

Academic Course Description

<p>BHARATH UNIVERSITY Faculty of Engineering and Technology Department of Civil Engineering</p> <p>BCE065 – CONSTRUCTION EQUIPMENT AND MANAGEMENT Seventh Semester, 2017-18 (Even Semester)</p>

Course (catalog) description

To introduce various construction equipment and study the efficient utilization of the same using scientific principles

Compulsory/Elective course : Compulsory for Civil students

Credit / Contact hours : 3 credits / 45 hours

Course Coordinator : Mr.S.Vinothkumar, Assistant Professor, Department of Civil Engineering

Instructors :

Name of the instructor	Class handling	Office location	Office phone	Email (domain: @bharathuniv.ac.in)	Consultation
Mr.S.Vinothkumar	Final year Civil	Civil Block		vinothsenna@gmail.com	9.00 - 9.50 AM
Mr.K.Venkatraman	Final year Civil	Civil Block		kvenkat26@gmail.com	12.45 - 1.15 PM

Relationship to other courses:

Pre –requisites : Building Construction Technology
 Assumed knowledge : Basic knowledge on Building Construction
 Following courses : BCE054 Construction Planning, Scheduling and Control

Syllabus Contents

UNIT I CONSTRUCTION EQUIPMENT MANAGEMENT 10 hours

Identification – Planning - Equipment Management in Projects - Maintenance Management – Replacement- Cost Control of Equipment - Depreciation Analysis – Safety Management.

UNIT II EQUIPMENT FOR EARTHWORK 10 hours

Fundamentals of Earth Work Operations - Earth Moving Operations - Types of Earth Work Equipment - Tractors, Motor Graders, Scrapers, Front end Waders, Earth Movers.

UNIT III OTHER CONSTRUCTION EQUIPMENTS 10 hours

Equipment for Dredging, Trenching, Tunneling, Drilling, Blasting - Equipment for Compaction - Erection Equipment - Types of pumps used in Construction - Equipment for Dewatering and Grouting – Foundation and Pile Driving Equipment – Equipment for Demolition.

UNIT IV MATERIALS HANDLING EQUIPMENT 5 hours

Forklifts and related equipment - Portable Material Bins – Conveyors – Hauling Equipment.

UNIT V EQUIPMENT FOR PRODUCTIO OF AGGREGATE AND CONCRETING 10 hours

Crushers – Feeders - Screening Equipment - Handling Equipment - Batching and Mixing Equipment - Hauling, Pouring and Pumping Equipment – Transporters.

TEXT BOOKS:

1. Varshney and Maheshwari, Managerial Economics
2. Dewett, Modern Economic Theory

REFERENCE:

1. L.M.Prasad, Principles and Practice of Management, Sultan Chand and Sons.
2. V.P.S.Rao and P.S.Narayana, Principles of Management.

Computer usage: Nil

Professional component

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

Broad area : Construction Techniques ,Equipments and Applications

Test Schedule

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

Mapping of Instructional Objectives with Program Outcome

To introduce various construction equipment and study the efficient utilization of the same using scientific principles	Correlates to program outcome		
	H	M	L
1. Manage the equipment, cost control and maintenance of a project.	e	a,c	i
2. Identify and understand the working principle of earthwork equipments.	e	a,c	
3. Identify and understand the working of various equipments for different construction process	e	a,c	
4. Identify and understand the working principle of material handling equipments	e	a,c	g
5. Understand the working of aggregate production and concreting equipments.	e	a,c	

H: high correlation, M: medium correlation, L: low correlation

Draft Lecture Schedule

Session	Topics	Problem solving (Yes/No)	Text / Chapter
UNIT I CONSTRUCTION EQUIPMENT MANAGEMENT			
1.	Identification	No	[R1, R3]
2.	Planning.	No	
3.	Equipment Management in Projects	No	
4.	Maintenance Management	No	
5.	Replacement	No	
6.	Cost Control of Equipment	No	
7.	Depreciation Analysis	No	
8.	Safety Management	No	
UNIT II EQUIPMENT FOR EARTHWORK			

9.	Fundamentals of Earth Work Operations	No	[R2, R4]
10.	Earth Moving Operations	No	
11.	Types of Earth Work Equipment	No	
12.	Tractors	No	
13.	Motor Graders	No	
14.	Scrapers	No	
15.	Front end Waders	No	
16.	Earth Movers	No	
UNIT III OTHER CONSTRUCTION EQUIPMENTS			
17.	Equipment for Dredging	No	[R1,R2]
18.	Trenching	No	
19.	Tunneling	No	
20.	Drilling	No	
21.	Blasting	No	
22.	Equipment for Compaction	No	
23.	Erection Equipment	No	
24.	Types of pumps used in Construction	No	
25.	Equipment for Dewatering	No	
26.	Grouting	No	
27.	Foundation	No	
28.	Pile Driving Equipment	No	
29.	Equipment for Demolition	No	
UNIT IV MATERIALS HANDLING EQUIPMENT			
30.	Forklifts	No	[R1,R4]
31.	related equipment	No	
32.	Portable Material Bins	No	
33.	Portable Material Bins	No	
34.	Conveyors	No	
35.	Hauling Equipment	No	
36.	Hauling Equipment	No	
UNIT V EQUIPMENT FOR PRODUCTIO OF AGGREGATE AND CONCRETING			
37.	Crushers	No	[T2, R2]
38.	Feeders	No	
39.	Screening Equipment	No	
40.	Handling Equipment	No	
41.	Batching	No	
42.	Mixing Equipment	No	
43.	Hauling, Pouring Equipment	No	
44.	and Pumping Equipment	No	
45.	Transporters	No	

Teaching Strategies

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

- Formal face-to-face lectures
- Tutorials, which allow for exercises in problem solving and allow time for students to resolve problems in understanding of lecture material.
- Laboratory sessions, which support the formal lecture material and also provide the student with practical construction, measurement and debugging skills.
- Small periodic quizzes, to enable you to assess your understanding of the concepts.

Evaluation Strategies

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

Prepared by: Mr.S.Vinothkumar Assistant Professor , Department of Civil

Dated :

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.S.Vinothkumar	
Mr.K. Venkatraman	

Course Coordinator

HOD/CIVIL