Department of Mining Engineering
IIT, Kharagpur

PROPOSAL FOR INTRODUCING A NEW SUBJECT

1.	Name of the Department/Centre/School proposing to introduce the subject	:	**Department of Mining Engineering**
2.	Name of the subject	:	**Fire Safety Engineering**
3.	L – T – P and Credit loading of the subject	:	L – T – P : 3 – 0 – 0 Credit : 3
4.	Status of the subject		
	a. Specify the Session, Semester from which the subject is going to be offered	:	Autumn, 2015 – 16
	b. Level of the subject c. Name (s) of the Programme (s) in whose curricula this subject will be included	: :	PG Level
	d. Whether the subject will be offered as Compulsory or Elective	:	Elective
	e. The semester in which the subject will be offered	:	Spring
5.	Prerequisite (s) for the subject, if any, (Please give the subject number and names)	:	None
6.	Objectives and contents a. Objective	:	This course covers the basic principles of fire safety engineering, tools and technology to detect, prevent and fight industrial fire. Fire risk management, fire plans, fire simulation and management of combustible materials are also covered. The methods of rescue and recovery of people struck off in industrial fires are also covered in this course. After completion of this course, the student will be able to: Classify fire, explain the basic principles of fire science and engineering, and discuss measures to prevent fire and its propagation; Select suitable fire extinguishers for fire fighting, suitable tools to detect fire, choose suitable fire protection system for an industrial setup; Analyse the fire risk, evaluate fire proneness of industrial materials; Prepare a fire plan for a simple industrial set up, design a rescue and recovery plan for a fire disaster management in industry; Recommend suitable fire protection system for an industrial setup.

	b. Contents (in 100 to 150 words) (Please attach the detailed lecture-wise breakup and/or list of experiments)		**Unit 1**: **Introduction to fire**: Stages of fire, Growth of fires, Classification of fire. [4 hours] **Unit 2: Fire extinguishing agents**: Water, Foam, Powder, Gaseous agents, and vaporising liquids [4 hours] **Unit 3: Measures to prevent fire and its propagation**: Fire alarms, Smoke detectors, Portable Fire protection systems, and Fire simulation. [8 hours] **Unit 4: Fire protection systems:** Fixed fire protection systems: water hydrant systems, fire water piping, fire water storage, fire water pumps, Foam systems: foam water sprinkler systems; Gaseous fire fighting systems [10 hours] **Unit 5: Fire fighting and rescue engineering**: Personal protection equipment for fire fighting, Self-contained breathing apparatus, Fire suits, fire tenders [6 hours]. **Unit 6: Fire Risk Management:** Fire hazard, fire accident prevention, fire proneness, fire plans, Storage of combustible materials, Hazard analysis [8 hours].
7.	Names of the faculty members of the Department/Centre/School who have the necessary expertise and will be willing to teach the subject (minimum two faculty members should be willing to teach the subject)	:	1. Dr Basanta Kumar Prusty 2. Prof. Ashish Bhattacharjee 3. Dr Kaushik Dey
8.	Do the contents of the subject have an overlap with any other subject offered in the institute? If yes, please give details as follows. a) The number and name of the existing subjects b) Approximate percentage of overlap c) Reason for offering the new subject in spite of the overlap	:	NO
9.	Recommended text books	:	1. Industrial Fire Protection Handbook, Second Edition, By R. Craig Schroll, CRC Press, 2002. 2. Principles of Fire Safety Engineering: Understanding Fire and Fire Protection, By Akhil Kumar Das, Phi Learnings, 2014. 3. Introduction to Fire Safety Management by By Andrew Furness, Martin Muckett, Butterworth-Heinemann Publisher (Elsevier, UK), 2007.
10.	Reference books	:	1. Guidelines for Fire Protection in Chemical, Petrochemical, and Hydrocarbon Processing

			Facility . by Center for Chemical Process Safety (CCPS), American Institute of Chemical Engineers, USA, 2003. 2. Fundamentals of Fire Protection for the Safety Professional, by Lon H. Ferguson, Dr. Christopher A, Government Institutes, 2005, USA. 3. Fire Safety Management Handbook, Third Edition By Daniel E. Della-Giustina, CRC press, 2014.
11.	Names of the departments/centres/schools/ programmes whose students are expected to register this subject	:	1. Chemical Engineering 2. Civil Engineering 3. Cryogenic Engineering 4. Electrical Engineering 5. Environmental Science and Engineering 6. Industrial and Systems Engineering 7. Mechanical Engineering 8. Metallurgical & Materials Engineering 9. Mining Engineering 10. Reliability Engineering Centre

Date:

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Signature of the Head/Dean of the Dept./Centre/School