SATHYABAMA UNIVERSITY

(Established under Section 3 of UGC Act, 1956)

Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119

www.sathyabamauniversity.ac.in

FACULTY OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING

Academic year 2016-2017

The second periodic Board of Studies Meeting for the Academic Year 2016-2017 (both UG and PG programme) for the Department of Civil Engineering, School of Building and Environment will be held on 13.11.2016 at 1.00 pm

Internal members

1. Dr. S.Packialakshmi, Head and Associate Professor, Department of Civil Engineering
2. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
3. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
4. Mr. A. Annadurai, Associate Professor, Department of Civil Engineering

External members

1. Dr. Arul Jayachandran, Structural Engineering Division, IIT Madras, India.
2. Dr. K. Gunasekaran, Associate Professor, Division of Transportation Engineering, Anna University
3. Dr. S.T. Ramesh, Associate Professor, NIT Trichy
4. Dr. V. Balakumar, Senior Consultant at Simplex Infrastructurs Ltd
5. Ar. Rajan Venkateshwaran, Head, centre for Excel & Future Development, L&T

Agenda:

1. Review of Curriculum of both UG and PG programmes
2. Introduction of Elective Course Mechanics of Composite Materials for PG programme

(S. PACKIALAKSHMI)

HOD/CIVIL

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DEPARTMENT OF CIVIL ENGINEERING

Minutes of the BOS Meeting - Academic year 2016-2017

The second periodic Board of Studies Meeting for the Academic Year 2016-2017 (both UG and PG programme) is held 13th November, 2016 at 1.00 pm at CADD Lab - I, Civil Engineering Dept.

Members Present

1. Dr. Arul Jayachandran, Structural Engineering Division, IIT Madras, India.
2. Dr. K. Gunasekaran, Associate Professor, Division of Transportation Engineering, Anna University
3. Dr. S.T. Ramesh, Associate Professor, NIT Trichy
4. Dr. V. Balakumar, Senior Consultant at Simplex Infrastructures Ltd
5. Ar. Rajan Venkateshwaran, Head, centre for Excel & Future Development, L&T
6. Dr. S.Packialakshmi, Head and Associate Professor, Department of Civil Engineering
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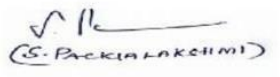
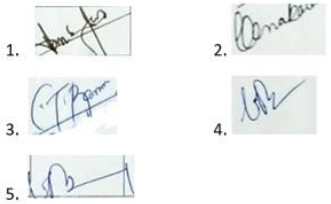
8. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
9. Mr. A. Annadurai, Associate Professor, Department of Civil Engineering

Discussion of Board of Studies meeting were highlighted as follows:

- The members of the Board of Studies reviewed the curriculum for both the UG and PG programmes for the upcoming semester and concluded that the curriculum met the needs of industry.
- As per inputs given from Dr. Arul Jayachandran. Professor, Division of Structural Engineering, IIT Madras, Chennai, the Elective Course Mechanics of Composite Materials can be included to make students on studying the performance of Composite Materials used in the construction industry





HOD/CIVIL **EXPERT MEMBERS**

SCI5602	MECHANICS OF COMPOSITE MATERIALS	L	T	P	Credits	Total Marks
		3	1	0	4	100

COURSE OBJECTIVE

To develop an understanding of the behaviour and design study of Steel concrete composite elements and structures.

UNIT 1 INTRODUCTION 12 Hrs.

Introduction to Composites, Classifying composite materials, commonly used fiber and matrix constituents, Composite Construction, Properties of Unidirectional Long Fiber Composites and Short Fiber Composites.

UNIT 2 STRESS STRAIN RELATIONS 12 Hrs.

Concepts in solid mechanics, Hooke's law for orthotropic and anisotropic materials, Linear Elasticity for Anisotropic Materials, Rotations of Stresses, Strains, Residual Stresses.

UNIT 3 ANALYSIS OF LAMINATED COMPOSITES 12 Hrs.

Governing equations for anisotropic and orthotropic plates. Angle-ply and cross ply laminates – Static, Dynamic and Stability analysis for Simpler cases of composite plates, Interlaminar stresses.

UNIT 4 FAILURE AND FRACTURE OF COMPOSITES 12 Hrs.

Netting Analysis, Failure Criterion, Maximum Stress, Maximum Strain, Fracture Mechanics of Composites, Sandwich Construction.

UNIT 5 APPLICATIONS AND DESIGN 12 Hrs.

Metal and Ceramic Matrix Composites, Applications of Composites, Composite Joints, Design with Composites, Review, Environmental Issues.

Max. 60 Hours

COURSE OUTCOME

On the end of the course, student will be able to:

- CO1 - Explain the various types of composites and its constituents
- CO2 - Derive the constitutive relationship and determine the stresses and strains in a composite material
- CO3 - Analyze a laminated plate and interlaminated stresses.
- CO4 - Explain the various failure criteria and fracture mechanics of composites
- CO5 - Discuss the various applications of Composites
- CO6 - Design simple composite elements

TEXT / REFERENCE BOOKS

1. Agarwal.B.D., Broutman.L.J., and Chandrashekara.K. "Analysis and Performance of Fiber Composites", John-Wiley and Sons,2006.
2. Daniel.I.M., and Ishai.O, "Engineering Mechanics of Composite Materials", Oxford University Press, 2005.
3. Hyer M.W., and White S.R., "Stress Analysis of Fiber-Reinforced Composite Materials", D.Estech Publications Inc., 2009
4. Jones R.M., "Mechanics of Composite Materials", Taylor and Francis Group 1999.
5. Mukhopadhyay.M, "Mechanics of Composite Materials and Structures", Universities Press, India, 2005
6. Datoo, "Mechanics of Fibrous Composites" Elsevier Science Publishers Ltd, 1991.

END SEMESTER EXAM QUESTION PAPER PATTERN

Max. Marks: 80 **Exam Duration : 3 Hrs.**

PART A : 6 Questions of 5 marks each – No choice - uniformly distributed **30 Marks**

PART B : 2 Questions from each unit of internal choice, each carrying 10 marks **50 Marks**