direct and iterative methods, ordinary differential equations, optimization, evaluate of determinants, matrix inversions, and calculation of eigenvalues and eigenvectors, and partial differential equations. This course makes use of the powerful MATLAB software utilizing a more practical approach and links every method to real engineering and/or science problems without deriving theoretical concepts.

- MATH 443 Real Analysis I Credit 3**
This course covers the analysis on the real line and n -space from the abstract point of view. Point sets, completeness, convergence, differentiability, Riemann integration, measurable sets and functions, Lebesgue integration, differentiation vs. integration, interchange of order, Lebesgue-Stieltjes integrals, dominated and other convergence theorems are included. Prerequisite: MATH 212 .
- MATH 444 Real Analysis II Credit 3**
This course is a continuation of MATH 443. Emphasis is placed on uniform convergence of sequences and series of functions, improper integrals, differentiation and integration in higher dimensions, inverse and implicit function theorems, introductory metric spaces, and metric space topologies. Prerequisite: MATH 443.
- MATH 455 Mathematical Models Credit 3**
This course covers construction, development, and study of mathematical models for real applications; Markov chain models; models for linear optimization; and selected case studies. Prerequisite: MATH 443 or permission of instructor.
- MATH 490 Senior Seminar Credit 1**
This course is designed for graduating seniors to acquaint them with research information and sources in the field of mathematics. The student develops and presents reports on current research problems from various fields of mathematics.
- MATH 498 Selected Topics in Mathematics Credit 3**
This is a reading course recommended for all mathematics majors. The grade for this course is based primarily on a research project in an area of mathematics chosen by the student and the instructor. This course may be repeated (with different topics) for a maximum of 12 credits.
- MATH 499 Selected Topics in Mathematics Credit 3**
This is a reading course recommended for all mathematics majors. The grade for this course is based primarily on a research project in an area of mathematics chosen together by the student and the instructor. This course may be repeated (with different topics) for a maximum of 12 credits.

DIRECTORY OF FACULTY

- Alls, David** Lecturer
B.A., Salisbury State College, M.Ed., University of Virginia, M.S., University of Maryland Eastern Shore
- Arya, Rakesh** Lecturer
B.A., B.S., Delhi University, M.S., Jackson State University
- Boyd, Eddie** Assistant Professor
B.S., Grambling State University, M.S., North Texas State University, Ph.D., Oklahoma State University
- Casavant, Albert E.** Assistant Professor
B.Sc., Brown University, M.S., and Ph.D., University of Illinois, Urbana-Champaign
- Chapin, Jr., Edward William** Assistant Professor
B.S. Trinity College at Hartford, M.A. and Ph.D., Princeton University
- Chi, Albert** Assistant Professor
M.A. and M.Ed. Emporia State University, Ph.D. Oklahoma State University
- Hura, Gurdeep** Chair and Professor
B.E. Jabalpur University India, M.S., Ph.D., University of Roorkee, India
- Johnson, Robert** Associate Professor
B.S., University of Louisiana, M.S. Southern University, Ph.D., St. Louis University
- Jones-Douglas, Lois E.** Lecturer
B.S., M.S., University of Maryland Eastern Shore
- Malik, Bashir Malik** Associate Professor
B.S., University of Khartoum, Ph.D., University of Essex, England
- Ndumu, Martin** Associate Professor
B.S., M.S., University of Paris, France, M.S., Ph.D., University of Warwick, England
- Riccobono, Joanna** Lecturer
B.S., and M.S., Salisbury University
- Ridlon, Candice** Assistant Professor
B.S. Florida State University, M.Ed. Valdosta State University, Ph.D. Florida State University
- Seaton, Daniel** Associate Professor
B.S., Frostburg University, M.S., Shippensburg University, Ph.D., Virginia Tech.
- Song, Yinglei** Assistant Professor
B.S. Tsinghua University, M.S. Physics and CS, Ohio University, Ph.D. University of Georgia
- Sharma, Rakesh** Lecturer
B.S., James Madison University, M.S. North Carolina Central University
- Ukoha, Ojiabo** Lecturer
B.B.A., M.B.A., Kennesaw State University, M.S., Clark Atlanta University, Ph.D. University of MD Eastern Shore
- Williams, Mark** Associate Professor
B.A., Oakland University, M.S., Ph.D., University of Cincinnati

DEPARTMENT OF TECHNOLOGY

www.umes.edu/SBT

Dr. Leon L. Copeland, Sr., Chairperson

MISSION

The central mission of the Department of Technology at the University of Maryland Eastern Shore is to serve the Eastern Shore region, the State of Maryland, and the nation by improving technical education and the professional technical practice of construction and engineering technology. The mission is achieved through high quality instruction, research, and community service. Through the teaching and learning process the department aims to provide knowledge, skills, and values to students preparing for professional technical careers and persons currently employed in industry. New technical and professional knowledge is developed and disseminated through research and community service. Academic programs include Construction Management Technology, Engineering Technology, and Technology Education. Each program emphasizes basic knowledge and up-to-date technical skills that will enable graduates to solve problems in a logical manner and to draw conclusions from principles and facts. Through the humanistic studies in each program, students are taught to recognize their responsibilities as citizens to prepare themselves for active participation in society.

OBJECTIVES

The educational experiences offered by the Department of Technology will provide students with opportunities to:

1. Demonstrate an operational knowledge of the techniques associated with the design, construction and maintenance of residential and commercial structures;
2. Exercise independent judgment and sound ethical values in expediting work without jeopardizing its effectiveness, safety or cost;
3. Organize and manage personnel, materials and equipment for carrying out construction, maintenance and operation of complex engineering systems;
4. Demonstrate effective communication of ideas by means of spoken and written language as well as graphic techniques;
5. Solve technical problems that translate ideas into functioning, machines, structures and systems;
6. Plan and implement instructional programs to meet the needs of students in a technological age;
7. Plan and instruct technology education programs that promote technical literacy through the application of mathematics and science and other subjects in classroom and laboratory activities;
8. Improve the professional technical practice of Construction Management, Engineering Technology, and Technology Education through continuing education and community service; and
9. Demonstrate humanistic values and responsibilities that promote active participation as productive citizens.

DEGREES OFFERED

Bachelor of Science - Construction Management Technology

Bachelor of Science - Engineering Technology

Bachelor of Science - Technology Education

Masters of Education¹ - Career and Technology Education

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate programs in the Department of Technology is based upon the general admission requirements of the University.

¹Please consult the UMES Graduate Catalog for further details.

DESCRIPTION OF PROGRAMS

The **Construction Management Technology** (CMTE) curriculum is a four year program of study leading to a Bachelor of Science Degree. This interdisciplinary curriculum accredited by the American Council for Construction Education (ACCE) provides a background in the several physical and applied sciences and construction technology. Technical content is balanced by courses in business management, communications, humanities, and social sciences. This broad diversification provides the technical base needed for immediate employment as well as the managerial concepts for career development. Students must complete 126 semester hours of designated coursework including supervised internship in the construction industry. A minimum grade of "C" must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses.

The curriculum in **Engineering Technology** (ETEE/ETME) follows TAC/ABET recommendations and offers upper division courses leading to a Bachelor of Science Degree in **Electrical/Electronic Engineering Technology** and **Mechanical Engineering Technology**. The program is designed to provide a flexible course of study for students holding an Associate Degree in Engineering Technology from the Maryland Community College system and for students transferring out of the regular engineering program. The first two years may be completed through any of the engineering technology programs offered by an accredited community college. The Electrical/Electronics option is designed to prepare graduates for a career in the Electrical Engineering field. The curriculum provides in-depth exposure to the areas of communications, digital systems (including microprocessors), power machinery, and electronic systems design. The Mechanical option is designed to prepare graduates for a career in the Mechanical Engineering field. The curriculum provides in-depth exposure to the areas of manufacturing, thermal power, and mechanical systems design. It is anticipated that most students from community colleges will transfer about 60 credit hours. Total semester credits required for graduation is 126. A minimum grade of "C" must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses.

Technology Education (EDTE) is a four-year program of study leading to a Bachelor of Science degree, which will certify students to teach technology education in the secondary school. Students acquire technical knowledge and skills through creative and problem solving learning experiences related to the designed world. A sequence of professional education and liberal studies courses are also required to develop leadership and citizenship skills needed for successful teaching. A total of 126 credits are required for graduation. A minimum grade of "C" must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses.

CONSTRUCTION MANAGEMENT TECHNOLOGY

The Construction Management Technology (CMTE) curriculum is a four year program of study leading to a Bachelor of Science Degree. This interdisciplinary curriculum accredited by the American Council for Construction Education (ACCE) provides a background in the several physical and applied sciences and construction technology. Technical content is balanced by courses in business management, communications, humanities, and social sciences. This broad diversification provides the technical base needed for immediate employment as well as the managerial concepts for career development.

The goal of the Construction Management Technology program is the preparation of well educated professionals for challenging careers in the construction industry. Emphasis is placed on preparing professionals who are capable of managing the total construction process. Graduates qualify for employment with general contracting and subcontracting firms and in government.

DEPARTMENTAL REQUIREMENTS

Students must complete 126 semester hours of designated coursework including supervised internship in the construction industry. A minimum grade of "C" must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses. Course requirements other than those listed should be selected in consultation with the advisor or Department Chairman.

COMMON REQUIRED COURSES

ACCT 201	BUAD 302	ECON 202	ENVS 101
----------	----------	----------	----------

REQUIRED MAJOR COURSES

CMTE 201	CMTE 311	CMTE 413	EDTE 131
CMTE 205	CMTE 312	CMTE 414	
CMTE 214	CMTE 313	CMTE 425	
CMTE 230	CMTE 314	CMTE 426	
CMTE 286	CMTE 315	CMTE 445	
CMTE 295	CMTE 316	CMTE 454	
	CMTE 317	CMTE 458	
	CMTE 342		
	CMTE 395		

CAREER OPPORTUNITIES

A degree in Construction Management Technology prepares individuals for challenging careers in the construction industry with the ability to manage and supervise the total construction process.

CURRICULUM GUIDE FOR CONSTRUCTION MANAGEMENT TECHNOLOGY

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EDTE 131	3	ENGL 102 ¹	3
ENGL 101 ¹	3	ENGL 001	0
MATH 111 ²	4	ECON 201 ³	3
ARTS 101	3	CMTE 230	3
EDTE 100	<u>1</u>	ENVS 101	<u>3</u>
	14		12

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
PHYS 121 ⁴	3	MATH 112	4
PHYS 123 ⁴	1	CMTE 214	3
CMTE 201	3	ENGL 305	3
ENGL 203 ⁵	3	PHYS 122	3
CMTE 205	3	PHYS 124	1
ECON 202	<u>3</u>	SOCI 201 ⁶	<u>3</u>
	15		

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CMTE 311	3	CMTE 312	3
CMTE 313	3	CMTE 314	4
CMTE 315	3	CMTE 316	3
CMTE 286	3	CMTE 342	3
ENGL 204	3	BUAD Elective ^{7, 8}	<u>3</u>
ACCT 201	<u>3</u>		16
	18		

SUMMER

CMTE 395	2
----------	---

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
CMTE 317	3	CMTE 414	3
CMTE 413	3	CMTE 426	3
CMTE 425	3	CMTE 454	3
CMTE 445	3	CMTE 458	2
BUAD Elective ^{1, 2}	<u>3</u>	BUAD Elective ^{1, 2}	<u>3</u>
	15		14

Total Credits Hours: 126

¹Course satisfies GEN ED CURR AREA V.

²Course satisfies GEN ED CURR AREA I:A.

³Course satisfies GEN ED CURR AREA II:A.

⁴Courses satisfy GEN ED CURR AREA III.

⁵Course satisfies GEN ED CURR AREA.

⁶Course satisfies GEN ED CURR AREA II:B

⁷Students must select from BUAD 132, 300, 304, 306, or 412 or MKTG 308.

⁸BUAD 302 is the prerequisite for BUAD 304, 306 and 412.

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY

The curriculum in Engineering Technology (ETEE/ETME) follows TAC/ABET recommendations and offers upper division courses leading to a Bachelor of Science Degree in Electrical/Electronic Engineering Technology. The program is designed to provide a flexible course of study for students holding an Associate Degree in Engineering Technology from the Maryland Community College system and for students transferring out of the regular engineering program. The first two years may be completed through any of the engineering technology programs offered by an accredited community college. The Electrical/Electronics option is designed to prepare graduates for a career in the Electrical Engineering field. The curriculum provides in-depth exposure to the areas of communications, digital systems (including microprocessors), power machinery, and electronic systems design.

The goal of the **Engineering Technology** program is to prepare students for a challenging career in Electrical/Electronic Engineering Technology. After receiving the Bachelor of Science degree, graduates are employed as Engineering Technologists. The emphasis in engineering technology courses is the practical design and utilization of devices and systems, with a strong laboratory program supporting the lecture courses.

DEPARTMENTAL REQUIREMENTS

It is anticipated that most students from community colleges will transfer about 60 credit hours. Total semester credits required for graduation is 126. A minimum grade of "C" must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses. Course requirements other than those listed should be selected in consultation with the advisor or Department Chairman. Electrical/Electronics Engineering Technology requires a minimum total of 24 credit hours of Technical Elective courses.

COMMON REQUIRED COURSES

CHEM 111	CHEM 113	CSDP 220	MATH 211
----------	----------	----------	----------

REQUIRED MAJOR COURSES

ETEE 114 ¹	ETEE 201 ¹	ETEE 303	ETEE 421
	ETEE 202 ¹	ETEE 314	ETEE 485
	ETEE 215 ¹	ETEE 335	ETEE 486
	ETEE 216	ETEE 346	
	ETEE 218	ETEE 355	

Group I: Technical Electives²

CMTE 313	EDTE 131	ETEE 222	ETME 318
CSDP 222	EDTE 132	ETEE 425	ETME 395
		ETEE 474	

Group II: Technical Electives³

BUAD 302	BUAD 410	BUAD 411	BUAD 412
----------	----------	----------	----------

CAREER OPPORTUNITIES

A degree in Engineering Technology provides an engineering education with emphasis on manufacturing systems operations, technical applications and managerial services in government and in industry.

¹These are community college level courses; they, or appropriate substitutions, should be completed before enrolling at UMES.

²Students must complete a minimum of 18 credit hours.

³Students must complete a minimum of 6 credit hours.

CURRICULUM GUIDE FOR ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY

The following paradigm is a prototype of the associate degree program or equivalent experience that should be completed before enrolling for the junior and senior year.

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Computer-Assisted Drawing and Design I (CAD-I)	3	Electronics I	3
Gen. College Physics I	3	Gen. College Physics II	3
Gen. College Physics I Lab	1	Gen. College Physics II Lab	1
Algebra/Trigonometry/Geometry	3	Calculus I	4
Basic Composition I	3	English Composition II	3
First Year Experience Seminar	<u>1</u>	English Proficiency Exam	<u>0</u>
	14		14

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Circuit Technology I	3	Circuit Technology II	3
Electronics II	3	Electronics III	3
Principles of Chemistry I	3	Electronics Laboratory	4
Principles of Chemistry I Lab	1	Introduction to Computers	4
Calculus II	4	Literature, Foreign Language	<u>3</u>
Fund. Contemporary Speech	<u>3</u>		17
	17		

The following paradigm is a recommended course sequence for those graduates of associate-degree technology programs or equivalent experiences to complete requirements for the Bachelor of Science degree in Engineering Technology at UMES.

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ETEE 303	3	ETEE 346	3
ETEE 421	4	ETEE 314	3
ENGL 305	3	ETEE 355	3
ETEE 335	3	CSDP 221	4
One Course in Literature, Foreign Lang. <u>or</u> Fine Arts	<u>3</u>	FREE Elective	<u>3</u>
	16		16

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ETEE 485	3	ETEE 486	3
Technical Elective	3	FREE Elective	3
One course in: Literature <u>or</u> Foreign Language	3	Technical Elective	3
Technical Elective	3	Technical Elective	3
Technical Elective	<u>3</u>	Technical Elective	3
	15	FREE Elective	<u>3</u>
			18

Total Credit Hours: 126

MECHANICAL ENGINEERING TECHNOLOGY

The curriculum in Engineering Technology (ETEE/ETME) follows TAC/ABET recommendations and offers upper division courses leading to a Bachelor of Science Degree in **Mechanical Engineering Technology**. The program is designed to provide a flexible course of study for students holding an Associate Degree in Engineering Technology from the Maryland Community College system and for students transferring out of the regular engineering program. The first two years may be completed through any of the engineering technology programs offered by an accredited community college. The Mechanical option is designed to prepare graduates for a career in the Mechanical Engineering field. The curriculum provides in-depth exposure to the areas of manufacturing, thermal power, and mechanical systems design.

The goal of the **Engineering Technology** program is to prepare students for a challenging career in Mechanical Engineering Technology. After receiving the Bachelor of Science degree, graduates are employed as Engineering Technologists. The emphasis in engineering technology courses is the practical design and utilization of devices and systems, with a strong laboratory program supporting the lecture courses.

DEPARTMENTAL REQUIREMENTS

It is anticipated that most students from community colleges will transfer about 60 credit hours. Total semester credits required for graduation is 126. A minimum grade of "C" must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses. Course requirements other than those listed should be selected in consultation with the advisor or Department Chairman. Electrical/Electronics Engineering Technology requires a minimum total of 15 credit hours of Technical Elective courses.

COMMON REQUIRED COURSES

BUAD 410	CHEM 111	CSDP 221	MATH 211
BUAD 411	CHEM 113		

REQUIRED MAJOR COURSES

CMTE 313	EDTE 131	ETEE 201	ETME 301
CMTE 314	EDTE 132	ETEE 202	ETM3 303
			ETME 318
			ETME 325
			ETME 342
			ETME 356
			ETME 381
			ETME 423
			ETME 445
			ETME 475

Technical Electives¹

CMTE 214	CSDP 222	EDTE 341	ETME 304
CMTE 316	CSDP 341	EDTE 342	ETME 360
CMTE 413	ENGE 370	ETEE 303	ETME 395
	MATH 212	ETEE 314	ETME 476
	MATH 321	ETEE 474	

CAREER OPPORTUNITIES

A degree in Engineering Technology provides an engineering education with emphasis on manufacturing systems operations, technical applications, and managerial services in government and industry.

¹Students must complete a minimum of 15 credit hours.

CURRICULUM GUIDE FOR MECHANICAL ENGINEERING TECHNOLOGY

The following paradigm is a prototype of the associate degree program or equivalent experience that should be completed before enrolling for the junior and senior year.

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
First Year Experience Seminar	1	Behavioral Sciences	3
English Composition I ¹	3	Computer-Assisted Drawing and Design II (CAD-II)	3
Computer-Assisted Drawing and Design I (CAD-I)	3	English Composition II ²	3
Trig. and Analytic Geometry ³	3	Calculus I ³	4
General College Physics I	3	General College Physics II	3
General College Physics I Lab	<u>1</u>	General College Physics II Lab	<u>1</u>
	14		17

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
Statics	3	Strength of Materials	4
Fund. of Contemporary Speech ⁴	3	Principles of Economics II ⁵	3
Circuit Technology I	3	Circuit Technology II	3
Principles of Chemistry I	3	Literature, Foreign Language or Fine Arts	3
Principles of Chemistry I Lab	1	Calculus II	<u>4</u>
Literature, Foreign Lang.	<u>3</u>		17
<u>or</u> Fine Arts	3		
	16		

The following is a recommended course sequence for those graduates of associate-degree technology programs or equivalent experiences to complete requirements for the Bachelor of Science degree in Engineering Technology at UMES.

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
ENGL 305 ⁶	3	ETME 318	3
ETME 301	3	ETME 342	3
ETME 303	3	ETME 356	3
ETME 381	4	CSDP 220	4
ETEE 325	<u>3</u>	FREE Elective	<u>3</u>
	16		16

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
BUAD 411	3	BUAD 410	3
ETME 423	3	ETME 475	3
ETME 445	3	Technical Elective	3
Technical Elective	3	Technical Elective	3
Technical Elective	<u>3</u>	Technical Elective	<u>3</u>
	15		15

Total Credit Hours: 126

¹Course satisfies GEN ED CURR AREA V. Students must pass English Composition I with a grade of "C" or better before taking ENGL 203.

²Course satisfies GEN ED CURR AREA V. Students must pass English Composition II with a grade of "C" or better before taking ENGL 203.

³Course satisfies GEN ED CURR AREA IV.

⁴Course satisfies GEN ED CURR AREA I.

⁵Course satisfies GEN ED CURR AREA II:A.

⁶Course satisfies GEN ED CURR AREA V.

TECHNOLOGY EDUCATION

Teacher Certification

Technology Education (EDTE) is a four-year program of study leading to a Bachelor of Science degree, which will certify students to teach technology education in the secondary school. Students acquire technical knowledge and skills through creative and problem solving learning experiences related to the designed world. The Technology Education Teacher Certification sequence (based on established state requirements) may be pursued by education majors who also desire certification in Technology Education.

The goal of the Technology Education program is to prepare professionals who will qualify for certification to teach technology education at the middle school and high school levels. Emphasis is placed on improving the teaching- learning process and promoting and developing technological literacy, which is the ability to use, manage, understand, and assess technology. Study is focused on technical applications to support classroom and laboratory activities.

DEPARTMENTAL REQUIREMENTS

A sequence of professional education and liberal studies courses are required to develop leadership and citizenship skills needed for successful teaching. A total of 126 credits are required for graduation. A minimum grade of "C" must be achieved in prerequisite courses, major core courses, supportive courses, technical elective courses, and selected general education courses. *Course Requirements other than those listed should be selected in consultation with the advisor or Department Chairman.

REQUIRED MAJOR COURSES

EDTE 111	EDTE 211	EDTE 341	EDTE 410
EDTE 131	EDTE 232	EDTE 342	EDTE 467
		EDTE 351	EDTE 481
		EDTE 361	EDTE 482
			EDTE 483

REQUIRED PROFESSIONAL EDUCATION COURSES

EDCI 200	EDCI 400	EDSP 428	PSYC 305
EDCI 201	EDCI 406		PSYC 307
EDCI 311	EDCI 409		
	EDCI 410		
	EDCI 425D		
	EDCI 460/470D		

CAREER OPPORTUNITIES

A degree in Technology Education prepares professionals who will qualify for certification to teach technology education at the middle school and high school levels.

CURRICULUM GUIDE FOR TECHNOLOGY EDUCATION

FRESHMAN YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EDTE 111	3	ARTS 101 ³	3
EDTE 131	3	MATH 110 ²	3
ENGL 101 ¹	3	ENGL 102 ¹	3
MATH 109 ²	3	EDCI 200	3
EDTE 100	<u>1</u>	ENGL 001	0
	13	BIOL 101 ⁴	3
		EDCI 201 ⁵	<u>1</u>
			16

SOPHOMORE YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
SOCI 201	3	EDTE 211	3
ECON 201 ⁶	3	EDTE 232	3
PHYS 121 ⁴	3	EDTE 314	3
PHYS 123	1	PHYS 122 ⁴	3
ENGL 203 ⁷	<u>3</u>	PHYS 124	1
	13	PSYC 305	<u>3</u>
			16

JUNIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EDTE 341	3	EDCI 409	3
EDTE 351	3	EDTE 361	3
PSYC 307	3	EDTE 467	3
EDCI 311	3	EDTE 342	3
ENGL 305 ¹	3	EDCI 406	3
ENGL204 ¹	<u>3</u>	EDCI 482	<u>3</u>
	18		18

SENIOR YEAR

<i>First Semester</i>	<i>Credit</i>	<i>Second Semester</i>	<i>Credit</i>
EDCI 410	3	EDCI 400	3
EDTE 481	3	EDCI 460	6
EDSP 428	3	EDCI 470	<u>6</u>
EDCI 483	3		15
EDCI425D	3		
EDTE 410	<u>3</u>		
	18		

Total Credit Hours: 126

¹Course satisfies GEN ED CURR AREA V.

²Course satisfies GEN ED CURR AREA IV. If student needs MATH 101, he/she must take the course before MATH 109.

³Course satisfies GEN ED CURR AREA I:A.

⁴Course satisfies GEN ED CURR AREA III.

⁵Course does not count towards graduation.

⁶Course satisfies GEN ED CURR AREA II:A.

⁷Course satisfies GEN ED CURR Requirement.

MINOR PROGRAMS

In order to minor in Construction Management Technology, it is recommended that the Department Chair be contacted as early as possible. A minor advisor will be assigned by the chairman. All prerequisites for departmental courses must be met before enrolling in the courses to satisfy the minor sequence.

Two suggested minors in Construction Management Technology are outlined below, one for those interested in technical applications and one for those interested in management applications. Upon justification by the student, limited substitution of courses can be made upon approval by the Department Chair.

TECHNICAL

Students interested in a minor in Construction Management Technology and in technical applications should complete the following courses, totaling 25 credits:

CMTE 201	CMTE 313	EDTE 131	CMTE 300-400 Level Course
CMTE 214	CMTE 314	EDTE 132	
CMTE 230			

MANAGEMENT

Students interested in a minor in Construction Management Technology and in management applications should complete the following courses, totaling 24 credits:

CMTE 201	CMTE 311	CMTE 425	EDTE 131
CMTE 230	CMTE 342	CMTE 445	EDTE 132

MECHANICAL ENGINEERING TECHNOLOGY

Students interested in a minor in Mechanical Engineering Technology should complete the following courses, totaling 25 credits:

CMTE 313	EDTE 131	ETME 301	ETME 423
CMTE 314	EDTE 132	ETME 303	
		ETME 356	

TECHNOLOGY EDUCATION (Teacher Certification)

Students interested in a minor in Technology Education may pursue one of two tracks depending on their career objective. A sequence of courses has been designed for both Technology Education Teacher Certification and Technical Applications in industry. The Technology Education Teacher Certification sequence (based on established state requirements) may be pursued by education majors who also desire certification in Technology Education. Students must meet all departmental prerequisites and receive a grade of C or better in required courses.

	<u>Manufacturing and Construction Technology</u>		
CMTE 230	EDTE 351	ETME 356	EDTE ¹
	EDTE 361		
	<u>Design and Communication Technology</u>		
CMTE 201	EDTE 131	EDTE 132	EDTE 232
	<u>Energy and Transportation Technology</u>		
EDTE 211	EDTE 312	EDTE 341	EDTE 342
	<u>Six additional semester hours to include</u>		
	EDTE 481	EDTE 499	

Additional professional education courses, as listed below for Career and Technology Education, and student teaching may also be required by the State for certification. A total of 27 credits is required.

	<u>Technical Applications For Industry</u>		
CMTE 230	EDTE 131	EDTE 351	Elective
ETME 356	EDTE 132	EDTE 361	
	EDTE 211		
	EDTE 212		

¹Student must select a Technical elective.

CAREER AND TECHNOLOGY EDUCATION CERTIFICATION

The University of Maryland is designated as one of the institutions which shall offer the "Trade and Industrial" certification courses. The courses which are offered are those required for certification in Maryland. To become certified as a trade-industrial and service occupations teacher in the State of Maryland, a person must successfully complete 18-21 credit hours of instruction. The following courses will satisfy the Standard (SPC) Certification Requirements:

EDCI 409	EDSP 428	EDTE 368	EDTE 437
EDCI 410		EDTE 370	EDTE 440

COURSE DESCRIPTIONS IN CONSTRUCTION MANAGEMENT TECHNOLOGY

- CMTE 201 Architectural Drawing Credit 3**
This is an introductory course in architectural planning and blue print reading utilized by architects and builders of residential, commercial, and light industrial properties throughout the construction industry. Students utilize CAD drafting skills and sketches to produce plans, details, and sections used in field and office operations. Lecture one hour, laboratory four hours. Prerequisite: EDTE 131.
- CMTE 205 Computer Applications in Construction Credit 3**
This course develops a solid understanding of micro-computers, the Windows operating system, and Internet usage. Students develop proficiency in the use of various commercially available software packages, such as word processing, presentation, spreadsheet, and database management. A variety of construction specific software programs in estimating, scheduling, and construction project management are introduced. Lecture two hours; laboratory two hours. Prerequisite: Sophomore standing.
- CMTE 214 Construction Surveying Credit 3**
This course covers coordinates, directions, distances and elevations. The course includes traverses, boundary surveys leveling, national rectangular coordinate systems, property description, public land subdivision, metes and bounds, and topographic surveys. Lecture one hour; laboratory four hours. Prerequisite: MATH 110 or MATH 111.
- CMTE 230 Construction Materials Credit 3**
The properties of various materials used in construction, such as wood, steel, clay products, concrete, plastic, glass, concrete products, soils, and other materials are covered in this course. Lecture two hours; laboratory two hours.
- CMTE 286 Construction Planning & Scheduling Credit 3**
The focus of this course is on the application of planning and scheduling techniques to a construction project. The use of bar charts and critical path method (CPM) are emphasized, as well as cost allocation, resource leveling, scheduling updating, and microcomputer application. Lecture two hours; laboratory two hours. Prerequisite: CMTE 201, CMTE 205.
- CMTE 295 Construction Management Internship I Credit 2**
This course is designed to provide students with work experience as interns under supervision of construction professionals. Students become familiar with many phases of construction under actual job conditions, which may include estimating, field engineering, inspecting, scheduling, and supervision. Students must register for the course during summer school and work a minimum of 40 hours per week for six (6) weeks to receive credit for the course. Students enrolled in the Military Reserve Officer Training Corps may receive credit for (1) summer camp experience under this course listing (while enrolled at UMES). Prerequisites: Completion of Sophomore year and permission of instructor.
- CMTE 311 Construction Methods I Credit 3**
The study and analysis of job planning, work methods, materials, equipment, and power tool and equipment safety methods employed on residential construction projects are covered in this course. Lecture one hour; laboratory four hours. Prerequisites: CMTE 201, CMTE 230, and MATH 110 or MATH 111.
- CMTE 312 Construction Methods II Credit 3**
This course is a continuation of Construction Methods I as applied to commercial, institutional, and industrial construction projects. Integration of OSHA and MOSHA safety standards for personal safety are covered in this course. Lecture one hour; laboratory four hours. Prerequisite: CMTE 311.
- CMTE 313 Statics Credit 3**
This course covers the composition and resolution of forces, equilibrium of force systems; application of the principles of statics to problems, including force analysis of simple structures; centroids; and moments of inertia. Lecture three hours. Prerequisites: MATH 110 and PHYS 121.
- CMTE 314 Strength of Materials Credit 4**
This course covers the behavior of materials subjected to tension, compression, shear, and bending; design of beams and columns; tests to determine the physical properties of various structural materials, including steel, wood, and aluminum; and analysis and interpretation of test data. Lecture three hours; laboratory two hours. Prerequisites: CMTE 313 and MATH 112.
- CMTE 315 Environmental Technology I Credit 3**
This course covers heat loss, heat gain, and humidity control; the control of temperature and humidity in buildings; basics of designing heating, ventilation, and air conditioning systems; sizing of pipes and ducts, and selection of HVAC equipment. Principles of water services, drainage, waste and vent, and fire protection systems will also be covered. Lecture two hours; laboratory two hours. Prerequisites: Junior standing, CMTE 201, ENGL 305, MATH 112, and PHYS 121.

- CMTE 316 Environmental Technology II Credit 3**
 This course covers the principles and practices of electrical systems, lighting systems, vertical transportation for buildings, sound control, and year-round climate control in buildings. The course also includes code provisions and cost estimation. Lecture one hour; laboratory four hours. Prerequisites: CMTE 201, ENGL 305, PHYS 121, PHYS 122, and MATH 112.
- CMTE 317 Soils in Construction Credit 3**
 This course covers the identification and properties of soils with emphasis on laboratory and field testing. The influence of soil material in certain construction operations and in the construction contract are emphasized. Lecture one hour. Laboratory four hours. Prerequisites: CMTE 314 and CMTE 230.
- CMTE 342 Construction Estimating I Credit 3**
 The classification of work, quantity survey techniques, as well as cost estimating of labor, material, and equipment used in the completion of construction projects are covered in this course. Lecture two hours; laboratory two hours. Prerequisites: CMTE 214, CMTE 311, MATH 110 or MATH 111.
- CMTE 395 Construction Management Internship II Credit 2**
 This course is designed to provide students with work experience as interns under supervision of construction professionals. Students become familiar with many phases of construction under actual job conditions, which may include estimating, field engineering, inspecting, scheduling, and supervision. Students must register for the course during summer school and work a minimum of 40 hours per week for six (6) weeks to receive credit for the course. Students with verifiable construction experience of three (3) years or more may receive credit under this course listing. Verification will be through letters of recommendation from employer(s) on company letterhead and documented payroll receipts. Junior college transfer students who have completed an Associate Degree Program are required to complete one internship course.
- CMTE 413 Structural Design I Credit 3**
 This course covers theory and principles of the design of steel and timber structural elements and connections and their applications in construction. Lecture three hours. Prerequisite: CMTE 314.
- CMTE 414 Structural Design II Credit 3**
 This course covers the theory and principles of the design of reinforced concrete and masonry structural elements and their applications in construction. Lecture three hours. Prerequisite: CMTE 314.
- CMTE 425 Construction Management I Credit 3**
 This course covers the effective management and control to complete a construction project in accordance with the contract documents, within budget, on time, and safely. Topics discussed include professional ethics, project management principles, effective communications, cost engineering, management accounting, procurement, change orders, claims, value engineering, safety management, and computer applications. Lecture three hours. Prerequisites: CMTE 286, CMTE 312, and CMTE 342.
- CMTE 426 Construction Management II Credit 3**
 This course covers construction contract administration, organization and ethics; contract documents, their relationships, meanings and significance in construction; human relations and communications. Safety, health, and risk control are topics that are also included in this course. Lecture three hours. Prerequisite: CMTE 286, CMTE 425, CMTE 445.
- CMTE 445 Construction Estimating II Credit 3**
 This course covers the analysis and determination of costs of construction operations, including all the normal bid-preparation activities that take place in a constructor's estimating section. This course also includes construction cost accounting and control, microcomputer applications, and professional ethics. Lecture three hours. Prerequisites: CMTE 205 and CMTE 342.
- CMTE 454 Site Development Credit 3**
 This course covers market analysis and search, site selection criteria, zoning, deed restrictions, physical influences on land, use of information coming from personal interviews and printed information from city and county offices, and preliminary layout and design of selected projects. Lecture two hours; laboratory two hours. Prerequisites: CMTE 201, CMTE 214, and CMTE 312.
- CMTE 458 Senior Seminar Credit 2**
 This course covers selected construction problems by individuals or project teams. The course includes presentation of selected topics by students and construction industry representatives. Laboratory four hours. Prerequisite: Senior standing in Construction.

CMTE 499 Undergraduate Research in Construction Management Technology Credit 1-6
This course is designed for the junior-senior undergraduate student who has an interest in pursuing a special problem as an independent research project. An Independent Study Contract must be prepared and submitted for the Department Chair's approval within the first week of the semester. Student cannot take more than two 499 courses for a total of 6 credits. Prerequisite: Consent of the instructor and approval of the Department Chairman.

TECHNOLOGY EDUCATION

EDTE 100 First Year Experience Seminar Credit 1
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. The course will assist students in developing skills that will assist them in adjusting personally and socially to the college environment. First-year students will develop skills in critical thinking, information literacy, self-awareness, and communication to facilitate a successful transition. In addition, to providing information needed for student success at the University of Maryland Eastern Shore, this course serves as a conduit for students entering the fields of Technology. Lecture one hour. Prerequisite: None.

EDTE 111 Technology and Society Credit 3
This course examines the nature of technology and society within the context of the designed world: its meaning, application, significance, the role it has played in our history and its importance in today's technological society. Course content focuses on: the characteristics and scope of technology; the nature of technology within the context of the designed world; the design and development process; core concepts of technology; relationships and connections between technology and other fields; the cultural, social, economic, and political effects of technology; the effects of technology on the environment; and the role of society in the development and use of technology. Lecture three hours. Prerequisite: None.

EDTE 131 Computer-Assisted Drawing and Design I (CAD) Credit 3
The attributes of design, the engineering design process, and the basics of technical drawing are covered in this course. The design process is utilized to solve problems and design contemporary products. Basic technical drawing skills are developed, such as sketching, coordinate systems, the principles and theory of visualization, shape description, orthographic projection, basic descriptive geometry, axonometric drawings, and developments. Students use and apply computer-assisted drawing and design (CADD) software to produce basic technical drawings and three-dimensional designs. Engineering design and problem solving are used to research and develop renderings and solid three-dimensional models. Lecture two hours. Laboratory two hours. Prerequisite: None.

EDTE 132 Computer-Assisted Drawing and Design II (CAD) Credit 3
In this course advanced computer-assisted drawing and design software is used to produce three-dimensional drawings. Engineering design and problem solving are used to research and develop renderings and animated wire-frame, surface, and solid three-dimensional models. The use of libraries of pre-drawn materials is also covered. Lecture two hours; and laboratory two hours. Prerequisite: EDTE 131 or permission of instructor.

EDTE 211 Electrical and Electronics Technologies I Credit 3
This is a study of electricity and electronic technologies within the context of the designed world. Different systems and technologies are presented to provide an overview of how systems relate to technology. Technical concepts and principles of different types of circuits, laws, symbols, scientific principles, design and test equipment are analyzed and applied to electronic technological systems. Theories and principles applied to communication devices such as computers, cell phones, and audio systems are studied. Students design, build, test, and evaluate systems. Laboratory two hours. Prerequisites: PHYS 121 and MATH 110.

EDTE 212 Electrical and Electronics Technologies II Credit 3
This course provides an advanced study of AC circuits, inductance, capacitance, and resonance applied to communication devices such as computers. Emphasis is placed on power supplies, amplifiers, oscillators, receivers, and test equipment. Lecture two hours. laboratory two hours. Prerequisite: EDTE 211.

EDTE 232 Information and Communication Technologies Credit 3
This course covers transportation systems used to transport people and goods within the context of the design world. The design and operation of transportation systems and subsystems, governmental regulations, care of products and systems, design and operation of transportation systems, and the impact of transportation systems on society are studied. Lecture two hours. Laboratory two hours. Prerequisite: Junior standing.

- EDTE 314 Biotechnology and Agricultural Technologies Credit 3**
 A study of techniques that use living organisms or parts of an organism to make or modify products to improve plants or animals, including humans, within the context of the designed world is covered in this course. Developing micro-organisms and agricultural products for specific uses is also examined. Medical technologies as related to biotechnology are infused through the course. Lecture two hours. Laboratory two hours. Prerequisite: BIOL 101.
- EDTE 341 Transportation Technologies Credit 3**
 This course covers transportation systems used to transport people and goods. The design and operation of transportation systems and subsystems, governmental regulations, care of products and systems, design and operation of transportation systems, and the impact of transportation systems on society are studied. Lecture two hours, laboratory two hours. Prerequisite: Junior standing.
- EDTE 342 Energy and Power Technologies Credit 3**
 The use and impact of energy and power systems within the context of the designed world are examined in this course. Such areas as power efficiency and conservation, energy sources, thermodynamics, renewable and non-renewable forms of energy, and alternate energy are studied. Technical aspects of systems design and development for solar energy, nuclear energy, wind energy, geothermal energy, hydro-energy and other sources are examined. Lecture two hours. Laboratory two hours. Prerequisite: EDTE 341.
- EDTE 351 Construction Technologies Credit 3**
 The structures, systems, processes, and procedures of construction technologies are examined within the context of the designed world. Principles of construction, personnel management and organization, the design process, methods, materials, tools, and equipment used in building structures are studied. Prefabricated materials, infrastructures and renovation are additional topics covered. Lecture two hours, Laboratory two hours. Prerequisite: Junior standing.
- EDTE 361 Manufacturing Technologies Credit 3**
 This course is a study of the principles of manufacturing goods, processes, and systems within the context of the designed world. Personnel management, organizational structures, durable and non-durable goods, product design, interchangeability, and product marketing are covered. Students research and select products suitable of mass-production using an enterprise system. Emphasis is placed on the manufacturing design process. The social, cultural and economic problems and benefits are also examined. Lecture two hours. Laboratory two hours. Prerequisite: Junior standing.
- EDTE 368¹ Curriculum Development and Methods of Teaching I Credit 3**
 This course focuses on identifying course content, developing instructional plans, writing objectives, designing instructional strategies, and developing instructional materials for career and technology education courses. State and national content standards are used as a basis for curriculum design. This is the first of a two-course sequence which utilizes competency-based materials and authentic teaching experiences. Lecture three hours. Prerequisite: Permission of instructor.
- EDTE 370¹ Curriculum Development and Methods of Teaching II Credit 3**
 A field-based internship in a public school under the supervision of an experienced mentor teacher and a university teacher educator is the basis for this course. Beginning teachers plan, develop, deliver, and assess competency-based instruction in their assigned area of teaching. Laboratory six hours. Prerequisite: EDTE 368.
- EDTE 410 Foundations of Technology Credit 3**
 The course focuses on the development of knowledge, skills and dispositions regarding the following aspects of technology: its evolution, systems, core concepts, design, and utilization. It addresses the three dimensions of technological literacy: knowledge, ways of thinking and acting, and capabilities with the goal of students developing the characteristics of a technologically literate citizen. The course explores teaching/learning strategies that enable students to build their own understanding of new ideas. It examines strategies designed to engage students in exploring and makes use of a variety of assessment instruments to reveal the extent of understanding. The nature of a technology education experience with its performance-based instruction and assessment are explored with special attention given to the program's potential to invigorate student interest and achievement. Lecture three hours. Prerequisite: Senior standing or consent of the instructor.
- EDTE 415 History and Principles of Career and Technology Education Credit 3**
 The history, purpose, goals, principles, and concepts of career and technology education are discussed in this course. Other topics include federal legislative acts, definition of terms, instructional programs, career clusters, administration of programs, and current trends. Lecture three hours. Prerequisite: Permission of instructor.

¹Career and Technology Education Certification course.

- EDTE 437¹ Student Performance Assessment Credit 3**
 This course teaches how to identify and utilize appropriate performance criteria to measure student achievement in the cognitive, psychomotor, and affective domains. A variety of assessment instruments is developed to document student mastery of instructional objectives. Topics covered include performance tests, rating scales, checklists, rubrics, student portfolio assessment, and grading systems. Lecture three hours. Prerequisite: Permission of instructor.
- EDTE 440¹ Integrating Math and Science in Occupational and Technical Education Credit 3**
 The purpose of this course is to provide teachers with techniques and methods to assist students in improving their math and science skills. Techniques and problem application will be covered for specific occupational/technical areas. Lecture three hours. Prerequisite: Permission of instructor.
- EDTE 445 American Industry and Global Competition Credit 3**
 This course is an examination of American business and industry in relation to current and future global economy trends. All aspects of the industry are covered, including planning, management, finance, technical and production skills, principles of technology, labor issues, community issues, and health, safety, and environmental issues. Lecture three hours. Prerequisite: Permission of instructor.
- EDTE 450¹ Mentoring: Expectations and Responsibilities Credit 3**
 Introduction to mentoring, selecting mentors, mentor/teacher responsibilities, teacher observation, problems of beginning teachers, mentoring techniques, assessment, and portfolio development are covered in this course. This course is designed to prepare experienced teachers that are interested in becoming mentors in their school system. Lecture three hours. Prerequisite: Permission of instructor.
- EDTE 467 Instructional Analysis and Curriculum Development Credit 3**
 This advanced curriculum design course covers how to design a standards-based unit of instruction based on an instructional analysis in a content area in order to develop curriculum materials. Students learn how to design, implement, and evaluate technology-oriented curriculum. Emphasis is placed on the integration and utilization of national and state content standards not only in Technology Education but also on academic areas such as math and science. Based on these standards and the backward mapping process, goals, objectives, indicators, student learning activities, instructional materials, and assessment instruments are designed. Lecture three hours. Prerequisite: Permission of instructor.
- EDTE 480 Coordination of Work-Based Learning Credit 3**
 Study of a variety of work-based learning programs will be covered including cooperative work-experience internships, mentorships, job shadowing, and apprenticeship. Mission, trends and current practices in these programs will be discussed. Methods and techniques of coordination in comprehensive and part-time programs at the secondary and adult levels are covered. Prerequisite: Senior standing or consent of instructor.
- EDTE 481 Facilities Organization and Management Credit 3**
 Basic elements of designing, creating, and managing Technology Education learning environments, both classroom and laboratory facilities, are covered in this course. Room layout, selection of tools, supplies, equipment, safety and layout arrangements will be studied. Modular lab design and management will be examined. Lecture three hours. Prerequisite: Senior standing.
- EDTE 482 Core Technologies I Credit 3**
 The core technologies are the building blocks of all technology systems within the context of the designed world. Mechanical and structural technologies will be examined with regard to common components, simple controls, basic system design, safety, and applications. Students will design, build, operate, and analyze a technological model, prototype or simulation related to the core technologies. An overview of materials technology will include an examination of ferrous and non-ferrous materials, common industrial forms, and the primary and secondary processing of industrial materials. Topical investigations and modular activity packages will be utilized to enhance understanding of the core technologies. Lecture two hours. Laboratory two hours. Prerequisite: Senior standing or permission of instructor.

¹Career and Technology Education Certification course.

EDTE 483 Core Technologies II**Credit 3**

The core technologies are the building blocks of all technology systems within the context of the designed world. Electrical, electronic, optical, fluid, and thermal technologies will be examined with regard to common components, simple controls, basic system design, safety, and applications. The context for the study of these core technologies will be the design and development of technology systems to solve practical problems. Students will design, build, operate, and analyze a technological model, prototype or simulation related to the core technologies studied in this course. Communication skills will be developed through the documentation of the design and development process. Topical investigations and modular activity packages will be utilized to enhance understanding of the core technologies. Lecture two hours. Laboratory two hours. Prerequisite: Senior standing or permission of instructor.

EDTE 484 Information Systems**Credit 3**

This course provides students with knowledge and skills related to communication systems, application of computers, computer controlled robots and machines, imaging, publishing, audio systems, video systems, and telecommunications. The focus of the course is on integrating instruction on information systems into the technology/learning strategies used in technology education. These strategies include: (1) Ingenuity Challenges, (2) Topical Investigations, (3) Product Generation, (4) Modular Activity Packages, (5) Research and Experimentation, and (6) Engineering Design and Development. Lecture two hours; laboratory two hours. Prerequisite: Senior standing or permission of instructor.

EDTE 485 Safety Programs in Education and Occupational Settings**Credit 3**

This course is a study of exemplary safety practices through conference discussions, group demonstrations, and development of written safety programs for occupational education facilities. Organized plant visits and industrial safety programs are studied. Lecture three hours. Prerequisite: Senior standing or permission of instructor.

EDTE 486 Instructional Technology and Media Development**Credit 3**

The study of various instructional technology commonly used as learning tools to assist with instructional delivery is the focus of this course. Computers, software, hardware, the Internet, web-page design, e-portfolios, video and audio resources, and other multimedia devices are covered. Lecture two hours; laboratory two hours. Prerequisite: Senior standing or permission of instructor.

EDTE 499 Undergraduate Research in Technology Education**Credit 1-6**

This course is designed for the junior-senior undergraduate student who has an interest in pursuing a special problem as an independent research project. An Independent Study Contract must be prepared and submitted for the Department Chair's approval within the first week of the semester. Student cannot take more than two 499 courses for a total of 6 credits. Prerequisite: Consent of the instructor and approval of the Department Chair.

ELECTRICAL/ELECTRONICS ENGINEERING TECHNOLOGY**ETEE 303 Circuit Technology III****Credit 3**

This course covers advanced network analysis and provides an introduction to the use and applications of Laplace and Fourier transforms, filter theory, and computer applications. Lecture two hours. Laboratory two hours. Prerequisites: Junior Standing, CSDP 220 and MATH 211.

ETEE 314 Electric Power and Machinery**Credit 3**

This course focus on the generation, transmission and distribution of electrical energy, theory and operation of transformers, DC machines, and AC machines including three phase synchronous, asynchronous, single phase and their equivalent circuits and performance analysis. Lecture two hours; laboratory two hours. Prerequisites: Junior standing and ETEE 202.

ETEE 335 Logic and Switching Circuits**Credit 3**

This course will focus on the principles and application of asynchronous logic, encoder and decoder, control and programmable logic, multiplexer, demultiplexer, PLA, memory latches, systems and codes, counters, shift registers, computer arithmetic circuits, memory systems, static and dynamic RAM and ROMS, and interfacing. Lecture two hours; laboratory two hours. Prerequisites: Junior standing and ETEE 216.

ETEE 346 Control Circuits**Credit 3**

This course will focus on the study of open and closed loop control systems, principles of feedback control, analysis of system response and criteria of system stabilities and compensation. Lecture two hours. Laboratory two hours. Prerequisite: ETEE 303.

ETEE 355 Advanced Electronic and Computer Networks Credit 3
This is an introductory course in electronic circuits for computers that covers number systems, computer organization, assembly language programming, microprocessors, system components and interfacing concepts. Lecture two hours; laboratory two hours. Prerequisite: ETEE 335.

ETEE 421 Instrumentation and Measurements Credit 4
This course will focus on the fundamental concepts of mechanical and electronic measurement of distance, velocity, acceleration, time, pressure, force, strain. The course is also an introduction to development of measuring systems and calibration of these systems and the application of measuring systems to industrial technology. Lecture two hours; laboratory four hours. Prerequisites: Senior standing, CSDP 220, ETEE 202 and MATH 112.

ETEE 425 Communication and Microwave Technology Credit 3
The course will cover the basics of electronic communication technology, digital communication, codes, serial interfaces, error detection, data link control, protocol, networking and network topology. Lecture two hours. Laboratory two hours. Prerequisites: Permission of instructor and MATH 211.

ETEE 474 Nuclear Fundamentals Credit 3
This course will focus on the basic theory related to the nuclear energy complex, nuclear reactor design, isotopic and chemical separations and computer applications in problem solving. Lecture three hours. Prerequisites: Permission of the instructor and Senior standing.

ETEE 485 Design Technology I Credit 3
This course will focus on the design process, including creativity, analysis, synthesis, and decision-making. It will also cover applications of analytical techniques, experimental results and individual or group design projects, emphasizing the synthesis of a design solution to meet performance specifications. Lecture three hours. Prerequisites: ETEE 335, ETEE 421 and Senior standing.

ETEE 486 Design Technology II Credit 3
This course will focus on individual or group design projects requiring the synthesis of analytical, experimental and manufacturer's data for the development of an electronic system. The course will require execution of the design in sufficient detail to permit construction and testing or evaluation of a prototype, model, or mock-up and consideration of reliability, safety, human factors, and economics of production. Computer applications will be required. Lecture one hour; laboratory four hours. Prerequisites: CSDP 220 and ETEE 485.

ETEE 499 Undergraduate Research in Electrical/Electronic Engineering Technology Credit 1-6
This course is designed for the junior-senior undergraduate student who has an interest in pursuing a special problem as an independent research project. An Independent Study Contract must be prepared and submitted for the Department Chair's approval within the first week of the semester. Student cannot take more than two 499 courses for a total of 6 credits. Prerequisite: Consent of the instructor and approval of the Department Chair.

MECHANICAL ENGINEERING TECHNOLOGY

ETME 301 Thermodynamics and Heat Power Credit 3
This course covers the basic laws of thermodynamics and properties of fluids. Applications of the first and second laws of thermodynamics in the analysis of basic heat engines and their cycles used in power generation will also be covered. Lecture three hours. Prerequisites: CHEM 111, MATH 211 and PHYS 122.

ETME 303 Machine Design I Credit 3
This course covers design and selection of machine elements, power transmissions, shafts, couplings, keys, threaded fasteners, belts, rivets, welding, lubrication, and sleeve bearings with roller bearings. Lecture three hours. Prerequisites: CMTE 314 and MATH 112.

ETME 304 Machine Design II Credit 3
This course covers the design and selection of machine elements, including chain drives, hoists and conveyors, brakes, clutches, power screws, gears, cams, springs, and fly wheels. Lecture three hours. Prerequisite: ETME 303.

ETME 318 Applied Dynamics Credit 3
This course covers systems of heavy particles and rigid bodies at rest and in motion, rectilinear motion, curvilinear motion, rotation, plane motion, work, energy, power, impulse, and momentum. Lecture three hours. Prerequisites: CMTE 313 and MATH 211.

ETME 325 Engineering Materials Credit 3

This course covers the nature, properties, and behavior of materials used in engineering applications. Materials studied include metals, plastics, polymers, and composites. The production of metals, heat treatment, and powder metallurgy will also be covered. Lecture three hours. Prerequisites: CHEM 111, MATH 112, and PHYS 122.

ETME 342 Fluid Mechanics Credit 3

This course covers fluid flow concepts and basic equations, laminar and turbulent flow, flow in pipes and open channels, energy and momentum equations, Bernoulli's equation, principles of flow measurements and instrumentation, fluid power, and machinery. Lecture two hours; laboratory two hours. Prerequisites: CMTE 313 and MATH 211.

ETME 356 Manufacturing Processes Credit 3

This course covers modern industrial metal working and fabrication processes. Machines and tools used in these processes are also covered. Additionally, study includes casting, welding, cold and hot working, metal cutting processes, and quality control. Lecture two hours; laboratory two hours. Prerequisites: MATH 110 and PHYS 122.

ETME 360 CNC Machines and Programming Credit 3

This course covers principles of numerical control, Computer Numerically Controlled (CNC) machines used in production, CNC machine capabilities, and point to point programming using G-codes and auxiliary machine control functions. Computer assisted design and computer assisted CNC machine programming are also studied. Lecture two hours; laboratory two hours. Prerequisites: CSDP 220, ETME 356 and MATH 110.

ETME 381 Instrumentation and Measurements Credit 4

This course covers the fundamental concepts of mechanical and electronic measurements of distance, velocity, acceleration, time, pressure, temperature, force, strain, and flow. Measurement systems, and application of selected instruments, with emphasis on interpretation of results are also studied. Lecture three hours; laboratory two hours. Prerequisites: CSDP 220, ETEE 202 and MATH 112.

ETME 395 Industrial Practice Credit 3

This course requires work experience practice in a Mechanical Engineering Technology related field. A minimum of 10 weeks of employment is required. The supervisor of the student must submit a confidential performance evaluation letter for the work done by the student to the faculty advisor. Students must register for the course before commencement of industrial practice for proper credit. Prerequisite: Prior approval of the faculty advisor.

ETME 423 Heating, Ventilating, and Air Conditioning Credit 3

This course covers heat loss, heat gain, the control of temperature and humidity in buildings, and the basics of designing heating, ventilating and air conditioning systems, including sizing of pipes and ducts. Selection of HVAC equipment is also covered. Lecture two hours; laboratory two hours. Prerequisites: EDTE 132, ENGL 305, MATH 112 and PHYS 122.

ETME 445 Computer Integrated Manufacturing Credit 3

This course covers principles of computer integrated manufacturing, system integration and architecture, data base development, interfaces, hardware and software requirements, communication protocols and programming. Lecture three hours. Prerequisites: CSDP 220 and ETME 356.

ETME 475 Mechanical Systems Design I Credit 3

This course covers the design process; creativity, analysis, synthesis, and decision making, applications of analytical techniques and experimental results, and individual or group projects emphasizing the synthesis of a design solution to meet performance specifications. Use of computers in design and drafting will be required. Lecture two hours. Laboratory two hours. Prerequisites: Senior standing, CSDP 220, ETME 303 and MATH 211.

ETME 476 Mechanical Systems Design II Credit 3

This course covers advanced individual or group design projects requiring the synthesis of analytical, experimental, and manufacturer's data for development of the design in sufficient detail to permit construction and testing or evaluation of prototype, model, or mock-up. Consideration of reliability, safety, human factors, and economics of construction are also covered. Use of computers in design and drafting will be required. Lecture two hours. Laboratory two hours. Prerequisite: ETME 475.

ETME 499 Undergraduate Research in Mechanical Engineering Technology Credit 1-6

This course is designed for the junior-senior undergraduate student who has an interest in pursuing a special problem as an independent research project. An Independent Study Contract must be prepared and submitted for the Department Chair's approval within the first week of the semester. Student cannot take more than two 499 courses for a total of 6 credits. Prerequisite: Consent of the instructor and approval of the Department Chair.

DIRECTORY OF FACULTY

- Arumala, Joseph**..... **Professor**
 B.S., University of Lagos; M.S., Ph.D.; Clemson University, P.E.
- Bahramian, Bahram** **Lecturer and Director**
Construction Management Technology Program at the Universities at Shady Grove
 MBA, University of Dayton; Ph.D., Civil Engineering, University of Birmingham, England
- Copeland, Sr., Leon L.**..... **Professor and Chair**
 B.S., Norfolk State University; M.Ed., Virginia State University; Ed.D, Virginia Polytechnic Institute and State University
- Day, Gerald F.**..... **Professor and Coordinator**
Career and Technology Education Graduate Program at the Baltimore Museum of Industry
 B.S., State University of New York; M.Ed., and Ph.D., University of Maryland College Park
- Fotouhi, Kenny M.**..... **Professor**
 B.S., Tehran Polytechnic; M.S., Oklahoma State University; Ph.D., University of Missouri-Rolla
- Molavi, Jeffrey M.**..... **Assistant Professor**
 B.S. National University of Tehran, M.S. and Ph.D., University of Colorado
- Salgado, Carlos A.**..... **Assistant Professor**
 B.S., National Autonomous University of Nicaragua; M.S., Ohio State University; Ph.D., University of Maryland
- Yilmaz, Emin**..... **Professor**
 B.S. and M.S., Middle East Technical University, Turkey; Ph.D., University of Michigan, P.E.