Established by UP Govt. Act No. 07 of 2015
Recognized by U.G.C. under section 2 (f) of Act-1956

Value Added Courses

Faculty of Mechanical Engineering

	J.S. University, Shikohabad Faculty of Mechanical engineering	Value Added Course
		AY: 2018-19

FIRE ENGINEERING AND SCIENCE

Learning Objective:

This Course will provide knowledge of Fire Engineering and Science

Duration: 33 Hours. (Theory and Practical)

Course Outcomes: -

After completion of the course the student shall be able to:-

1. Discuss the role of fire science and engineering in the design of engineering system
2. Manipulate concepts related to the quantification of fire hazards and processes
3. Perform basic fire engineering calculations, recognising the associated limits of applicability
4. Critically appraise simple fire engineering designs
5. The course is structured around taught material, and a mix of tutorials based on group-based discussion and problem solving
6. Fire hazards of consumer goods

	J.S. University, Shikohabad Faculty of Mechanical engineering	Value Added Course
		AY: 2018-19

Syllabus

Module I: Physics of Fire

History of fire service - Basic physics - Units – Measurement system - Force, resultant force - Laws of force - Laws of motion - Mass and weight, work, power, energy Law of conservation of energy - Mechanics – rest and motion - Distance and displacement -Speed and velocity .

Module 2: Chemistry of Fire

Fire properties of solid, liquid and gases -fire spread -toxicity of products of combustion - theory of combustion and explosion –vapour clouds –flash fire –jet fires –pool fires –unconfined vapour cloud explosion, shock waves -auto-ignition –boiling liquid expanding vapour explosion

Module 3: Characteristics of Fire

Energy changes - Effects of heat on matter - Combustion - Temperature - Specific heat capacity - Catalyst – Neutralization – Sublimation - Heat of decomposing - Chemical reaction - Exothermic reaction and endothermic reaction - Transmission of heat - Flash and fire point - Ignition temperature - Flammables and combustible chemicals - Spontaneous combustion - Triangle of combustion - Tetrahedron fire - Spread of fire.

Module 4: Regulation for Safety and Environment

Factories act and rules - Indian explosive act - Gas cylinder rules - SMPV Act - Indian petroleum act and rules. Environmental pollution act - Overview of OHSAS 18000 and ISO 14000

Module 5: Case Studies

Flix borough - Mexico disaster - Pasedena Texas - Piper Alpha - Peter borough - Bombay Victoria dock ship explosion – Bhopal Gas Tragedy.

References:-

1. Derek, James, "Fire Prevention Hand Book", Butter Worths and Company, London, 1986.
2. Gupta, R.S., "Hand Book of Fire Technology" Orient Longman, Bombay 1977.
3. "Accident Prevention manual for industrial operations" N.S.C., Chicago, 1982.
4. Dinko Tuhtar, "Fire and explosion protection"
5. Fundamental of Combustion by D.P. Mishra.

Dean Academics

Dr. Swatantra Kr. Pathak

Dr. R. P. Singh

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