# MECHANICAL ENGINEERING: FIRE PROTECTION SYSTEMS, BSME

### Requirements for Students Matriculating in or before Academic Year 2024-2025. Learn more about University Academic Regulation 3.1 (http://catalog.okstate.edu/university-academic-regulations/ #matriculation).

### Minimum Overall Grade Point Average: 2.00 Total Hours: 130

Code	Title	Hours			
General Education I	Requirements				
All General Education coursework requirements are satisfied					
upon completion of	÷ ·				
English Composition					
5	ulation 3.5 (http://catalog.okstate.edu/				
	c-regulations/#english-composition)				
ENGL 1113	Composition I <sup>1</sup>	3			
or ENGL 1313	Critical Analysis and Writing I				
Select one of the fo	5	3			
ENGL 1213	Composition II <sup>1</sup>				
ENGL 1413	Critical Analysis and Writing II				
ENGL 3323	Technical Writing <sup>1</sup>				
American History & 0	Government				
Select one of the fo	llowing:	3			
HIST 1103	Survey of American History				
HIST 1483	American History to 1865 (H)				
HIST 1493	American History Since 1865 (DH)				
POLS 1113	American Government	3			
Analytical & Quantita	ative Thought (A)				
MATH 2144	Calculus I (A) <sup>1</sup>	4			
MATH 2153	Calculus II (A) <sup>1</sup>	3			
MATH 2163	Calculus III <sup>1</sup>	3			
MATH 2233	Differential Equations <sup>1</sup>	3			
Humanities (H)		Ū			
Courses designated	1 (H)	6			
Natural Sciences (N)	. ,	Ŭ			
( )	aboratory Science (L) course				
CHEM 1414	General Chemistry for Engineers (LN) <sup>1</sup>	4			
or CHEM 1515	Chemistry II (LN)	4			
PHYS 2014	University Physics I (LN) <sup>1</sup>	4			
		4			
Social & Behavioral S	.,	0			
Course designated	(5)	3			
Hours Subtotal		42			
	rnational Dimension (I)				
	in any part of the degree plan				
Select at least one Diversity (D) course					
Select at least one International Dimension (I) course					
College/Departmen	tal Requirements				

UNIV 1111	First Year Seminar (or other approved first year seminar course)	1
Basic Science		
PHYS 2114	University Physics II (LN) $^1$	4
Engineering and Eng	-	
ENGR 1332	Engineering Design with CAD for MAE <sup>1</sup>	2
ENGR 1412	Introductory Engineering Computer Programming (1) <sup>1</sup>	2
ENSC 2113	Statics <sup>1</sup>	3
ENSC 2123	Elementary Dynamics <sup>1</sup>	3
ENSC 2143	Strength of Materials <sup>1</sup>	3
ENSC 2213	Thermodynamics <sup>1</sup>	3
ENSC 2613	Introduction to Electrical Science <sup>1</sup>	3
Choose one of the b	pelow laboratory options: <sup>1</sup>	3
OPTION 1 (ENGR	2421 is required for this option)	
ENGR 2421	Engineering Data Acquisition Controls Lab	
and two more fro	om the following labs:	
ENSC 2141	Strength of Materials Lab	
ENSC 2411	Electrical Science Lab	
ENSC 2611	Electrical Fabrication Lab	
ENSC 3231	Fluids and Hydraulics Lab	
ENSC 3311	Material Science Lab	
ENSC 3431	Thermodynamics and Heat Transfer Lab	
OPTION 2		
MAE 3113	Measurements and Instrumentation <sup>2</sup>	
Hours Subtotal		27
Upper Division Maje	or Requirements <sup>2</sup>	
ENSC 3313	Materials Science	3
ENSC 3313 FPST 1213	Materials Science Fire Safety Hazards Recognition	
		3
FPST 1213	Fire Safety Hazards Recognition	3 3
FPST 1213 FPST 1373	Fire Safety Hazards Recognition Fire Suppression and Detection Systems	3 3
FPST 1213 FPST 1373 FPST 2243	Fire Safety Hazards Recognition Fire Suppression and Detection Systems Design and Analysis of Sprinkler Systems	3 3 3
FPST 1213 FPST 1373 FPST 2243 FPST 3373	Fire Safety Hazards Recognition Fire Suppression and Detection Systems Design and Analysis of Sprinkler Systems Fire Dynamics	3 3 3 3
FPST 1213 FPST 1373 FPST 2243 FPST 3373 FPST 4143	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> </ul>	3 3 3 3 3 3
FPST 1213 FPST 1373 FPST 2243 FPST 3373 FPST 4143 IEM 3503	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> </ul>	3 3 3 3 3 3 3 3 3
FPST 1213 FPST 1373 FPST 2243 FPST 3373 FPST 4143 IEM 3503 MAE 3013	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> <li>Engineering Analysis and Methods I</li> </ul>	3 3 3 3 3 3 3 3 3 3 3
FPST 1213         FPST 1373         FPST 2243         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> <li>Engineering Analysis and Methods I</li> <li>Introduction to MAE Design</li> </ul>	3 3 3 3 3 3 3 3 3 3 3
FPST 1213 FPST 1373 FPST 2243 FPST 3373 FPST 4143 IEM 3503 MAE 3013 MAE 3153 MAE 3233	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> <li>Engineering Analysis and Methods I</li> <li>Introduction to MAE Design</li> <li>Heat Transfer</li> </ul>	3 3 3 3 3 3 3 3 3 3 3
FPST 1213 FPST 1373 FPST 2243 FPST 3373 FPST 4143 IEM 3503 MAE 3013 MAE 3153 MAE 3233 MAE 3233	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> <li>Engineering Analysis and Methods I</li> <li>Introduction to MAE Design</li> <li>Heat Transfer</li> <li>Fundamental Fluid Dynamics</li> </ul>	3 3 3 3 3 3 3 3 3 3 3 4
FPST 1213 FPST 1373 FPST 2243 FPST 3373 FPST 4143 IEM 3503 MAE 3013 MAE 3013 MAE 3153 MAE 3233 MAE 3333 MAE 3334	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> <li>Engineering Analysis and Methods I</li> <li>Introduction to MAE Design</li> <li>Heat Transfer</li> <li>Fundamental Fluid Dynamics</li> <li>Mechanical Design I</li> </ul>	3 3 3 3 3 3 3 3 3 3 4 4 3
FPST 1213         FPST 1373         FPST 2243         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153         MAE 3233         MAE 3324         MAE 3403	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> <li>Engineering Analysis and Methods I</li> <li>Introduction to MAE Design</li> <li>Heat Transfer</li> <li>Fundamental Fluid Dynamics</li> <li>Mechanical Design I</li> <li>Computer Methods in Analysis and Design</li> </ul>	3 3 3 3 3 3 3
FPST 1213 FPST 1213 FPST 1373 FPST 2243 FPST 3373 FPST 4143 IEM 3503 MAE 3013 MAE 3013 MAE 3153 MAE 3153 MAE 3233 MAE 3333 MAE 3324 MAE 3403 MAE 3524 MAE 3724 Select 7 hours of the	<ul> <li>Fire Safety Hazards Recognition</li> <li>Fire Suppression and Detection Systems</li> <li>Design and Analysis of Sprinkler Systems</li> <li>Fire Dynamics</li> <li>Industrial Ventilation and Smoke Control</li> <li>Engineering Economic Analysis</li> <li>Engineering Analysis and Methods I</li> <li>Introduction to MAE Design</li> <li>Heat Transfer</li> <li>Fundamental Fluid Dynamics</li> <li>Mechanical Design I</li> <li>Computer Methods in Analysis and Design</li> <li>Thermal Fluids Design</li> <li>Dynamic Systems Analysis and</li> </ul>	3 3 3 3 3 3 3 3 3 3 3 4 3 4 4 3 4
FPST 1213 FPST 1373 FPST 2243 FPST 2243 FPST 3373 FPST 4143 IEM 3503 MAE 3013 MAE 3013 MAE 3153 MAE 3153 MAE 3233 MAE 3333 MAE 3324 MAE 3403 MAE 3524 MAE 3724 Select 7 hours of the	Fire Safety Hazards RecognitionFire Suppression and Detection SystemsDesign and Analysis of Sprinkler SystemsFire DynamicsIndustrial Ventilation and Smoke ControlEngineering Economic AnalysisEngineering Analysis and Methods IIntroduction to MAE DesignHeat TransferFundamental Fluid DynamicsMechanical Design IComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis and Introduction to ControlFollowing 2 categories, selecting one course so that both categories are represented:	3 3 3 3 3 3 3 3 3 3 4 3 4 3
FPST 1213         FPST 1373         FPST 2243         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153         MAE 3233         MAE 3324         MAE 3524         MAE 3724         Select 7 hours of the from each category state	Fire Safety Hazards RecognitionFire Suppression and Detection SystemsDesign and Analysis of Sprinkler SystemsFire DynamicsIndustrial Ventilation and Smoke ControlEngineering Economic AnalysisEngineering Analysis and Methods IIntroduction to MAE DesignHeat TransferFundamental Fluid DynamicsMechanical Design IComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis and Introduction to ControlFollowing 2 categories, selecting one course so that both categories are represented:	3 3 3 3 3 3 3 3 3 3 3 4 3 4 4 3 4
FPST 1213         FPST 1373         FPST 2243         FPST 3373         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153         MAE 3233         MAE 3333         MAE 3403         MAE 3724         Select 7 hours of the from each category 3         Category I (Realization)	Fire Safety Hazards RecognitionFire Suppression and Detection SystemsDesign and Analysis of Sprinkler SystemsInesign and Analysis of Sprinkler SystemsFire DynamicsIndustrial Ventilation and Smoke ControlEngineering Economic AnalysisEngineering Analysis and Methods IIntroduction to MAE DesignHeat TransferFundamental Fluid DynamicsMechanical Design IComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis and Introduction to Controlefollowing 2 categories, selecting one course so that both categories are represented: tion): 2	3 3 3 3 3 3 3 3 3 3 3 4 3 4 4 3 4
FPST 1213         FPST 1373         FPST 2243         FPST 3373         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153         MAE 3233         MAE 3333         MAE 3403         MAE 3724         Select 7 hours of the from each category 5         Category I (Realizate MAE 4243	Fire Safety Hazards RecognitionFire Suppression and Detection SystemsDesign and Analysis of Sprinkler SystemsDesign and Analysis of Sprinkler SystemsFire DynamicsIndustrial Ventilation and Smoke ControlEngineering Economic AnalysisEngineering Analysis and Methods IIntroduction to MAE DesignHeat TransferFundamental Fluid DynamicsMechanical Design IComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis and Introduction to Controlfollowing 2 categories, selecting one course so that both categories are represented:tion): 2Aerospace Propulsion and Power	3 3 3 3 3 3 3 3 3 3 3 4 3 4 4 3 4
FPST 1213         FPST 1373         FPST 2243         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153         MAE 3233         MAE 3324         MAE 3524         MAE 3724         Select 7 hours of the from each category 5         Category I (Realizate MAE 4243         MAE 4263	Fire Safety Hazards RecognitionFire Suppression and Detection SystemsDesign and Analysis of Sprinkler SystemsFire DynamicsIndustrial Ventilation and Smoke ControlEngineering Economic AnalysisEngineering Analysis and Methods IIntroduction to MAE DesignHeat TransferFundamental Fluid DynamicsMechanical Design IComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis andIntroduction to Controlfollowing 2 categories, selecting one course so that both categories are represented: stion): 2Aerospace Propulsion and PowerEnergy Conversion Systems	3 3 3 3 3 3 3 3 3 3 3 4 3 4 4 3 4
FPST 1213         FPST 1373         FPST 2243         FPST 3373         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153         MAE 3153         MAE 3333         MAE 3403         MAE 3724         Select 7 hours of the from each category 3         Category I (Realizat MAE 4243         MAE 4263         MAE 4353	Fire Safety Hazards RecognitionFire Suppression and Detection SystemsDesign and Analysis of Sprinkler SystemsIndustrial Ventilation and Smoke ControlEngineering Economic AnalysisEngineering Analysis and Methods IIntroduction to MAE DesignHeat TransferFundamental Fluid DynamicsMechanical Design IComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis andIntroduction to ControlEngineering Pluids DesignSystems Analysis and DesignComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis andEntroduction to ControlPollowing 2 categories, selecting one courseSo that both categories are represented:Cion): 2Aerospace Propulsion and PowerEnergy Conversion SystemsMechanical Design II	3 3 3 3 3 3 3 3 3 3 3 4 3 4 4 3 4
FPST 1213         FPST 1373         FPST 2243         FPST 2243         FPST 3373         FPST 3373         FPST 4143         IEM 3503         MAE 3013         MAE 3153         MAE 3233         MAE 3333         MAE 3403         MAE 3724         Select 7 hours of the from each category 5         Category I (Realizat MAE 4243         MAE 4263         MAE 4353         MAE 4363	Fire Safety Hazards RecognitionFire Suppression and Detection SystemsDesign and Analysis of Sprinkler SystemsIndustrial Ventilation and Smoke ControlEngineering Economic AnalysisEngineering Analysis and Methods IIntroduction to MAE DesignHeat TransferFundamental Fluid DynamicsMechanical Design IComputer Methods in Analysis and DesignThermal Fluids DesignDynamic Systems Analysis and Introduction to ControlFollowing 2 categories, selecting one course so that both categories are represented: tion): 2Aerospace Propulsion and PowerEnergy Conversion Systems Mechanical Design IIAdvanced Methods in Design	3 3 3 3 3 3 3 3 3 3 3 4 3 4 4 3 4

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MAE 4723	Refrigeration Systems Design
Category II (Capstone	e Design): <sup>2</sup>
MAE 4344	Design Projects
MAE 4354	Aerospace Systems Design for Mechanical Engineers
MAE 4374	Aerospace System Design
Upper Division Elective	e Requirements
3 hours of MAE elect	ives to be selected from the following list,

3

2

or from courses in the Category I listed above, but not used to satisfy the category requirement:

MAE 3033	Design of Machines and Mechanisms
MAE 3123	Manufacturing Processes
MAE 3223	Thermodynamics II
MAE 3253	Applied Aerodynamics and Performance
MAE 3293	Fundamentals of Aerodynamics
MAE 4003	Introduction to Autonomous Systems
MAE 4010	Mechanical and Aerospace Engineering Projects
MAE 4053	Automatic Control Systems
MAE 4063	Mechanical Vibrations
MAE 4273	Experimental Fluid Dynamics
MAE 4313	Advanced Processing of Engineered Materials
MAE 4333	Mechanical Metallurgy
MAE 4583	Corrosion
MAE 4733	Mechatronics Design
2 hours of EDCT/	NTT electives to be calested from the following

3 hours of FPST/CET electives to be selected from the following list, or from courses in the Category I listed above, but not used to satisfy the category requirement:

3000-level or above from:

Total Hours		130
Hours Subtotal		61
FPST 4383	Fire and Evacuation Modeling	
FPST 4213	Advanced Building Design and Analysis	
FPST 3383	Building Electrical Systems	
FPST 3113	Advanced Special Hazard Suppression and Detection	
CET 4443	Construction Safety and Loss Control	

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MAE requires grades of "C" or better for any course that is a pre-requisite or co-requisite to a required course on the degree plan.

#### 2

Grades of "C" or higher in all Upper Division Major Requirements courses and ME Realization Category course and Capstone Design Category course.

## **Graduation Requirements**

- 1. A "C" or better is required in each course taken that is designated with footnote 1 or footnote 2.
- The major engineering design experience, capstone course, is satisfied by MAE 4344 Design Projects or MAE 4354 Aerospace Systems Design for Mechanical Engineers or MAE 4374 Aerospace Systems Design.

# **Additional State/OSU Requirements**

- At least: 60 hours at a four-year institution; 30 hours completed at OSU; 15 of the final 30 or 50% of the upper-division hours in the major field completed at OSU.
- Limit of: one-half of major course requirements as transfer work; onefourth of hours earned by correspondence; 8 transfer correspondence hours.
- Students will be held responsible for degree requirements in effect at the time of matriculation and any changes that are made, so long as these changes do not result in semester credit hours being added or do not delay graduation.
- Degrees that follow this plan must be completed by the end of Summer 2030.