

## Academic Course Description

<p>BHARATH UNIVERSITY Faculty of Engineering and Technology Department of Civil Engineering</p> <p><b>BCE059 SAFETY PRACTICES IN CONSTRUCTION</b> <b>Sixth Semester, 2016-17 (Even Semester)</b></p>
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### Course (catalog) description

To study various safety practices that has to be adopted in construction and to know the finer aspects of safety programs, sampling and audit.

**Compulsory/Elective course** : Elective for Civil students

Credit / Contact hours : 3 credits/ 45 hours

Course Coordinator : Mr. P. Dayakar, Associate Professor

**Instructors** : Ms. Shruthi M V, Assistant professor

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@bharathuniv.ac.in)	Consultation
Ms. Shruthi M V	Vii –A, Vii-B			m.vshruthi@yahoo.com	9.00 - 9.50 AM

### Relationship to other courses:

Pre –requisites : Concrete Techniques Equipments and practice

Assumed knowledge : Basic knowledge about Safety in Construction

Following courses : Nil

## Syllabus Contents

### UNIT I SAFETY CONCEPTS

8

Construction accidents - Construction Safety Management: Importance - causes of accident, safety measures- Environmental issues in construction-Construction industry related laws. Human factors in safety

### UNIT II SAFETY PROGRAMMES

9

Safety Programmes - Construction Safety - Elements of an Effective Safety Programmes - Job-site assessment - Safety Meetings - Safety Incentives. Contractual Obligations - Safety in construction contracts- Substance Abuse - safety Record Keeping.

### UNIT III SAFETY PRACTICES

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Safety Culture - Safe Workers- Safety and First Line Supervisors - Safety and Middle Managers - Top Management Practices, Company Activities and Safety - Safety Personnel - Sub-contractual Obligation - Project Coordination and Safety Procedures - Workers Compensation

### UNIT IV SAFETY SAMPLING AND AUDIT

9

Accident prevention-cost of accidents-Safety and productivity-safety provision in the factories act-accident reporting investigation and statistics-total loss control and damage control-Safety sampling- safety audit - critical incident technique- safety equipment - planning and site preparation- safety system of storing construction materials-Excavation - blasting- timbering-scaffolding- safe use of ladders- safety in welding.

### UNIT V SAFETY IN LIFTING AND FIRE

9

Safety in hand tools- Safety in grinding- Hoisting apparatus and conveyors- Safety in the use of mobile cranes- Manual handling- Safety in demolition work- Trusses, girders and beams- First- aid- Fire hazards and preventing methods-Interesting experiences at the construction site against the fire accidents.

**Computer usage:** NIL

#### Professional component

General	-	0%
Basic Sciences	-	0%
Engineering sciences & Technical arts	-	0%
Professional subject	-	100%

**Broad area :** DESIGN OF STRUCTURES

S. No	Topics	Problem Solving (Yes/No)	Text/ Chapter
<b>UNIT I SAFETY CONCEPTS</b>			
1.	Construction accidents	NO	T1&R1,R2
2.	Construction Safety Management	NO	
3.	Importance - causes of accident, safety measures-	NO	
4.	Importance - causes of accident, safety measures-	NO	
5.	Environmental issues in construction-Construction industry related laws.	NO	
6.	Construction industry related laws.	NO	
7.	Construction industry related laws.	NO	
8.	Human factors in safety	NO	
9.	Human factors in safety	NO	
<b>UNIT II SAFETY PROGRAMMES</b>			
10.	Safety Programmes - Construction Safety	NO	[T1] Chapter -4, [R1]Chapter-9,11
11.			
12.	Elements of an Effective Safety Programmes	NO	
13.	Job-site assessment.	NO	
14.	Safety Meetings - Safety Incentives.	NO	
15.	Contractual Obligations	NO	
16.	Safety in construction contracts	NO	
17.	Substance Abuse	NO	
18.	safety Record Keeping.	NO	
<b>UNIT III SAFETY PRACTICES</b>			
19.	Safety Culture - Safe Workers- Safety and First Line	NO	[T1] Chapter -5,6 [R1]Chapter-4
20.	Supervisors - Safety and Middle Managers	NO	
21.	Top Management Practices	NO	
22.	Company Activities and Safety - Safety Personnel	NO	
23.	- Safety Personnel	NO	
24.	Sub-contractual Obligation - Project Coordination	NO	
25.	Project Coordination	NO	
26.	Safety Procedures	NO	
27.	Workers Compensation	NO	
<b>UNIT IV SAFETY SAMPLING AND AUDIT</b>			
28.	Accident prevention-cost of accidents-Safety and productivity-safety provision in the factories	NO	
29.	-Safety and productivity-safety provision in the factories	NO	

30.	act-accident reporting investigation and statistics-total loss control and damage control	NO	[T1] Chapter – 7, [R1]Chapter-7
31.	Safety sampling- safety audit	NO	
32.	critical incident technique- safety equipment	NO	
33.	planning and site preparation- safety system of storing construction materials	NO	
34.	Excavation - blasting- timbering-	NO	
35.	Scaffolding	NO	
36.	safe use of ladders safety in welding.	NO	
<b>UNIT V SAFETY IN LIFTING AND FIRE</b>			
37.	Safety in hand tools- Safety in grinding	NO	[T1] Chapter -8, 9 [R1]Chapter-12,14
38.	- Hoisting apparatus and conveyors	NO	
39.	Safety in the use of mobile cranes-Manual handling	NO	
40.	Safety in demolition work	NO	
41.	Trusses, girders and beams	NO	
42.	Trusses, girders and beams	NO	
43.	Trusses, girders and beams	NO	
44.	First- aid- Fire hazards and preventing methods	NO	
45.	Interesting experiences at the construction site against the fire accidents.	NO	

### Test Schedule

S. No.	Test	Tentative Date	Portions	Duration
1	Cycle Test-1	February 1 <sup>st</sup> week	Session 1 to 14	2 Periods
2	Cycle Test-2	March 1 <sup>st</sup> week	Session 15 to 28	2 Periods
3	Model Test	March 4 <sup>th</sup> week	Session 1 to 45	3 Hrs
4	University Examination	TBA	All sessions / Units	3 Hrs.

## Mapping of Instructional Objectives with Program Outcome

S.NO	Description	Correlates to program outcome		
		H	M	L
1	Know the safety concepts that have to be adopted in construction	f,h	a,g	
2	Understand the elements of safety programmes	f,h	a,g	
3	Know the awareness on safety practices that has to be ensured during construction.	f,h	a,g	
4	Know about the accident prevention, safety sampling and audit. CO5	f,h	a,g	
5	Know the safety concepts in hand tools, grinding, lifting works and while operating fire fighting equipments.	f,h	a,g	

### Draft Lecture Schedule

### Teaching Strategies

The teaching in this course aims at establishing a good fundamental understanding of the areas covered using:

- Formal face-to-face lectures
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.

### Evaluation Strategies

Cycle Test – I	-	5%
Cycle Test – II	-	5%
Model Test	-	5%
Assignment	-	5%
Attendance	-	10%
Final exam	-	70%

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**Prepared by:** Ms. Shruthi M V Assistant Professor , Department of Civil

**Dated :**

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**Addendum****ABET Outcomes expected of graduates of B.Tech / Civil/ program by the time that they graduate:**

- a. An ability to apply knowledge of mathematics, science, and engineering
- b. An ability to design and conduct experiments, as well as to analyze and interpret data
- c. An ability to design a hardware and software system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d. An ability to function on multidisciplinary teams
- e. An ability to identify, formulate, and solve engineering problems
- f. An understanding of professional and ethical responsibility
- g. An ability to communicate effectively
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- i. A recognition of the need for, and an ability to engage in life-long learning
- j. A knowledge of contemporary issues
- k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**Program Educational Objectives****PEO1: PREPARATION**

Electronics Engineering graduates are provided with a strong foundation to passionately apply the fundamental principles of mathematics, science, and engineering knowledge to solve technical problems and also to combine fundamental knowledge of engineering principles with modern techniques to solve realistic, unstructured problems that arise in the field of Engineering and non-engineering efficiently and cost effectively.

**PEO2: CORE COMPETENCE**

Electronics engineering graduates have proficiency to enhance the skills and experience to apply their engineering knowledge, critical thinking and problem solving abilities in professional engineering practice for a wide variety of technical applications, including the design and usage of modern tools for improvement in the field of Electronics and Communication Engineering.

**PEO3: PROFESSIONALISM**

Electronics Engineering Graduates will be expected to pursue life-long learning by successfully participating in post graduate or any other professional program for continuous improvement which is a requisite for a successful engineer to become a leader in the work force or educational sector.

**PEO4: SKILL**

Electronics Engineering Graduates will become skilled in soft skills such as proficiency in many languages, technical communication, verbal, logical, analytical, comprehension, team building, interpersonal relationship, group discussion and leadership ability to become a better professional.

**PEO5: ETHICS**

Electronics Engineering Graduates are morally boosted to make decisions that are ethical, safe and environmentally-responsible and also to innovate continuously for societal improvement.

Course Teacher	Signature
Ms. Shruthi M V	

**Course Co- Ordinator**

**HOD/CIVIL**