

Applied Engineering Sciences

University Requirements (23-24)

Writing, Rhetoric and American Cultures (WRA)	4
Integrative Studies in Humanities (IAH)	8
Integrative Studies in Social Sciences (ISS)	8
Bioscience (one of the following):	
BS 110, BS 111, ENT 205, MMG 201, MMG 301, PLB 105, PSL 250, ZOL 141	3-4

College Requirements (30)

CEM 141 General Chemistry	4
*EGR 100 Introduction to Engineering Design	2
*EGR 102 Introduction to Engineering Modeling	2
MTH 132 Calculus I	3
MTH 133 Calculus II	4
MTH 234 Multivariable Calculus	4
MTH 235 Differential Equations	3
PHY 183 Physics for Scientists & Engineers I	4
PHY 184 Physics for Scientists & Engineers II	4

Major Requirements (39)

A. Complete all of the following courses:

CE 221 Statics	3
CEM 161 Chemistry Laboratory I	1
EGR 300 Technology, Society and Public Policy	2
EGR 410 System Methodology	2
ME 222 Mechanics of Deformable Solids	4
ME 280 Graphic Communications	2
MGT 325 Management Skills and Processes	3
MSE 250 Materials Science and Engineering	3
PSY 101 Introductory Psychology	4
PSY 255 Industrial & Organizational Psychology	3
STT 351 Probability & Statistics for Engineering	3

B. Select one of the following courses:

ECE 201 Circuits and Systems I	3
ECE 230 Digital Logic Fundamentals	3
ECE 345 Electronic Instrumentation & Systems	3

C. Select one of the following courses:

BE 230 Engineering Anlys of Biological Systems	3
CE 280 Principles of Environ Engr & Science	3
CHE 201 Material and Energy Balances	3

D. Select one of the following courses:

ME 201 Thermodynamics	3
MSE 310 Phase Equilibria in Materials	3

*EGR 100 and EGR 102 are required for all students matriculating at MSU beginning Fall Semester, 2008. Students who matriculate before Fall 2008 must complete CSE 131 in place of EGR 102.

Some courses may have prerequisites, which are not otherwise required in the program. Students should check course descriptions to ensure they are aware of prerequisites.

E. Cognates

Cognates in Business-Supply Chain Management and Telecommunication are available to majors in Applied Engineering Sciences. Students should consult with their adviser prior to selection of a cognate. Students must select one of the following cognates.

Business-Supply Chain Management (27)

A. All of the following courses:

ACC 201 Principles of Financial Accounting	3
ACC 202 Principles of Management Accounting	3
EC 210 Economics Principles Using Calculus	3
FI 320 Introduction to Finance	3
GBL 323 Introduction to Business Law	3
MSC 303 Introduction to Supply Chain Mgt	3
MSC 327 Introduction to Marketing	3
MSC 372 Manufacturing Planning and Control	3

B. One of the following courses:

BE 431 Bio-resource Optimization	3
ME 477 Manufacturing Processes	3
ME 497 Biomechanical Design	3
STT 471 Statistics for Quality and Productivity	3
MSE 425 Biomaterials and Biocompatibility	3
MSE 426 Introduction to Composite Materials	3

Telecommunication (30)

ACC 230 Survey of Accounting Concepts	3
EC 201 Introduction to Microeconomics	3
TC 100 The Information Society	3
TC 200 History and Economics of Telecommunication	4
TC 201 Introduction to Telecommunication Technology	4
TC 310 Basic Telecommunication Policy	4
TC 361 Data Communication	3
TC 463 Network Design and Implementation I	3
TC 465 Network Design & Implementation II (W)	3

Other Electives (Variable)

Total credits Required for Degree 128

The requirements listed above apply to students admitted to the major of Applied Engineering Sciences in the Engineering Undergraduate Studies Office (UGS) beginning Fall, 2008. The Engineering Undergraduate Studies Office constantly reviews requirements and reserves the right to make changes as necessary. Consequently, each student is strongly encouraged to consult with his/her adviser to obtain assistance in planning and appropriate schedule of courses. Students who have questions about Applied Engineering Sciences should contact the Engineering Undergraduate Studies Advising Office, 1410 Engineering Building, phone (517) 355-6616 extension 1.

Applied Engineering Sciences

Sample Program

Freshman Year				Sophomore Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CEM 141	4	Bioscience	3/4	Cognate #1	3	CE 221	3
CEM 161	1	CSE 131	3	IAH 20X	4	Cognate #2	3
EGR 100	2	EGR 102	2	MTH 234	4	ISS 2XX	4
ME 280	2	MTH 133	4	PHY 183	4	MTH 235	3
MTH 132	3	PSY 101	4	PSY 255	3	MSE 250	3
WRA 1XX	4						
Total	16	Total	16/17	Total	18	Total	16

Junior Year				Senior Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
Cognate #3	3	Cognate #5	3	Cognate #6	3	Cognate #8	3
Cognate #4	3	IAH XXX	4	Cognate #7	3	Cognate #9	3
EGR 300	2	Item B Choice	3	ISS 3XX	4	EGR 410	2
ME 222	4	Item C Choice	3	Elective	1/2	Elective	3
PHY 184	4	Item D Choice	3	MGT 325	3	Elective	3
				STT 351	3		
Total	16	Total	16	Total	17/18	Total	14

Program Objectives

The Applied Engineering Sciences major is an undergraduate, interdisciplinary program that combines scientific and technical course work with a complementary cognate resulting in a Bachelor of Science degree awarded by the College of Engineering. It is the intent of the Applied Engineering Sciences major to provide educational opportunities for the undergraduate student who wishes to gain a broad foundation in the engineering sciences, core engineering disciplines and their application to one of the cognate areas. Cognates are available in Business - Supply Chain Management and Telecommunication. On a space available basis, an Information Technology Specialization can be combined with either of the two cognates.

The program is designed to develop an individual who:

1. Brings to the workplace a knowledge of business, management, and logistics, grounded in calculus, basic sciences, and engineering sciences;
2. Can apply the rigor of their education and training to a diverse set of problems;
3. Is prepared to work at the interfaces of planning, design, production, procurement, marketing, distribution, sales, and management;
4. Can effectively communicate across diverse professional disciplines; and
5. Is knowledgeable of contemporary technological and societal issues and can facilitate the effective deployment of new technologies.