

## Academic Course Description

<p><b>BHARATH UNIVERSITY</b>  Faculty of Engineering and Technology  Department of Civil Engineering</p> <p><b>BCE066 - PREFABRICATION AND CONSTRUCTION TECHNIQUES</b>  <b>Seventh Semester, 2017-18 (odd Semester)</b></p>
---

### Course (catalog) description

To bring about an understanding of the prefabrication and construction techniques adopted and the standardization tolerances-system for prefabrication an also Understand the Pre-casting and handling techniques

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

Credit / Contact hours : 3 credits / 45 hours

Course Coordinator : Mr.P.Dayakar, Assistant Professor

**Instructors** :

Name of the instructor	Class handling	Office location	Office phone	Email (domain:@bharathuniv.ac.in)	Consultation
Mr.P.Dayakar		Civil Block			9.50 – 10.40 AM
Dr.S.J.Moham		Civil Block			2.20 – 3.10 PM

### Relationship to other courses:

Pre –requisites : Building Construction Technology Assumed knowledge : -

Following courses :

### Syllabus Contents

#### **UNIT I INTRODUCTION 9**

Materials - Modular co-ordination, standardization and tolerances-system for prefabrication. Pre-cast concrete manufacturing techniques, Moulds –construction design, maintenance and repair.

#### **UNIT II TECHNIQUES OF PRE-CASTING 9**

Pre-casting techniques - Planning, analysis and design considerations - Handling techniques -Transportation Storage and erection of structures.

#### **UNIT III INDUSTRIAL STRUCTURES 9**

Joints -Curing techniques including accelerated curing such as steam curing, hot air blowing etc., -Test on precast elements - skeletal and large panel constructions - Industrial structures.

#### **UNITIV APPLICATIONS 9**

Pre-cast and pre-fabricating technology for low cost and mass housing schemes. Small pre-cast products like door frames, shutters, Ferro-cement in housing - Water tank service core unit.

#### **UNIT V QUALITY CONTROL 9**

Quality control - Repairs and economical aspects on prefabrication.

### TEXT BOOKS:

1. Vazirani V.N & Ratwani M M, "Concrete Structures", Khanna Publishers, New Delhi, 1995

#### REFERENCES:

1. Levitt. M., Precast concrete - Materials, Manufacture Properties and Usage, Applied Science Publs. 1982,
2. Konex.T., Handbook of Pre-cast Construction, Vol.1.2&3.
3. Richardson,J.G., Pre-cast concrete Production, Cement and Concrete Association, London, 1973.
4. Madhava Rao.A-G., Modern Trends in Housing in Developing Countries, Oxford & UBH Publishing co., 1985. -
5. Lewicki.B., Building with Large Pre-fabrications, Elsevier Publishers.
6. Large Panel Prefabricated Constructions, Proc. of Advance Course conducted by SERC, Madras.
7. Bruggeling.A.S.G., & Huyghe.G.F., Prefabrication with Concrete, A.s.A., Balkema Publishers, Netherland, 1991.

**Computer usage:** Nil

#### Professional component

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

**Broad area:**

#### Test Schedule

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

#### Mapping of Instructional Objectives with Program Outcome

To bring about an understanding of the prefabrication and construction techniques adopted and the standardization tolerances-system for prefabrication an also Understand the Pre-casting and handling techniques	Correlates to program outcome		
	H	M	L
1. To study about Industrial Frames	e	a,c	i
2. To Analyse the Rc structures elements	e	a.c	-
3. To analysis and design of flat slab	e	a,c	-
4. To carry out the functional details of tall buildings	e	a,c	-
5. To study about computer application	e	a,c	-

**Draft Lecture Schedule**

## Teaching Strategies

S.NO	Topics	Problem solving (Yes/No)	Text / Chapter
<b>UNIT I INTRODUCTION</b>			<b>9</b>
1.	Materials	YES	T1/R3
2.	- Modular co-ordination, standardization and tolerances-system for prefabrication. Pre-cast concrete manufacturing techniques, Moulds –construction design, maintenance and repair.	YES	
3.	Briefly explain prefabrication of structures	YES	
4.	Concept of Pre-cast concrete manufacturing techniques	YES	
5.	Briefly explain Moulds construction design,	YES	
6.	Concept of maintenance and repair of structures	YES	
<b>UNIT II TECHNIQUES OF PRE-CASTING</b>			
7.	Pre-casting techniques	YES	T1/R1
8.	Planning, analysis and design considerations		
9.	Handling techniques	YES	
10.	Transportation Storage and erection of structures.	YES	
<b>UNIT III INDUSTRIAL STRUCTURES</b>			
11.	Concept of industrial structures	YES	T1/R1
12.	Explain about Curing techniques including accelerated curing such as steam curing, hot air blowing	YES	
13.	Test on precast elements	YES	
14.	Briefly explain large panel constructions	YES	
15.	Concept of Industrial structures.	YES	
<b>UNITIV APPLICATIONS</b>			<b>9</b>
16.	Pre-cast and technology for low cost and mass housing schemes	YES	T1/R1
17.	pre-fabricating	YES	
18.	shutters, Ferro-cement in housing -	YES	
19.	Small pre-cast products like door frames	YES	
20.	Water tank service core unit	YES	
<b>UNIT V QUALITY CONTROL</b>			
21.	Briefly Quality control	YES	
22.	Concept of Repairs and economical prefabrication	YES	
23.	Types of prefabrication of structures	YES	
24.		YES	

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%

---

Prepared by: Mr P. Dayakar Assistant Professor , Department of Civil

Dated :

---

BCE066 - PREFABRICATION AND CONSTRUCTION TECHNIQUES

## 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**

Civil Engineering graduates will have knowledge to apply the fundamental principles for a successful profession and/or for higher education in Civil Engineering based on mathematical, scientific and engineering principles, to solve realistic and field problems that arise in engineering and non engineering sectors

#### **PEO2: CORE COMPETENCE**

Civil Engineering graduates will adapt to the modern engineering tools and construction methods for planning, design, execution and maintenance of works with sustainable development in their profession.

#### **PEO3: PROFESSIONALISM**

Civil Engineering Graduates will exhibit professionalism, ethical attitude, communication and managerial skills, successful team work in various private and government organizations both at the national and international level in their profession and adapt to current trends with lifelong learning.

**PEO4: SKILL**

Civil Engineering graduates will be trained for developing soft skills such as proficiency in many languages, technical communication, verbal, logical, analytical, comprehension, team building, inter personal relationship, group discussion and leadership skill to become a better professional.

**PEO5: ETHICS**

Civil Engineering graduates will be installed with ethical feeling, encouraged to make decisions that are safe and environmentally-responsible and also innovative for societal improvement.

Course Teacher	Signature
Mr. T.P Maikandaan	

**Course Coordinator**

**HOD/Civil**