



**DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.**

Course Syllabus

- 1. Course number and name**
ME 540 Fire Fighting Systems Design
- 2. Credits and contact hours**
(3+0) 3 credit hours, 3 contact hours
- 3. Course type**
Face to face Learning Course (3+0)
- 4. Instructor's or course coordinator's name**
Prof. Tariq Alazab
- 5. Textbook information**
Design of water-based fire protection systems, Robert M.Gagnon
ISBN: 978-0827378834
 - a. Other supplemental materials**
 - NFPA 13 standard for the installation of sprinkler system
 - NFPA 20 standard for the installation of centrifugal fire pumps.
 - Instructor's Notes
- 6. Specific course information**
 - a. Catalog description**

The course covers the following topics: Fire protection survey procedure; underground piping design procedure; automatic sprinkler systems; basic hydraulic; hydraulic calculation of sprinkler systems; standpipe system; fire pump calculations.
 - b. Prerequisites or co-requisites**

Prerequisite: ME 341 Fluid mechanics
 - c. The course is:**

Required in Mechanical Engineering Department.
- 7. Specific goals for the course**
 - a. Course outcomes:**

After completion of the course, students are expected to be able to:



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1. To explain the main terminologies and key terms used in a fire protection system as defined by NFPA standards (NFPA13).
2. To explain a methodical approach to the design of underground piping for water based fire protection system.
3. To understand the types of water supplies available for supply underground piping system.
4. To follow a design method to ensure accuracy to the applicable standards related fire protection systems.
5. To perform hydraulic to calculate fire protection system demand..

b. The following student outcomes are addressed by the course:

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
To explain the main terminologies and key terms used in a fire protection system as defined by NFPA standards (NFPA13).	-	Lectures (Example and Problems)	Question in exam
To explain a methodical approach to the design of underground piping for water based fire protection system.	-	Lectures (Example and Problems)	Question in exam
To understand the types of water supplies available for supply underground piping system.		Lectures (Example and Problems)	Question in exam
To follow a design method to ensure accuracy to the applicable standards related fire protection systems.	-	Lectures (Example and Problems)	Question in exam
To perform hydraulic to calculate fire protection system demand..	-	Lectures (Example and Problems)	Question in exam
Student Outcomes			



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9. Weekly Teaching Plan

Week No.	Lecture	Topic	Method of Delivery
1	Sun (9-10)	Introduction fire protection survey procedure	Lecture
	Tue (9-10)	Introduction fire protection survey procedure	Lecture
	Thu (9-10)	Introduction fire protection survey procedure	Lecture
2	Sun (9-10)	Underground piping design procedure	Lecture
	Tue (9-10)	Underground piping design procedure	Lecture
	Thu (9-10)	Underground piping design procedure	Lecture
3	Sun (9-10)	Perform a water flow test and water supply information on plans	Lecture
	Tue (9-10)	Perform a water flow test and water supply information on plans	Lecture
	Thu (9-10)	Perform a water flow test and water supply information on plans	Lecture
4	Sun (9-10)	Sprinkler system key terms as listed in NFPA standards, sprinkler types, sprinkler system types	Lecture
	Tue (9-10)	Sprinkler system key terms as listed in NFPA standards, sprinkler types, sprinkler system types	Lecture
	Thu (9-10)	Sprinkler system key terms as listed in NFPA standards, sprinkler types, sprinkler system types	Lecture
5	Sun (9-10)	Sprinkler system components, occupancy classifications.	Lecture
	Tue (9-10)	Sprinkler system components, occupancy classifications.	Lecture
	Thu (9-10)	First Exam	Exam
6	Sun (9-10)	Fundamental of hydraulics, hydrostatic and hydrokinetic	Lecture
	Tue (9-10)	Fundamental of hydraulics, hydrostatic and hydrokinetic	Lecture



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	Thu (9-10)	Fundamental of hydraulics, hydrostatic and hydrokinetic	Lecture
7	Sun (9-10)	Friction loss for simple loops and combined loops	Lecture
	Tue (9-10)	Friction loss for simple loops and combined loops	Lecture
	Thu (9-10)	Friction loss for simple loops and combined loops	Lecture
8	Sun (9-10)	Analysis of loop calculation results	Lecture
	Tue (9-10)	Analysis of loop calculation results	Lecture
	Thu (9-10)	Analysis of loop calculation results	Lecture
9	Sun (9-10)	Hydraulic calculation method for sprinkler systems	Lecture
	Tue (9-10)	Hydraulic calculation method for sprinkler systems	Lecture
	Thu (9-10)	Hydraulic calculation method for sprinkler systems	Lecture
10	Sun (9-10)	Configuration of sprinklers in the design area.	Lecture
	Tue (9-10)	Configuration of sprinklers in the design area.	Lecture
	Thu (9-10)	Configuration of sprinklers in the design area.	Lecture
11	Sun (9-10)	Design examples	Lecture
	Tue (9-10)	Design examples	Lecture
	Thu (9-10)	Second Exam	Exam
12	Sun (9-10)	Standpipe system	Lecture
	Tue (9-10)	Standpipe system	Lecture
	Thu (9-10)	Standpipe system	Lecture
13	Sun (9-10)	Calculation of standpipe systems	Lecture
	Tue (9-10)	Calculation of standpipe systems	Lecture
	Thu	Calculation of standpipe systems	Lecture



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	(9-10)		
14	Sun (9-10)	Introduction to fire pump	Lecture
	Tue (9-10)	Introduction to fire pump	Lecture
	Thu (9-10)	Introduction to fire pump	Lecture
15	Sun (9-10)	Fire pump performance curves and its specifications	Lecture
	Tue (9-10)	Fire pump performance curves and its specifications	Lecture
	Thu (9-10)	Fire pump performance curves and its specifications	Lecture

10. Grade Distribution:

Assessment	Grade	Date
- First Exam	20%	Fifth Week
- Second Exam	20%	10 th Week
- Assignments	10%	
- Final Examination	50%	16 th Week

* Make-up exams will be offered for valid reasons. It may be different from regular exams in content and format.