

Applied Engineering Sciences

1. University Requirements: (23)

Writing, Rhetoric and American Cultures (WRA)	4
Integrative Studies in Humanities (IAH)	8
Integrative Studies in Social Sciences (ISS)	8
Bioscience: BS 161 Cell and Molecular Biology	3

2. College Requirements: (27)

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
PHY 183 Physics for Scientists & Engineers I	4
PHY 184 Physics for Scientists & Engineers II	4

3. Major Requirements: (64-67)

A. Complete all of the following courses: (46)

ACC 230 Survey of Accounting Concepts	3
CE 221 Statics	3
CEM 161 Chemistry Laboratory I	1
COM 225 Intro to Interpersonal Communication	3
EC 201 Introduction to Microeconomics	3
EC 202 Introduction to Macroeconomics	3
ECE 201 Circuits and Systems I	3
EGR 210 Global Sys: Econ, Engr, Environment	3
EGR 310 Sustainable Systems Analysis	3
EGR 410 System Methodology (W)	3
ME 201 Thermodynamics	3
ME 280 Graphic Communications	2
MGT 325 Management Skills and Processes	3
MKT 317 Quantitative Bus Research Methods	3
MSE 250 Materials Science and Engineering	3
PHY 191 Physics Lab for Scientists, I	1
STT 315 Intro to Prob & Statistics for Business	3

B. Select one of the following courses: (3)

BE 230 Engr Anlys of Biological Systems	3
CE 280 Principles of Environ Engr & Science	3

Total credits Required for Degree 120

The requirements listed above apply to students admitted to the major of Applied Engineering Sciences in the Engineering Undergraduate Studies Office (UGS) beginning Fall, 2010. 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.

C. Concentrations (15-18)

In consultation with their academic advisor, students must select one of the following concentrations: computer science, supply chain management, technical sales, or telecommunications. For students interested in computer science, the minimum criteria for acceptance is the completion of Computer Science and Engineering 231 and 260 with a combined grade-point average in those two courses of 3.0. The concentration will be noted on the student's academic record.

Computer Science: (18)

1. All of the following courses: (12)

CSE 231 Introduction to Programming I	4
CSE 232 Introduction to Programming II	4
CSE 260 Discrete Structures in Computer Sci	4

2. One of the following courses: (3)

CSE 320 Computer Organization & Architecture	3
CSE 331 Algorithms and Data Structures	3
CSE 335 Object-oriented Software Design	3

3. One of the following courses: (3)

CSE 410 Operating Systems	3
CSE 420 Computer Architecture	3
CSE 440 Intro to Artificial Intelligence	3
CSE 471 Media Processing & Multimedia Computing	3
CSE 472 Computer Graphics	3

Supply Chain Management: (15)

FI 320 Introduction to Finance	3
MKT 327 Introduction to Marketing	3
SCM 303 Introduction to Supply Chain Mgt	3
SCM 371 Procurement & Supply Management	3
SCM 372 Manufacturing Planning and Control	3

Technical Sales: (18)

COM 360 Advanced Sales Communication	3
COM 483 Practicum in Sales Communication	1
FI 320 Introduction to Finance	3
MKT 313 Personal Selling and Buying Processes	3
MKT 327 Introduction to Marketing	3
MKT 383 Sales Management	3
SCM 474 Negotiations	2

Telecommunications: (18)

TC 100 The Information Society	3
TC 201 Introduction to Media & Comm Technology	3
TC 210 Media & Communication Policy	3
TC 300 Economics of Media	3
TC 361 Information & Communication Tech Mgt	3
TC 365 Intro to Network Management	3

Other Electives (Variable)

Sample Program – Computer Science Concentration

Freshman Year				Sophomore Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CEM 141	4	CEM 161	1	CE 221	3	CSE 260	4
COM 225	3	CSE 231	4	CSE 232	4	IAH 201-210	4
EGR 100	2	MTH 133	4	ME 280	2	ME 201	3
MTH 132	3	MSE 250	3	MTH 234	4	PHY 184	4
WRA 1XX	4			PHY 183	4		
Total	16	Total	12	Total	17	Total	15

Junior Year				Senior Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CE 280	3	CSE 410	3	BS 161	3	ACC 230	3
CSE 320	3	EC 210	3	EC 202	3	EGR 410	3
EGR 210	3	EGR 310	3	ECE 201	3	Elective	3
IAH 211 or higher	4	ISS 200-Level	4	Elective	2	MGT 325	3
PHY 191	1	MKT 317	3	ISS 300-Level	4		
STT 315	3						
Total	17	Total	16	Total	15	Total	12

Sample Program – Supply Chain Management Concentration

Freshman Year				Sophomore Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CEM 141	4	CEM 161	1	CE 221	3	EC 201	3
COM 225	3	MTH 133	4	EGR 210	3	IAH 201- 210	4
EGR 100	2	MSE 250	3	MTH 234	4	ME 201	3
EGR 102	2	PHY 183	4	PHY 184	4	ME 280	2
MTH 132	3	WRA 1XX	4			PHY 191	1
						STT 315	3
Total	14	Total	16	Total	14	Total	16

Junior Year				Senior Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CE 280	3	ACC 230	3	BS 161	3	EGR 410	3
IAH 210 or higher	4	ECE 201	3	EC 202	3	Elective	3
MKT 317	3	EGR 310	3	FI 320	3	Elective	3
MKT 325	3	ISS 200-Level	4	SCM 372	3	MKT 327	3
SCM 303	3	SCM 371	3	ISS 300-Level	4		
Total	16	Total	16	Total	16	Total	12

Sample Program – Technical Sales Concentration

Freshman Year				Sophomore Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CEM 141	4	CEM 161	1	CE 221	3	EC 201	3
COM 225	3	MTH 133	4	EGR 210	3	IAH 201-210	4
EGR 100	2	MSE 250	3	MTH 234	4	ME 201	3
EGR 102	2	PHY 183	4	PHY 184	4	ME 280	2
MTH 132	3	WRA 1XX	4			PHY 191	1
						STT 315	3
Total	14	Total	16	Total	14	Total	16

Junior Year				Senior Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CE 280	3	COM 360	3	BS 161	3	ACC 230	3
EC 202	3	ECE 201	3	FI 320	3	COM 483	1
IAH 211 or higher	4	EGR 310	3	ISS 300-Level	4	EGR 410	3
MKT 313	3	ISS 200-Level	4	MKT 317	3	Elective	3
MKT 327	3	MKT 383	3	SCM 474	2	MGT 325	3
Total	16	Total	16	Total	15	Total	13

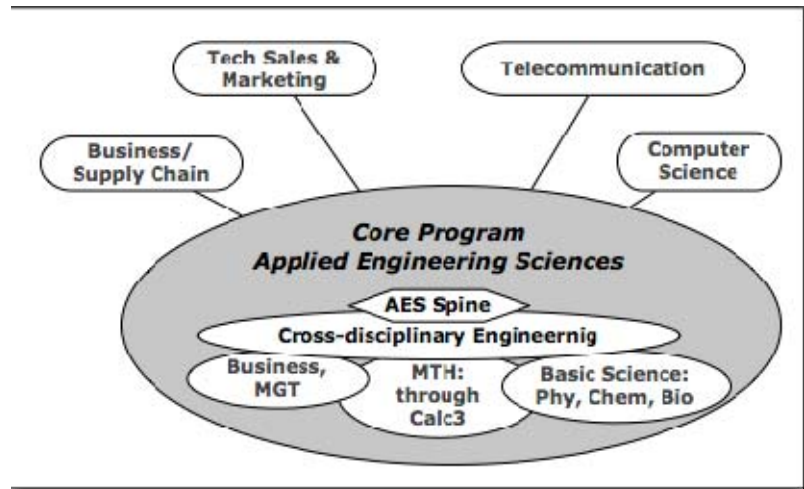
Sample Program – Telecommunications Concentration

Freshman Year				Sophomore Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CEM 141	4	CEM 161	1	CE 221	3	IAH 201-210	4
COM 225	3	EGR 102	2	EGR 210	3	ME 201	3
EGR 100	2	MTH 133	4	MTH 234	4	PHY 191	1
MTH 132	3	PHY 183	4	PHY 184	4	STT 315	3
TC 100	3	WRA 1XX	4			TC 201	3
Total	15	Total	15	Total	14	Total	14

Junior Year				Senior Year			
Fall	Credits	Spring	Credits	Fall	Credits	Spring	Credits
CE 280	3	ACC 230	3	BS 161	3	EC 202	3
IAH 211 or higher	4	ECE 201	3	EC 201	3	EGR 410	3
MKT 317	3	EGR 310	3	ISS 300-Level	4	Elective	3
MKT 325	3	ISS 200-Level	4	ME 280	2	MSE 250	3
TC 210	3	TC 300	3	TC 361	3	TC 365	3
Total	16	Total	16	Total	15	Total	15

Program Objectives

The Applied Engineering Sciences (AES) major is an undergraduate BS degree program in the MSU College of Engineering. AES is a multidisciplinary program that integrates core studies in mathematics, statistics, and science, core studies in multiple engineering disciplines, and core studies in business fundamentals and management. Built on this strong technical and business base, an AES student completes his or her studies by selecting one of four concentration areas: supply chain management, technical sales and marketing, telecommunications, or computer science.



AES is focused on developing strong problem solvers who have good people skills, and who bring to their workplace an integrated approach to understanding and managing complex business and engineered systems. More specifically, the AES program objectives are for each AES graduate to have the ability to:

- a. apply an integrated knowledge of engineering and business to problem solving, and;
- b. effectively function at the interfaces of engineering, design, production, procurement, marketing, distribution, sales, and management;
- c. effectively function in work teams, including functioning as a manager and a leader;
- d. effectively communicate in oral, written, and new media contexts;
- e. effectively apply the strengths of a technically based education to all problem solving contexts; and
- f. effectively demonstrate the nimbleness and flexibility to respond to new types of problems and new opportunities based on being a life long learner.