

DEPARTMENT OF MECHANICAL ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN – PART I			
Course Title	Industrial Safety Engineering Laboratory		
Course Code	ME 658	No. of Credits	3
Course Code of Pre-requisite subject(s)	ME 653	ME 655	ME 657
Session	JANUARY	Section (if, applicable)	
Name of Faculty	Dr.S.P.Sivapirakasam	Department	MECHANICAL
Email	spshivam@nitt.edu	Telephone No.	9944547215
Name of Course Coordinator(s) (if, applicable)			
E-mail		Telephone No.	
Course Type	Core course		
Syllabus (approved in BoS)			
<p>1. NOISE LEVEL MEASUREMENT AND ANALYSIS Measurement of noise level for various sources – Impact, continuous and intermittent. Frequency and spectrum analysis of noise: <i>Instrument – precision type of Noise level meter with frequency and spectrum analyzer.</i></p> <p>2. VIBRATION MEASUREMENT AND ANALYSIS Measurement of whole body vibration for various acceleration: <i>Instrument – vibration simulator and vibration analyzer</i></p> <p>3. FRICTION SENSITIVITY TEST Measurement of friction sensitivity for unstable materials: <i>Instrument – BAM friction tester</i></p> <p>4. IMPACT SENSITIVITY TEST Measurement of impact sensitivity for unstable materials: <i>Instrument – BAM fall hammer</i></p> <p>5. THERMAL REACTIVITY TEST Measurement of thermal reactivity for unstable materials: <i>Instrument – DSC/TGA</i></p> <p>6. EXHAUST GAS MEASUREMENT AND ANALYSIS Measurement of Exhaust gas measurement of IC engines: <i>Instrument – Gas analyzer</i></p> <p>7. BREATHING ZONE CONCENTRATION Measurement of breathing zone concentration of dust and fumes: <i>Instrument –</i></p>			

personal air sampler

8. AMBIENT AIR MONITORING

Measurement of respirable and non-respirable dust in the ambient air: *Instrument* – High volume sampler

9. CONSEQUENCE ANALYSIS

Soft computing skills on developing effects of fire & explosion and dispersion: *Software* – RISK PHAST V 6.6 (DNV) and ALOHA

10. STUDY OF PERSONAL PROTECTIVE EQUIPMENT:

Safety helmet, belt, hand gloves, goggles, safety shoe, gum boots, ankle shoes, face shield, nose mask, ear plug, ear muff, apron and leg guard.

COURSE OBJECTIVES

- 1) To provide opportunity to operate the equipment to acquire practical knowledge.
- 2) To know the various PPEs and software.
- 3) To carry out experiments to find out the environmental and safety parameters.
- 4) To assess the impact of sensitivity of chemicals on explosivity.
- 5) To run the software to assess the consequence effects of major accidents.

<u>Course Outcomes</u>	<u>Aligned Programme Outcomes (PO)</u>
1) This course would make students to know and run the various equipments to bring out the safety environment in the industry.	1,2,3,5,6,7,8,9
2) Course would be helpful for the students to measure the particulate matter and assess the impact of air pollution.	1,2,6,7,9,10
3) Students would be trained to conduct experiments to find out various safety parameters.	1,2,3,4,7,8,9,10,
4) Students would be able to use personal protective equipment in-dependently.	1,2,3,4,5,8,9,10,11
5) Students can recognize the various problems with the use of soft-ware and hence to predict the real situations on major accidents.	1,2,3,4,5,8,9,10,11

COURSE PLAN – PART II

COURSE OVERVIEW

Industrial Safety laboratory enables student to use various safety equipments practically. This course will make the students to become competent safety officers where they will work in industry. Laboratory provides various safety parameters to be measured like Noise level, vibration, impact and friction sensitivity of chemicals, breathing zone air sampling and measurement and also how, when and where to use the personal protective equipments. By measuring and analyzing all the safety parameters risk can be assessed and Health, safety of employees is protected.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
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1	1-2	NOISE LEVEL MEASUREMENT AND ANALYSIS	Lecture and practical
2	3-4	VIBRATION MEASUREMENT AND ANALYSIS	Lecture and practical
3	5-6	FRICITION SENSITIVITY TEST IMPACT SENSITIVITY TEST	Lecture and practical
4	7-8	THERMAL REACTIVITY TEST	Lecture and practical
5	9-10	EXHAUST GAS MEASUREMENT AND ANALYSIS	Lecture and practical
6	11-12	BREATHING ZONE CONCENTRATION MEASUREMENT	Lecture and practical
7	13-14	AMBIENT AIR MONITORING	Lecture and practical
8	15-16	STUDY OF PERSONAL PROTECTIVE EQUIPMENT	Lecture and practical
9	17-18	CONSEQUENCES ANALYSIS	Lecture and practical

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Experiment and Observation	-	-	30%
2	Record Assessment	-	-	20%
3			-	
4				
CPA	Compensation Assessment*			
5				

6	Final Assessment *	18 th Week	3 hours	50 %
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*mandatory; refer to guidelines on page 5

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

1. Students can meet the faculty at any stage in the course duration in case he/she finds difficulty in understanding the concept.
2. Feedback form issued to students to express their comments about the course after completing the syllabus. Students are requested to give genuine feedback about the course.
3. Student knowledge about the topic covered in this course will be judged based on marks obtained in the written examination.

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, , academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc)

Students can reach course faculty by fixing appointment through E-mail (spshivam@hitt.edu) or phone (9944547215)

ATTENDANCE :

1. The minimum attendance for appearing for the semester examination is 75%.
2. Those students, whose attendance falls below 75% but above 50% in a subject, shall attend mandatory classes before the semester examinations to qualify to write semester exam.
3. The students who are having attendance less than 50% has to redo the course in next semester.

COMPENSATION ASSESSMENT

1. Attending all the assessments are MANDATORY for every student.
2. One Compensation Assessment (CPA) will be conducted for those students who are being physically absent for any of the assessment and it covers the entire contents of the course.
3. At any case, CPA will not be considered as an improvement test.



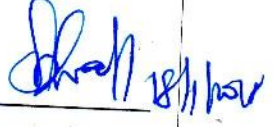
ACADEMIC HONESTY & PLAGIARISM

1. The minimum attendance for appearing for the semester examination is 75%.
2. Those students, whose attendance falls below 75% but above 50% in a subject, shall attend mandatory classes before the semester examinations to qualify to write semester exam.
3. Relative grading will be adopted for the course.
4. Plagiarism is applied during the Assignment grading, based on which mandatory corrective actions are taken.

ADDITIONAL INFORMATION

Students can reach course faculty by fixing appointment through E-mail (spshivam@nitt.edu) or phone (9944547215)

FOR APPROVAL

Course Faculty  CC-Chairperson  HOD 

Guidelines:

- a) The number of assessments for a course shall range from 4 to 6.
- b) Every course shall have a final assessment on the entire syllabus with at least 30% weightage.
- c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. This is not applicable for project work/industrial lectures/internship.
- d) The policy for attendance for the course should be clearly specified.
- e) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.