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 (one of the following):
      BS 161, ENT 205, IBIO 150, MMG 141
      MM 201, PLB 105, PSL 250 3-4

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 294 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
      AESC 210 Global Sys: Econ, Engr, Environment 3
      AESC 310 Sustainable Systems Analysis 3
      AESC 410 Capstone Project in Applied Egr Sci (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 Analysis of Biological Systems 3
      ENE 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, 2015. 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, 3508 Engineering Building, phone (517) 432-1352.

c. Concentrations (15-18)
   In consultation with their academic advisor, students must select one of the following concentrations: business law, computer science, packaging, supply chain management, technical sales, or media and information. 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.

Business Law (16-17)
1. All of the following courses: (13)
   EC 301 Intermediate Microeconomics 3
   EC 425 Law and Economics 3
   GBL 295 Business Law, Public Policy & Ethics 3
   GBL 480 Environmental Law & Sustainability for Business: From Local to Global 3
   PHY 192 Physics Laboratory for Scientists, II 1

2. One of the following courses (3 or 4 credits):
   PHL 345 Business Ethics 4
   PHL 354 Philosophy of Law 3
   PLS 320 Judicial Politics 3
   PLS 321 Constitutional Law 3
   PLS 322 Comparative Legal Systems 3

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 4

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

Packaging (17)
All of the following courses:
   CEM 143 Survey of Organic Chemistry 4
   PKG 101 Principles of Packaging 3
   PKG 221 Packaging with Glass and Metal 2
   PKG 322 Packaging with Paper and Paperboard 4
   PKG 323 Packaging with Plastics 4

Supply Chain Management: (15)
All of the following courses:
   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)

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>COM 360</td>
<td>Advanced Sales Communication</td>
<td>3</td>
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<tr>
<td>COM 483*</td>
<td>Practicum in Sales Communication</td>
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</tr>
<tr>
<td>FI 320</td>
<td>Introduction to Finance</td>
<td>3</td>
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<td>MKT 313</td>
<td>Personal Selling and Buying Processes</td>
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</tr>
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<td>MKT 327</td>
<td>Introduction to Marketing</td>
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<td>MKT 383</td>
<td>Sales Management</td>
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<td>SCM 474</td>
<td>Negotiations</td>
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*Requires a sales-based internship

Media and Information: (18)

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<tr>
<td>MI 101</td>
<td>Understanding Media and Information</td>
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<td>MI 201</td>
<td>Media &amp; Information Technologies &amp; Industries</td>
<td>3</td>
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<tr>
<td>MI 301</td>
<td>Bringing Media to Market</td>
<td>3</td>
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<tr>
<td>MI 305</td>
<td>Media &amp; Information Policy</td>
<td>3</td>
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<td>MI 361</td>
<td>IT Network Management &amp; Security</td>
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<td>MI 458</td>
<td>Project Management (W)</td>
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Other Electives (Variable)

Sample Program

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Sophomore Year</th>
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<tbody>
<tr>
<td>Fall</td>
<td>Spring</td>
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<tr>
<td>CEM 161</td>
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<td>COM 225</td>
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<th>Junior Year</th>
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<td>MSE 250</td>
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<td>MKT 317</td>
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<td>AESC 310</td>
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<td>ENE 280 or BE 230</td>
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<td>ISS 2XX</td>
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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 six concentration areas: business law, computer science, packaging, supply chain management, technical sales or media and information.

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 lifelong learner.

Last revised May 2015