

BS MANUFACTURING ENGINEERING 2022-2026

This document displays only your course requirements at the time of publication of the catalog.
You must use your Degree Progress Report to track all your graduation requirements.

Note: No Major or Support courses may be selected as credit/no credit.

MAJOR COU	RSES				
IME 101	Intro to Industrial & Manufacturing Engr	1			
IME 141		1			
IME 142	Manufacturing Processes: Net Shape				
IME 144	Manufacturing Processes: Materials Joining				
	Introduction to Design and Manufacturing				
IME 156	Basic Electronics Manufacturing				
IME 223	Process Improvement Fundamentals				
IME 244	Intermediate Design and Manufacturing				
IME 314	Engineering Economics	3			
or IME 315	Financial Decision Making for Engineers				
IME 327	Test Design & Analysis in Manufacturing Engr				
IME 330	Fundamentals of Manufacturing Engineering				
IME 335	Computer-Aided Manufacturing I				
IME 342	Manufacturing Systems Integration				
IME 356	Manufacturing Automation				
IME 417	Supply Chain and Logistics Management	4			
IME 418	Product-Process Design	4			
IME 430	Quality Engineering	4			
IME 450	Manufacturing Process and Tool Engineering	4			
IME 481	Senior Design Project I	6			
& IME 482	and Senior Design Project II				
& IME 483	and Senior Design Project III 1, 2				
Technical Elect		13			
	3.4				
Select from Cate	gory A (8-13 units) & Category B (0-5 units) below: "'				
	gory A (8-13 units) & Category B (0-5 units) below: ^{3,4} Inits	74			
Total Major L	Jnits	74			
Total Major U SUPPORT CO	Jnits OURSES				
Total Major U SUPPORT CO BIO 213	Units DURSES Life Science for Engineers	74			
Total Major L SUPPORT CO BIO 213 & BMED 213	Units OURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6	4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5	4 3			
Total Major U SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6	3 4			
Total Major U SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II	3 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers	3 4 4 3			
Total Major U SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory	3 4 4 3 3			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory	3 4 4 3 3 1			
Total Major U SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics	3 4 4 3 3 1 3			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6	3 4 4 3 3 1 3 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering	3 4 4 3 3 1 3 4 3			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I	3 4 4 3 3 1 3 4 3 1			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6	3 4 4 3 3 1 3 4 3 1 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6	3 4 4 3 3 1 3 4 3 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141	Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6	3 4 4 3 3 1 3 4 4 3 1 4 4 4 4 4 4 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 143	Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 244	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 4 3 3 3 1			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 244 ME 211	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV Linear Analysis I	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 241 MATH 244 ME 211 ME 211	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV Linear Analysis I Engineering Statics	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 4 3 3 3 1 4 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 244 ME 211 ME 212 ME 302	Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV Linear Analysis I Engineering Dynamics Thermodynamics I	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 3 3 3 3			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 244 ME 211 ME 212 ME 302 PHYS 141	Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV Linear Analysis I Engineering Dynamics	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 3 3 3 3			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 244 ME 211 ME 212 ME 302 PHYS 141 PHYS 142	Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV Linear Analysis I Engineering Dynamics Thermodynamics I General Physics IA (Area B Electives) 6	4 3 4 4 3 3 1 3 4 4 4 4 4 4 4 4 4 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143	Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV Linear Analysis I Engineering Statics Engineering Dynamics Thermodynamics I General Physics IA (Area B Electives) 6 General Physics II	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 4 4			
Total Major L SUPPORT CO BIO 213 & BMED 213 CE 204 CHEM 124 CHEM 125 CSC 232 EE 201 EE 251 EE 321 ENGL 147 MATE 210 MATE 215 MATH 141 MATH 142 MATH 143 MATH 244 ME 211 ME 212 ME 302 PHYS 141 PHYS 142 PHYS 143	Units DURSES Life Science for Engineers and Bioengineering Fundamentals (B2) 6 Mechanics of Materials I 5 Gen CHEM for Physical Sci & Engr I (B1 & B3) 6 Gen CHEM for Physical Sci & Engineering II Computer Programming for Scientists & Engineers Electric Circuit Theory Electric Circuits Laboratory Electronics Writing Arguments about STEM (A3) 6 Materials Engineering Materials Laboratory I Calculus I (B4) 6 Calculus II (B4) 6 Calculus III (Area B Electives) 6 Calculus IV Linear Analysis I Engineering Statics Engineering Dynamics Thermodynamics I General Physics IA (Area B Electives) 6 General Physics III	3 4 4 3 3 1 3 4 3 1 4 4 4 4 4 4 4 4 4 4			

GENERAL EDUCATION					
Area A	English Language Communication and Critical				
	Thinking				
A1	Oral Communication	4			
A2	Written Communication				
A3	Critical Thinking (4 units in Support) ⁶	0			
Area B	rea B Scientific Inquiry and Quantitative Reasoning				
B1	Physical Science (4 units in Support) ⁶	0			
B2	Life Science (4 units in Support) ⁶	0			
B3	One lab taken with either a B1 or B2 course				
B4	Mathematics/Quantitative Reasoning (8 units in	0			
	Support) ⁶				
Upper-Division	n B (4 units in Support) ⁶	0			
Area B Elective	es (8 units in Support) ⁶	0			
Area C	Arts and Humanities				
Lower-division	n courses in Area C must come from three different subj	ect			
prefixes.					
C1	Arts	4			
C2	Humanities	4			
Lower-Division C Elective - Select a course from either C1 or C2.					
Upper-Division C					
Area D	Social Sciences	ı			
D1	American Institutions (Title 5, Section 40404	4			
	Requirement)				
Area D Elective	e - Select either a lower-division D2 or upper-division D	4			
course.					
Area E	Lifelong Learning and Self-Development	•			
Lower-Division	ı E	4			
Area F	Ethnic Studies	-			
F	Ethnic Studies	4			
Total GE Units 4					
FREE ELECTIVES					
TOTAL DEGREE UNITS					

FOOTNOTES

- 1 ENGR 459, ENGR 460 and ENGR 461 (6) may substitute for IME 481, IME 482 and IME 483 (6).
- 2 ENGR 463, ENGR 464 and ENGR 465 (6) may substitute for IME 481, IME 482 and IME 483 (6).
- 3 If a course is taken to meet the Technical Electives requirement, it cannot be double-counted to satisfy another Major or Support requirement.
- 4 Consultation with an advisor is recommended prior to selecting Technical Electives; bear in mind your selections may impact pursuit of post-baccalaureate studies and/or goals. Upper-division courses not on this list may substitute as Technical Electives, if approved by an advisor and the Industrial and Manufacturing Engineering department chair.
- 5 CE 208 (5) may substitute for both CE 204 (3) and CE 207 (2).
- 6 Required in Major or Support; also satisfies General Education (GE) requirement.



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Technical ElectivesSelect from Category A (8-13 units) & Category B (0-5 units) below: ^{3,4}

Category A Biomechanics Biomec	Select from Cate	gory A (8-13 units) & Category B (0-5 units) below: 3,4		
E8 361 Electronics Laboratory BUSENSIN 320 Introduction to Entrepreneurally E8 343 Automotive Engineering for a Sustainable Future BUS 311 Managing Technology in the International Legal Environment M8 303 Operations Research II BUS 382 Leadership and Organizations M8 304 Operations Research II Leadership and Organizations M8 312 Data Management and System Design ME 212 Leadership and Organizations M8 319 Human Factors Engineering ME 212 Introduction to Enterprise Analytics M8 319 Intermediate Metal Casting ME 421 Introduction to Enterprise Analytics M8 319 Computer Added Manufacturing II ME 421 Introduction to Enterprise Analytics M8 430 Special Problems for Advanced Undergraduates ME 421 Engineering Management M8 400 Special Problems for Advanced Undergraduates ME 421 Engineering Supervision I introduction to Enterprise Analytics M8 400 Evolution Flanning and Control Systems and Management ME 420 Engineering Management Industrial Engineering in Healthcare ITP 320 Production Flanning Mediculturing M8 416 Automation o			Category B	
E4 94 Automotive Engineering for a sustainable Future BUS 314 Managing Technology in the International Logal Environment M8 303 Operations Research BUS 366 Principles of Markethring M8 305 Operations Research BUS 362 Leadership and Organizations M8 312 Data Management and System Design ENGR 500 The Global Environment M8 312 Data Management and System Design ENGR 500 The Global Environment M8 313 Intermediate Metal Casting ME 212 Introduction to Entire Engineering Analytics M8 313 Intermediate Metal Casting ME 401 Sales Engineering Analytics M8 336 Computer-Allord Manufacturing II ME 412 Engineering Supervision I M8 400 Special Problems for Advanced Undergraduates ME 412 Engineering Supervision I M8 400 Special Problems for Advanced Undergraduates ME 440 Engineering Analysis M8 410 Production Planning and Control Systems ITP 365 Production Planning and Control Systems M8 410 Automation of Industrial Systems and Systems and Processing ME 420 Systems Analysis M8 421 </td <td>BMED 410</td> <td>Biomechanics</td> <td>BMED 212</td> <td>Introduction to Biomedical Engineering Design</td>	BMED 410	Biomechanics	BMED 212	Introduction to Biomedical Engineering Design
Mar	EE 361	Electronics Laboratory	BUS/ENGR 310	Introduction to Entrepreneurship
M8 839 Project Organization and Management BUS 832 Leadership and Organizations M8 839 Operations Research is C 207 Mechanics of Materials II S Methal	EE 434	Automotive Engineering for a Sustainable Future	BUS 311	Managing Technology in the International Legal Environment
MR 312 Deta Management and System Design ENGR 330 The Global Environment MR 319 Human Factors Engineering MR 212 Introduction to Enterprise Analytics MR 331 Intermediate Metal Casting MR 212 Introduction to Enterprise Analytics MR 333 Intermediate Metal Casting MR 401 Sales Engineering MR 336 Computer-Aided Mundraturing II MR 410 Engineering Supervision II Tollar Computer Aided Mundraturing II MR 410 Engineering Supervision II Introduction to Value Chain Analytis MR 403 Systems Engineering and Control Systems III P3 36 Product Design and Development MR 409 Economic Decision Systems III P3 36 Product Design and Evolution Planning and Control Systems III P3 36 Product Design and Evolution Planning and Control Systems III P3 36 Product Design and Evolution Planning and Control Systems III P3 31 Packaging Polymers and Production Planning and Control Systems III P3 31 Supply Chain Management III P3 41 Packaging Polymers and Processing MR 410 Simulation III P4 46 Professional Technical Selling MR 421 Industrial Engineering in Healthcare III P4 48 Professional Technical Selling MR 422 Engineering Metrology MR 423 Additive Manufacturing MR 424 Engineering Metrology MR 425 Reliability for Design and Testing MR 426 Engineering Metrology MR 427 Advanced Topics and Testing MR 437 Advanced Electronic Manufacturing MR 438 Facilities Planning and Design MR 439 Advanced Information Systems Packaging MR 430 Systems Engineering II MR 431 Advanced Operations Research MR 432 Advanced Topics in Engineering Economy MR 433 Advanced Information Systems for Operations MR 434 Advanced Topics in Engineering Economy MR 435 Advanced Topics in Simulation MR 431 Advanced Topics in Engineering Economy MR 432 Advanced Topics in Simulation MR 433 Advanced Topics in Engineering Economy MR 434 Advanced Topics in Engineering Economy MR 435 Advanced Topics in Engineering Economy MR 436 The Industrial Internation Systems for Operations MR 437 Advanced Topics in Engineering Economy MR 438 Advanced Topics in Engineering	IME 301	Operations Research I	BUS 346	Principles of Marketing
M8 319 bata Management and System Design	IME 303	Project Organization and Management	BUS 382	Leadership and Organizations
ME 219 Human Factors Engineering ME 210 Introduction to Enterprise Analytics ME 231 Intermediate Metal Casting ME 218 Engineering Member 2015 Sales Engineering Management ME 240 Special Problems for Advanced Undergraduates ME 241 Engineering Management ME 240 Introduction to Value Chain Analysis ME 240 Engineering Development Devolution Evolution Systems (Figure 2015) ME 240 Production Production Planning and Control Systems (Figure 2015) Production Production Planning and Control Systems (Figure 2015) Professional Technical Selling (Figure 2015) Professional Technical Sel	IME 305	Operations Research II	CE 207	Mechanics of Materials II 5
ME 331 Intermediate Metal Casting ME 401 Sales Engineering Management ME 336 Computer-Aided Manufacturing II ME 421 Engineering Management ME 400 Special Problems for Advanced Undergraduates ME 401 Introduction to Value Chain Analysis ME 408 Systems Engineering and Management ME 400 Introduction to Value Chain Analysis ME 409 Economic Decision Systems TP 326 Product Design and Development ME 410 Production Planning and Control Systems TP 320 Product Design and Development ME 415 Packaging Fundamentals ME 415 Automation of Industrial Systems TP 311 Supply Chain Management in Manufacturing and Services Simulation (Industrial Engineering in Healthcare TP 418 Commercialization of New Technologies ME 429 Industrial Engineering in Healthcare TP 428 Commercialization of New Technologies ME 429 Engineering Methology ME 429 Additive Manufacturing ME 435 Reliability for Design and Testing ME 435 Reliability for Design and Testing ME 436 Facilities Planning and Design ME 436 The Industrial Internet of Things ME 437 Reliability for Design and Testing ME 438 Reliability for Design and Testing ME 439 Reliability for De	IME 312	Data Management and System Design	ENGR 350	The Global Environment
ME 326 Computer-Aided Manufacturing II ME 421 Engineering Management ME 408 Special Problems for Advanced Undergraduates MIM 441 Engineering Supervision I ME 408 Nystems Engineering ME 408 Introduction to Value Chain Analysis Introduction to Value Chain Analysis Introduction Decision Systems and Production Planning and Control Systems ITP 336 Product Design and Development ME 410 Production Planning and Control Systems ITP 341 Packaging Polymers and Processing ME 410 Automation of Industrial Engineering and Management ITP 341 Packaging Polymers and Processing ME 416 Automation of Industrial Engineering in Healthcare ITP 412 Packaging Polymers and Processing ME 420 Simulation ITP 406 Professional Technical Selling ME 424 Engineering Metrology ME 429 Ergonomics Laboratory ME 429 Ergonomics and Electronics Packaging ME 470 Selected Advanced Topics and Electronics Packaging ME 471 Selected Advanced Topics and Electronics Packaging ME 472 Advanced Depraction Membrands and Electronics Packaging ME 473 Elected Advanced Topics ME 474 Engineering II ME 511 Systems Engineering II ME 511 Systems Engineering II ME 512 Advanced Organism Research ME 520 Applied Human Factors ME 520 Advanced Topics in Engineering Economy ME 524 Applied Human Factors ME 524 Advanced Topics in Engineering Economy ME 525 Advanced Controlication Explanation ME 520 Advanced Engineering ME 520 Advanced Engineering Economy ME 521 Advanced Organisms Research ME 524 Advanced Organisms Research ME 524 Advanced Organisms Engineering Economy ME 525 Advanced Engineering ME 526 Engineering ME 527 Engineering Economy ME 527 Engineering Engineering Economy ME 528 Engineering Engineering M	IME 319	Human Factors Engineering	IME 212	Introduction to Enterprise Analytics
MRE 400 Special Problems for Advanced Undergraduates MRE 41 Engineering Supervision	IME 331	Intermediate Metal Casting	IME 401	Sales Engineering
MRE 408 Systems Engineering MRE 460 Introduction to Value Chain Analysis MRE 409 Economic Decision Systems TP 256 Product Design and Development MRE 410 Production Planning and Control Systems TP 330 Packaging Fundamentals MRE 415 Service Enterprises Engineering and Management TP 331 Packaging Polymers and Processing MRE 416 Automation of Industrial Systems TP 371 Supply Chain Management in Manufacturing and Services MRE 420 Simulation TP 431 Supply Chain Management in Manufacturing and Services MRE 420 Simulation TP 431 Supply Chain Management in Manufacturing and Services MRE 424 Industrial Esting MRE 424 Philosophy of Design MRE 424 Philosophy of Design Professional Technical Selling MRE 428 Engineering Metrology MRE 234 Philosophy of Design Professional Technical Selling MRE 429 Additive Manufacturing MRE 429 Additive Manufacturing MRE 432 Additive Manufacturing MRE 431 Reliability for Design and Testing MRE 431 Reliability for Design and Testing MRE 431 Reliability for Design and Sensing System Design MRE 432 Advanced Electronic Manufacturing MRE 433 Advanced Electronic Manufacturing MRE 434 Advanced Electronic Manufacturing MRE 435 Advanced Electronic Manufacturing MRE 436 Selected Advanced Topics and Electronics Packaging MRE 431 Systems Engineering MRE 431 Systems Engineering MRE 431 Systems Engineering MRE 434 Advanced Topics and Electronics Packaging MRE 435 Advanced Topics and Electronics Packaging MRE 436 Advanced Topics in Engineering MRE 437 Advanced Topics in Engineering MRE 438 Advanced Topics in Engineering MRE 439 MRE 439 MRE 439 MRE 439	IME 336	Computer-Aided Manufacturing II	IME 421	Engineering Management
MRE 409 Economic Decision Systems TP 326 Product Design and Development	IME 400	Special Problems for Advanced Undergraduates	IME 441	Engineering Supervision I
IME 410 Production Planning and Control Systems ITP 330 Packaging Fundamentals ME 415 Service Enterprises Engineering and Management ITP 311 Packaging Polymers and Processing ME 420 Simulation ITP 481 Professional Technical Selling IME 420 Simulation Industrial Systems ITP 371 Supply Chain Management in Manufacturing and Services IME 420 Simulation ITP 482 Commercialization of New Technologies IME 428 Engineering in Healthcare ITP 428 Commercialization of New Technologies IME 429 Engineering Metrology IME 429 Engineering Metrology IME 431 Additive Manufacturing IME 432 Additive Manufacturing IME 433 Facilities Planning and Design IME 434 Facilities Planning and Design IME 435 Radio Frequency Identification and Sensing System Design IME 436 Radio Frequency Identification and Sensing System Design IME 437 Advanced Electronic Manufacturing IME 437 Advanced Electronic Manufacturing IME 438 Selected Advanced Topics and Electronics Packaging IME 470 Selected Advanced Laboratory IME 511 Systems Engineering I IME 512 Applied Reliability Engineering IME 520 Applied Reliability Engineering IME 530 Advanced Topics in Engineering IME 541 Advanced Topics in Engineering IME 543 Applied Reliability Engineering IME 544 Advanced Topics in Engineering IME 545 Advanced Topics in Engineering IME 546 Advanced Topics in Engineering IME 547 Advanced Topics in Engineering IME 548 Advanced Topics in Engineering IME 549 Applied Reliability Engineering IME 540 Advanced Topics in Engineering IME 541 Advanced Topics in Engineering IME 542 Applied Human Factors IME 543 Applied Human Factors IME 544 Advanced Topics in Engineering IME 545 Advanced Topics in Engineering IME 546 Advanced Topics in Engineering IME 547 Advanced Topics in Engineering IME 548 Advanced Topics in Engineering IME 549 Advanced Topics in Engineering IME 540 Advanced Topics in Engineering IME 541 Advanced Topics in Engineering IME 542 Applied Engineering IME 543 Advanced Topics in Engineering IME 544 Advanced Topics in Engineer	IME 408	Systems Engineering	IME 460	Introduction to Value Chain Analysis
INE 415 Service Enterprises Engineering and Management ITP 341 Supply Chain Management IM Automation of Industrial Systems ITP 371 Supply Chain Management IM Manufacturing and Services IME 420 Simulation IME 424 Industrial Engineering IME Healthcare ITP 428 Commercialization of New Technologies IME 429 Engineering Metrology ME 234 Philosophy of Design IME 429 Ergonomics Laboratory IME 428 Reliability for Design and Testing IME 435 Reliability for Design and Testing IME 435 Reliability for Design and Testing IME 436 Reliability for Design and Testing IME 436 Reliability for Design and Testing IME 437 Reliability for Design and Testing IME 437 Reliability for Design and Testing IME 438 Reliability for Design and Testing IME 439 Reliability for Design and Testing IME 436 Reliability for Design Internet of Things IME 436 Reliability For Design and Testing IME 437 Reliability for Design Imenagement IME 437 Reliability For Design Advanced Copical Internet of Things IME 437 Selected Advanced Laboratory IME 510 Systems Engineering IME 547 Systems Engineering IME 548 Advanced Information Systems for Operations IME 541 Advanced Operations Research IME 541 Advanced Operations Research IME 541 Advanced Operations Research IME 543 Applied Reliability Engineering Economy IME 543 Advanced Topics in Engineering Economy IME 543 Advanced Topics in Simulation IME 544 Advanced Topics in Simulation IME 545 Manuscale Engineering IME 545 Advanced Topics in Simulation IME 546 Advanced Topics in Simulation IME 547 Advanced Topics in Simulation IME 548 Advanced Topics in Simulation IME 549 Advanced Topics in Simulation I	IME 409	Economic Decision Systems	ITP 326	Product Design and Development
INE 416 Automation of Industrial Systems ITP 371 Supply Chain Management in Manufacturing and Services IME 428 Industrial Engineering in Healthcare ITP 428 Commercialization of New Technologies IME 428 Engineering Metrology ME 234 Philosophy of Design IME 429 Engonemics Laboratory IME 420 Additive Manufacturing IME 431 Reliability for Design and Testing IME 432 Facilities Planning and Design IME 435 Reliability for Design and Serving IME 435 Reliability for Design and Serving IME 436 Facilities Planning and Design IME 437 Radio Frequency Identification and Sensing System Design IME 437 Radio Frequency Identification and Sensing System Design IME 438 Microelectronics and Electronics Packaging IME 470 Selected Advanced Topics IME 471 Selected Advanced Laboratory IME 510 Systems Engineering II IME 511 Systems Engineering II IME 512 Design of Experiments IME 527 Design of Experiments IME 527 Design of Experiments IME 528 Advanced Operations Research IME 529 Advanced Topics in Simulation IME 520 Advanced Topics in Engineering Economy IME 524 Advanced Topics in Engineering Economy IME 525 Advanced Topics in Engineering Economy IME 526 Advanced Topics in Engineering Economy IME 527 Advanced Topics in Engineering Economy IME 528 Applied Muman Factors IME 529 Advanced Topics in Engineering Economy IME 540 Advanced Topics in Engineering Economy IME 541 Advanced Topics in Engineering Economy IME 542 Advanced Topics in Engineering Economy IME 543 Advanced Topics in Engineering Economy IME 544 Advanced Topics in Engineering Economy IME 545 Advanced Imenagement Economy IME 546 Advanced Topics in Engineering Economy IME 547 Advanced Topics in Engineering Economy IME 548 Advanced Topics in Engineering Economy IME 549 Advanced Electron Laboratory IME 540 Advanced Imenagement Economy IME 541 Advanced Topics in Engineering Economy IME 542 Advanced Topics in Engineering Economy IME 543 Advanced Topics in Engineering Economy IME 545 Advanced Electron Engineering Economy IME 546 Advanced Topics in Engineering Economy IME 547 Advance	IME 410	Production Planning and Control Systems	ITP 330	Packaging Fundamentals
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