## MAJOR: MECHANICAL ENGINEERING, B.S.

DEPARTMENT OF MECHANICAL & INDUSTRIAL ENGINEERING

The B.S.M.E. program integrates topics from chemistry, physics, advanced mathematics and statistics, and core engineering science to prepare graduates to work professionally in both thermal and mechanical systems, from design, development, manufacture, and use of products involving mechanical and thermal elements. The program emphasizes the production engineering approach to mechanical and thermal systems design and development. Mechanical engineering program educational objectives: B.S.M.E. graduates will 1. Solve mechanical engineering problems by applying contemporary engineering tools to propose and implement effective solutions. 2. Design, develop, implement and improve thermal and mechanical systems. 3. Contribute as informed, ethical, and responsible members of the engineering profession and society as a whole. 4. Continue lifelong professional development throughout their career. 5. Collaborate and communicate effectively with others as a member or leader of an engineering or multidisciplinary team in an international setting.

with others as a member or leader of an engineering of		· ·	
Түріс	al Prog	FRAM OF STUDY	
FIRST YEAR			
FALL SEMESTER	SPRING SEMESTER		
WRIT 1120 College Writing	3 cr	CHEM 1151 General Chemistry I	5 cr
CS programming course <sup>1</sup>	3-5	IE 1225 Intro to Design and Manufacturing Engineering <sup>3</sup>	4 cr
MATH 1296 Calculus I^		MATH 1297 Calculus II	
or MATH 1596 Honors Calculus I	5 cr	or MATH 1597 Honors Calculus II	5 cr
Liberal education requirement <sup>2</sup>	<u>3 cr</u>	PHYS 2011 General Physics I	<u>4 cr</u>
Total:	14-16cr	Total:	18 cr
SECOND YEAR			
ENGR 2015 Statics	3 cr	ENGR 2016 Mechanics of Materials	3 cr
ENGR 2110 Intro to Material Science for Engineers	3 cr	ENGR 2026 Dynamics	3 cr
MATH 3280 Differential Equations w/Linear Algebra	4 cr	ECE 2006 Electrical Circuit Analysis	4 cr
PHYS 2012 General Physics II	4 cr	MATH 3298 Calculus III	4 cr
ECON 1022 Principles of Economics: Macro		STAT 3411 Engineering Statistics	<u>3 cr</u>
or ECON 1023 Principles of Economics: Micro	<u>3 cr</u>	Total:	17 cr
	17 cr		
THIRD YEAR			
WRIT 3130 Advanced Writing: Engineering <sup>4</sup>	3 cr	ME 3211 Thermodynamics	3 cr
IE 3122 Materials Engineering lab	2 cr	ME 3222 Controls & Kinematics lab	2 cr
IE 3125 Engineering Economic Analysis	3 cr	ME 3230 Kinematics & Mechatronics	3 cr
IE 3130 Materials Processing Engineering	3 cr	ME 4145 CAD/CAM	4 cr
ME 3111 Fluid Mechanics	3 cr	Liberal education <sup>2</sup>	<u>3 cr</u>
ME 3140 System Dynamics & Control	<u>3 cr</u>	Total:	15 cr
	17 cr		
FOURTH YEAR			
EMGT 4110 Engineering Professionalism & Practice	2 cr	IE 4993 Industrial Engineering Seminar	1 cr
ME 4112 Heat & Mass Transfer <sup>5</sup>	3 cr	ME 4255 Multidisciplinary Senior Design	4 cr
ME 4122 Heat Transfer, Thermo. & Fluid Mechanics lab	2 cr	ME elective <sup>7</sup>	3 cr
ME 4175 Machine Design	3 cr	ME elective <sup>7</sup>	3 cr
ME technical elective <sup>6</sup>	3-4 cr	Liberal education <sup>2</sup>	<u>4 cr</u>
Liberal education <sup>2</sup>	<u>3 cr</u>	Total:	15 cr
Total:	16-17cr		

<sup>^</sup>First math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

For additional information: Department of Mechanical & Industrial Engineering • 105 Voss-Kovach Hall 218-726-6161 • mie@d.umn.edu • http://www.d.umn.edu/mie

Last update: February 22, 2008

<sup>&</sup>lt;sup>1</sup> Students must choose one computer programming course from the following: CS 1121, CS 1131, CS 1511 or CS 2121.

<sup>&</sup>lt;sup>2</sup> In addition to the above listed requirements, students must complete one course *each* from liberal education categories 7, 8, and 9, and one additional course from *either* 9 or 10. Courses from categories 9 and 10 must have different course designators.

<sup>&</sup>lt;sup>3</sup> Students may take both ENGR 1210 and IE 2222 in place of IE 1225.

<sup>&</sup>lt;sup>4</sup> Students may take WRIT 3150 or WRIT 3180 in place of WRIT 3130.

<sup>&</sup>lt;sup>5</sup> Students may take ChE 3112 in place of ME 4112.

<sup>&</sup>lt;sup>6</sup> Students must take 3 credits of ME technical electives chosen from the following ME courses: 4135, 4245, 4495, 5305, 5315, 5325, 5335.

<sup>&</sup>lt;sup>7</sup> Students must take 2 courses and at least 6 credits of ME electives. See list of elective course options in the 2007-09 catalog

## MECHANICAL ENGINEERING, B.S.

FIRST VEAR   WRIT 1120 College Writing   3   HS chemistry, HS algebra   CHEM 1151 General Chemistry   5   HS chemistry, HS algebra   CS programming course   3-5	Major Course Requirements	CREDITS	Prerequisites	SEMESTER TO BE COMPLETED	Grade
Second Nation   Second Remistry   Second Remis					
Second Second Manufacturing Engineers	WRIT 1120 College Writing	3			
IE 1225 Intro to Design and Marufacturing Engineer.3			HS chemistry, HS algebra		
MATH 1296 Calculus I		3-5			
MATH 1296 Calculus I	IE 1225 Intro to Design and Manufacturing Engineer.3	4	MATH 1296 or 1596		
MATH 1297 Calculus II	MATH 1296 Calculus I^	5	Math placement or MATH 1250		
Or MATH 1597 Honors Calculus II	or MATH 1596 Honors Calculus I		Placement		
PHYS 2011 General Physics	MATH 1297 Calculus II	5	MATH 1290, 1296 or 1596 with C- or better		
SECOND YEAR	or MATH 1597 Honors Calculus II		MATH 1596		
SECOND YEAR	PHYS 2011 General Physics I	4	MATH 1296 or 1596		
ECCNO YEAR		3			
ECE 2006 Electrical Circuit Analysis	4			L	
ECON 1022 Principles of Economics: Micro or ECON 1023 Principles of ECON 1024 Principles of ECON 1023 Principles of ECON 1024 Principles of ECON 102		4	PHYS 2011, MATH 3280 (concurrent reg. OK)		
Second		<u>'</u>			
ENGR 2015 Staties		3			
ENGR 2116 Intro to Material Science for Engineers   3					
ENGR 2016 Mechanics of Materials   3					
ENGR 2026 Dynamics					
MATH 1297 with a C- or better   MATH 1297 with a C- or better   MATH 3298 Calculus III   4   MATH 1297 with a C- or better					
MATH 1297 with a C- or better	-				
PHYS 2012 General Physics II					
STAT 3411 Engineering Statistics   3   MATH 1297					
WRIT 3130 Advanced Writing: Engineering4   3   WRIT 1120, 60 credits					
WRIT 3130 Advanced Writing: Engineering 4   3   WRIT 1120, 60 credits		3	MATH 1297		
IE 3122 Materials Engineering lab  IE 3125 Engineering Economic Analysis  IE 3130 Materials Processing Engineering  3 BSIE or BMSE major, STAT 3411(concurrent OK)  IE 3130 Materials Processing Engineering  3 ENGR 2110, 2016, STAT3411  ME 3111 Fluid Mechanics  ME 3140 System Dynamics & Control  3 CS course, ECE 2006, Math 3298, BSME  ME 3211 Thermodynamics  3 Phys 2012, ME 3111, BSME  ME 3222 Controls & Kinematics lab  2 3140 with C- or better, IE 3122, concurrent w/3230  ME 3230 Kinematics & Mechatronics  3 3140  ME 4145 CAD/CAM  4 ENGR 2016, BSIE Intl Eng, or BSME candidate  Iberal education <sup>2</sup> 3 FOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice  1 WRIT 31xx, Engineer. major, w/in 2 sem. of grad  IE 4993 Industrial Engineering Seminar  1 BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  4 ENGR 2016, Engr 2016, Engr 2110, BSME candidate  Concurrent w/4112 or ChE 3112 or instructor perm.  ME 4175 Machine Design  3 Engr 2016, Engr 2110, BSME candidate  4 EMgt 4110, BSME candidate  5 Engr 2016, Engr 2110, BSME candidate  6 EMgt 4110, BSME candidate	THIRD YEAR				
IE 3125 Engineering Economic Analysis IE 3130 Materials Processing Engineering 3 BSIE or BMSE major, STAT 3411(concurrent OK) IE 3130 Materials Processing Engineering 3 ENGR 2110, 2016, STAT3411  ME 3111 Fluid Mechanics 3 Engr 2026, BSME or BSChE cand CS course, ECE 2006, Math 3298, BSME ME 3211 Thermodynamics 3 Phys 2012, ME 3111, BSME ME 3222 Controls & Kinematics lab 2 3140 with C- or better, IE 3122, concurrent w/3230 ME 3230 Kinematics & Mechatronics 3 3140 ME 4145 CAD/CAM 4 ENGR 2016, BSIE Intl Eng, or BSME candidate Liberal education <sup>2</sup> 3 BSIE or BMSE major, STAT 3411(concurrent OK) ENGR 2110, 2016, STAT3411   WE 3111, Fluid Mechanics ME 3140 System Dynamics & Control A ENGR 2016, BSIE Intl Eng. or BSME candidate  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  IE 4993 Industrial Engineering Seminar 1 BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab ME 4124 Heat Transfer, Thermo., Fluid Mech. lab ME 4255 Multidisciplinary Senior Design 4 Engr 2016, Engr 2110, BSME candidate  EMgt 4110, BSME candidate	WRIT 3130 Advanced Writing: Engineering <sup>4</sup>	3	WRIT 1120, 60 credits		
IE 3130 Materials Processing Engineering  3 ENGR 2110, 2016, STAT3411  ME 3111 Fluid Mechanics  ME 3140 System Dynamics & Control  3 CS course, ECE 2006, Math 3298, BSME  ME 3211 Thermodynamics  3 Phys 2012, ME 3111, BSME  ME 3222 Controls & Kinematics lab  2 3140 with C- or better, IE 3122, concurrent w/3230  ME 3230 Kinematics & Mechatronics  3 3140  ME 4145 CAD/CAM  4 ENGR 2016, BSIE Intl Eng, or BSME candidate  Liberal education <sup>2</sup> 3 WRIT 31xx, Engineer. major, w/in 2 sem. of grad  IE 4993 Industrial Engineering Seminar  1 BSIE, BSME, BSCHE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  2 Concurrent w/4112 or ChE 3112 or instructor perm.  ME 4175 Machine Design  3 Engr 2016, Engr 2110, BSME candidate  ME 4255 Multidisciplinary Senior Design  4 EMgt 4110, BSME candidate  ME elective <sup>7</sup> 3 ME elective <sup>7</sup> 3 The dective or As	IE 3122 Materials Engineering lab	2	IE 2222		
ME 3111 Fluid Mechanics  ME 3140 System Dynamics & Control  ME 3211 Thermodynamics  ME 3221 Thermodynamics  ME 3222 Controls & Kinematics lab  ME 3230 Kinematics & Mechatronics  ME 4145 CAD/CAM  Liberal education <sup>2</sup> FOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice  E 4993 Industrial Engineering Seminar  ME 4122 Heat & Mass Transfer <sup>5</sup> ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME elective <sup>7</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> A SIMB SIE, BSME or BSChE cand  SC course, ECE 2006, Math 3298, BSME  BSME or BSChE, DSSME  CS course, ECE 2006, Math 3298, BSME  BSME 3111, BSME  A SI11, BSME  A SI11, BSME  BSME 3140 with C- or better, IE 3122, concurrent w/3230  3140  ENGR 2016, BSIE Intl Eng, or BSME candidate  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  BSIE, BSME, BSChE, BSECE, or MEHS cand.  BSIE, BSME, BSChE, BSECE, or MEHS cand.  Concurrent w/4112 or ChE 3112 or instructor perm.  E 4973 Multidisciplinary Senior Design  ME 4255 Multidisciplinary Senior Design  ME elective <sup>7</sup> 3 ME elective <sup>7</sup> 3 Liberal education <sup>2</sup> 3-4	IE 3125 Engineering Economic Analysis	3	BSIE or BMSE major, STAT 3411(concurrent OK)		
ME 3140 System Dynamics & Control  ME 3211 Thermodynamics  ME 3221 Controls & Kinematics lab  ME 3222 Controls & Kinematics lab  ME 3230 Kinematics & Mechatronics  ME 4145 CAD/CAM  Liberal education²  FOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice  12 WRIT 31xx, Engineer. major, w/in 2 sem. of grad  13 Essem, BSCE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME delective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> A Liberal education <sup>2</sup> 3 CS course, ECE 2006, Math 3298, BSME  Phys 2012, ME 3111, BSME  3 1410 with C- or better, IE 3122, concurrent w/3230  3 140  ENGR 2016, BSIE Intl Eng, or BSME candidate  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  BSIE, BSME, BSChE, BSECE, or MEHS cand.  Concurrent w/4112 or ChE 3112 or instructor perm.  EMGT 4110, BSME candidate	IE 3130 Materials Processing Engineering	3	ENGR 2110, 2016, STAT3411		
ME 3140 System Dynamics & Control  ME 3211 Thermodynamics  ME 3221 Controls & Kinematics lab  ME 3222 Controls & Kinematics lab  ME 3230 Kinematics & Mechatronics  ME 4145 CAD/CAM  Liberal education²  FOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice  12 WRIT 31xx, Engineer. major, w/in 2 sem. of grad  13 Essem, BSCE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME delective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> A Liberal education <sup>2</sup> 3 CS course, ECE 2006, Math 3298, BSME  Phys 2012, ME 3111, BSME  3 1410 with C- or better, IE 3122, concurrent w/3230  3 140  ENGR 2016, BSIE Intl Eng, or BSME candidate  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  BSIE, BSME, BSChE, BSECE, or MEHS cand.  Concurrent w/4112 or ChE 3112 or instructor perm.  EMGT 4110, BSME candidate	ME 3111 Fluid Mechanics	3	Engr 2026, BSME or BSChE cand		
ME 3211 Thermodynamics  ME 3222 Controls & Kinematics lab  ME 3230 Kinematics & Mechatronics  ME 4145 CAD/CAM  Liberal education <sup>2</sup> BMGT 4110 Engineer. Professionalism & Practice  IE 4993 Industrial Engineering Seminar  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4125 Multidisciplinary Senior Design  ME 4255 Multidisciplinary Senior Design  ME dective <sup>7</sup> ME elective <sup>7</sup> August ME 3211 Thermodynamics  3 Phys 2012, ME 3111, BSME  3140 with C- or better, IE 3122, concurrent w/3230  3140  ENGR 2016, BSIE Intl Eng, or BSME candidate  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  BSIE, BSME, BSChE, BSECE, or MEHS cand.  3 211, Math 3298, BSME or BSChE candidate  Concurrent w/4112 or ChE 3112 or instructor perm.  EMG 4175 Machine Design  4 EMgt 4110, BSME candidate  ME 4255 Multidisciplinary Senior Design  ME technical elective <sup>6</sup> 3 ME elective <sup>7</sup> 3 ME elective <sup>7</sup> 3 Liberal education <sup>2</sup> 3-4					
ME 3222 Controls & Kinematics lab  ME 3230 Kinematics & Mechatronics  ME 4145 CAD/CAM  Liberal education <sup>2</sup> BOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice  EMGT 4110 Engineering Seminar  BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4121 Heat & Mass Transfer <sup>5</sup> ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4125 Multidisciplinary Senior Design  ME 4255 Multidisciplinary Senior Design  ME technical elective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> A 3140 with C- or better, IE 3122, concurrent w/3230  3140  ENGR 2016, BSIE Intl Eng, or BSME candidate  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  BSIE, BSME, BSChE, BSECE, or MEHS cand.  3211, Math 3298, BSME or BSChE candidate  Concurrent w/4112 or ChE 3112 or instructor perm.  Engr 2016, Engr 2110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate					
ME 3230 Kinematics & Mechatronics  ME 4145 CAD/CAM  Liberal education <sup>2</sup> BOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice  EMGT 4110 Engineering Seminar  BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME 4255 Multidisciplinary Senior Design  ME delective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> Author and the EMGR 2016, BSIE Intl Eng, or BSME candidate  ENGR 2016, BSIE Intl Eng, or BSME candidate  WRIT 31xx, Engineer. major, w/in 2 sem. of grad  BSIE, BSME, BSChE, BSECE, or MEHS cand.  Concurrent w/4112 or ChE 3112 or instructor perm.  Engr 2016, Engr 2110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate		2			
ME 4145 CAD/CAM Liberal education <sup>2</sup> 3 FOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice 1 WRIT 31xx, Engineer. major, w/in 2 sem. of grad 1 BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate ME 4122 Heat Transfer, Thermo., Fluid Mech. lab 2 Concurrent w/4112 or ChE 3112 or instructor perm. ME 4175 Machine Design 3 Engr 2016, Engr 2110, BSME candidate EMgt 4110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate					
FOURTH YEAR  EMGT 4110 Engineer. Professionalism & Practice  2 WRIT 31xx, Engineer. major, w/in 2 sem. of grad  IE 4993 Industrial Engineering Seminar  1 BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  2 Concurrent w/4112 or ChE 3112 or instructor perm.  ME 4175 Machine Design  3 Engr 2016, Engr 2110, BSME candidate  ME 4255 Multidisciplinary Senior Design  4 EMgt 4110, BSME candidate  ME technical elective <sup>6</sup> 3 ME elective <sup>7</sup> 3 ME elective <sup>7</sup> 3 Liberal education <sup>2</sup> 3-4	ME 4145 CAD/CAM	4	ENGR 2016, BSIE Intl Eng, or BSME candidate		
EMGT 4110 Engineer. Professionalism & Practice  2 WRIT 31xx, Engineer. major, w/in 2 sem. of grad  IE 4993 Industrial Engineering Seminar  1 BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  2 Concurrent w/4112 or ChE 3112 or instructor perm.  ME 4175 Machine Design  3 Engr 2016, Engr 2110, BSME candidate  ME 4255 Multidisciplinary Senior Design  4 EMgt 4110, BSME candidate  ME technical elective <sup>6</sup> 3 ME elective <sup>7</sup> 3 ME elective <sup>7</sup> 3 Liberal education <sup>2</sup> 3-4	Liberal education <sup>2</sup>	3			
EMGT 4110 Engineer. Professionalism & Practice  IE 4993 Industrial Engineering Seminar  I BSIE, BSME, BSChE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME technical elective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> J Liberal education <sup>2</sup> WRIT 31xx, Engineer. major, w/in 2 sem. of grad  Concurrent major, w/in 2 sem. of grad  BSIE, BSME, BSChE, BSECE, or MEHS cand.  S211, Math 3298, BSME or BSChE candidate  Concurrent w/4112 or ChE 3112 or instructor perm.  Engr 2016, Engr 2110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate	FOURTH YEAR				
IE 4993 Industrial Engineering Seminar  1 BSIE, BSME, BSCHE, BSECE, or MEHS cand.  ME 4112 Heat & Mass Transfer <sup>5</sup> 3 3211, Math 3298, BSME or BSChE candidate  ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design 3 Engr 2016, Engr 2110, BSME candidate  ME 4255 Multidisciplinary Senior Design 4 EMgt 4110, BSME candidate  ME technical elective <sup>6</sup> 3 ME elective <sup>7</sup> 3 ME elective <sup>7</sup> 3 Liberal education <sup>2</sup> 3-4		2	WRIT 31xx, Engineer. major, w/in 2 sem. of grad		
ME 4112 Heat & Mass Transfer <sup>5</sup> ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME technical elective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> All Liberal education <sup>2</sup> 3 3211, Math 3298, BSME or BSChE candidate  Concurrent w/4112 or ChE 3112 or instructor perm.  Engr 2016, Engr 2110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate		1			
ME 4122 Heat Transfer, Thermo., Fluid Mech. lab  ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME technical elective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> Liberal education <sup>2</sup> 3 Concurrent w/4112 or ChE 3112 or instructor perm.  Engr 2016, Engr 2110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate					
ME 4175 Machine Design  ME 4255 Multidisciplinary Senior Design  ME technical elective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> Liberal education <sup>2</sup> 3 Engr 2016, Engr 2110, BSME candidate  EMgt 4110, BSME candidate  EMgt 4110, BSME candidate					
ME 4255 Multidisciplinary Senior Design  ME technical elective <sup>6</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> ME elective <sup>7</sup> Liberal education <sup>2</sup> 4 EMgt 4110, BSME candidate  3 SME candidate  4 EMgt 4110, BSME candidate					
ME technical elective <sup>6</sup> 3         ME elective <sup>7</sup> 3         ME elective <sup>7</sup> 3         Liberal education <sup>2</sup> 3-4	0				
ME elective <sup>7</sup> 3           ME elective <sup>7</sup> 3           Liberal education <sup>2</sup> 3-4					
ME elective <sup>7</sup> 3 Liberal education <sup>2</sup> 3-4					
Liberal education <sup>2</sup> 3-4					
Liberal education <sup>2</sup> 3-4	Liberal education <sup>2</sup>	3-4			

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<sup>&</sup>lt;sup>3</sup> Students may take both ENGR 1210 and IE 2222 in place of IE 1225.

<sup>&</sup>lt;sup>4</sup>Students may take WRIT 3150 or WRIT 3180 in place of WRIT 3130.

<sup>&</sup>lt;sup>5</sup> Students may take ChE 3112 in place of ME 4112.

<sup>&</sup>lt;sup>6</sup> Students must take 3 credits of ME technical electives chosen from the following ME courses: 4135, 4245, 4495, 5305, 5315, 5325, 5335.

<sup>7</sup> Students must take 2 courses and at least 6 credits of ME electives. See list of elective course options in the 2007-09 catalog.