



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY

(DEEMED TO BE UNIVERSITY)

Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE

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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING - Academic year 2020-2021

The periodic Board of studies meeting - Virtual, for the Department of Civil Engineering, School of Building and Environment will be held on 01.02.2021 at 11.00 am

Internal members

1. Dr.Devyani Gangopadhyay, Dean, School of Building and Environment
2. Dr.S.Packialakshmi, Associate Professor, Department of Civil Engineering
3. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
4. Dr.V.Sampathkumar, Professor, Department of Civil Engineering
5. Dr.S.Nandhakumar, Assistant Professor, Department of Civil Engineering

External members

1. Dr.R.Santhakumar, Professor, Department of Civil Engineering, NITTTR, Chennai
2. Dr.R.Saravanan, Associate Professor, CWR, Anna University, Chennai

Agenda:

1. Review of Curriculum for the upcoming semester courses
2. Implementation of Public Health Engineering as Choice Based Credit System Course all branches of UG Programme

Convenor/Dean

HOD

Expert member



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SCHOOL OF BUILDING AND ENVIRONMENT DEPARTMENT OF CIVIL ENGINEERING

Minutes of the BOS Meeting - Academic year 2020-2021

The Board of Studies Meeting - Virtual for both UG and PG programme is held on 1st Febraury, 2021 at 11.00 AM.

Members Present

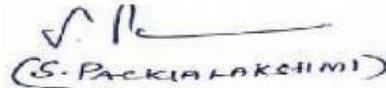
- | | |
|--|---------------|
| 1. Dr.Devyani Gangopadhyay
Dean, School of Building and Environment | Convenor |
| 2. Dr.R.Santhakumar
Professor, Department of Civil Engineering, NITTTR, Chennai | Expert Member |
| 3. Dr.R..Saravanan
Associate Professor, CWR, Anna University, Chennai | Expert Member |
| 4. Dr.R.Padmapriya
Associate Professor, Department of Civil Engineering | Member |
| 5. Dr.S.Packialakshmi,
Associate Professor, Department of Civil Engineering | Member |
| 6. Dr.V.Sampathkumar,
Professor, Department of Civil Engineering | Member |
| 7. Dr.S.Nandhakumar
Assistant Professor, Department of Civil Engineering | Member |

After a brief introduction, the agenda were taken up for discussion and as per the constructive suggestions given by Dr. R. Santhakumar, Professor, Department of Civil Engineering, NITTTR, Chennai and Dr. R. Saravanan, Associate Professor, CWR, Anna University, Chennai, the following discussions were taken up into considerations;

- The syllabus for the Public Health Engineering for all UG Programmes was approved by Expert Committee members and implemented as CBCS for the academic year 2020-2021
- The Curriculum for the courses (both Undergraduate and Post Graduate) in the upcoming semester is meeting out the requirements of skill development / Employability / Entrepreneurship liability for the students.

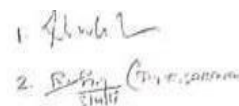


Convenor/Dean



(S. Packialakshmi)

HOD



1. Dr. R. Santhakumar
2. Dr. R. Saravanan (CWR, Anna Univ.)

Expert member

SCIA4002	PUBLIC HEALTH ENGINEERING	L	T	P	Credits	Total Marks
		2	0	0	2	100

COURSE OBJECTIVES

- To provide knowledge about the solid waste management and its disposal.
- To implicate the importance of wastewater treatment.
- To create awareness and importance of the Rainwater Harvesting and Artificial Recharge Techniques.
- To provide an awareness about the health impacts due to water, air and land pollution.
- To gain knowledge on various regulatory bodies and acts.

UNIT – I – SOLID WASTE MANAGEMENT

Importance of public health engineering - Role of public health engineer - Sources and types of solid wastes - Waste generation rates and variation - Components of Integrated SWM - Sustainable SWM techniques at source - Segregation and sorting, reduce, reuse, and recycle. Present scenario of SWM in Urban Local Bodies - Dumping of solid waste- sanitary landfills- waste disposal options - Case studies related to reuse of waste.

UNIT – II – WASTEWATER MANAGEMENT

Sewage - classification - Waste water treatment - primary, secondary and tertiary stages - Standards for Disposal - Methods - Self- purification of river- Oxygen sag curve - Land disposal - Sewage farming - Objectives - Sludge characterization - Thickening - Design of gravity thickener- Sludge digestion - Sludge Conditioning and Dewatering - Sludge drying beds- ultimate residue disposal - recent advances - Case studies related to wastewater reclamation.

UNIT – III – WATER QUALITY MANAGEMENT

Role of Environmental Engineer - Water supply - development of public water supply - need for protected water supplies - objectives of water supply systems – Quality of water - physical, chemical and biological aspects - analysis of water - water quality standards - Sustainable Development - Rainwater Harvesting-Artificial Recharge Techniques - Case studies related to water management.

UNIT – IV – HEALTH IMPACTS

Health and environmental effects of water, air and land pollution - Chemicals in drinking water - Sources of air pollution - Sources of land pollutants - Disease - Preventive measures - Case studies related to pollution effects.

UNIT – V – GUIDELINES FOR WATER ACT & AIR ACT

Role of regulatory bodies & Local bodies-CPCB-TWAD Board- CMWSSB etc - Case Studies related to Effective Water Management - National concern for environment: Important environmental protection acts in India - water, air (prevention and control of pollution) act.

COURSE OUTCOMES:

On completion of the course, student will be able to

- CO1 - Understand the segregation and 3R from the solid waste.
- CO2 - Perform basic design of the unit operations and processes that are used in sewage treatment.
- CO3 - Analysis of water quality criteria and standards and their relation to public health.
- CO4 - Study on health impacts and its preventive measures.
- CO5 - Understand about the various boards for water and air acts.
- CO6 - Understand the prevention and control of water and air pollution acts.

TEXT / REFERENCES BOOKS:

1. Khan, I. H., & Ahsan, N. (2019). Textbook of solid waste management. New Delhi: Satish Kumar Jain for CBS Publisher and Distributors.
2. Mantell C.L., (1975), "Solid Waste Management", John Wiley.
3. "Wastewater Engineering - Treatment and Reuse", Metcalf and Eddy Inc., (2012), 4th Edition, Tata McGraw Hill Publishing Co. Ltd., New Delhi.
4. Viessman Jr, Hammer J. M, Perez, E.M, and Chadik, P. A, Water Supply and Pollution Control, PHI Learning, New Delhi, 2009
5. CPHEEO (2016). Manual on Municipal Solid Waste Management, Central Public Health and Environmental Engineering Organisation, Ministry of Urban Development, Govt. of India, New Delhi.



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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING - Academic year 2020-2021

The periodic Board of studies meeting - Virtual, for the Department of Civil Engineering, School of Building and Environment will be held on 30.06.2020 at 4.00 pm

Internal members

1. Dr.Devyani Gangopadhyay, Dean, School of Building and Environment
2. Dr.S.Packialakshmi, Associate Professor, Department of Civil Engineering
3. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
4. Dr.V.Sampathkumar, Professor, Department of Civil Engineering
5. Dr.S.Nandhakumar, Assistant Professor, Department of Civil Engineering

External members

1. Dr.R.Santhakumar, Professor, Department of Civil Engineering, NITTTR, Chennai
2. Dr.R.Saravanan, Associate Professor, CWR, Anna University, Chennai

Agenda:

1. Review of Curriculum for the upcoming semester courses
2. Implementation of Industry 4.0 for UG and PG Programmes

Convenor/Dean

HOD

Expert member



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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

Minutes of the BOS Meeting - Academic year 2020-2021

The Board of Studies Meeting - Virtual for both UG and PG programme is held on 30th June, 2020 at 4.00 pm.

Members Present

- | | |
|--|---------------|
| 1. Dr.Devyani Gangopadhyay
Dean , School of Building and Environment | Convenor |
| 2. Dr.R.Santhakumar
Professor, Department of Civil Engineering, NITTTR, Chennai | Expert Member |
| 3. Dr.R..Saravanan
Associate Professor, CWR, Anna University, Chennai | Expert Member |
| 4. Dr.R.Padmapriya
Associate Professor, Department of Civil Engineering | Member |
| 5. Dr.S.Packialakshmi,
Associate Professor, Department of Civil Engineering | Member |
| 6. Dr.V.Sampathkumar,
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| 7. Dr.S.Nandhakumar
Assistant Professor, Department of Civil Engineering | Member |



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After a brief introduction, the agenda were taken up for discussion and as per the constructive suggestions given by Dr. R. Santhakumar, Professor, Department of Civil Engineering, NITTTR, Chennai and Dr. R. Saravanan, Associate Professor, CWR, Anna University, Chennai, the following discussions were taken up into considerations;

- The Curriculum for the courses in the upcoming semester is reviewed and met out the requirements of skill development / Employability / Entrepreneurship liability for the students.
- Introduction of industry oriented and emerging technologies in various disciplines in the Industry 4.0 will be helpful for the students to industry ready within their course period
- The long duration of internship training may be included in program curriculum to expand the knowledge on real time industrial projects to the students.
- The students must acquire knowledge on skill development courses in relation with industry and additional credits can also be given for the same.

Convenor/Dean

HOD

Expert member

SAIC4001	INDUSTRY 4.0	L	T	P	Credits	Total Marks
		2	0	2	2	100

UNIT 1 ADVANCED TECHNOLOGY AND ADVANCED MATERIALS**7 Hrs.**

Advanced electro-optical sensing technology-active, passive multi-spectral and hyper spectral imaging; electronic beam steering; vacuum technology, surface and coating technology, health care technology, Nanotechnology- Nanomechanics, Nano optoelectronics; energy storage technology-next generation Li-based Batteries, Hydrogen storage, solar photovoltaic's, Flexible electronics. Intellectual Property Rights - case studies governing/pertaining to Materials/Technology.

UNIT 2 TRANSFORMING TECHNOLOGIES IN BIOENGINEERING**7 Hrs.**

Establishment of smart biotechnology factory, Artificial intelligence in Bioprocess technology, Omics - Big data analysis through automation, 3D bio printing for tissue engineering. Simulation tools, RSM and Box model. Cyber physical system based telemedicine, diagnosis and therapeutics through real time biosensors. Bionanotechnology. Intellectual Property rights (IPR): Case Studies.

UNIT 3 ADVANCEMENTS IN SUSTAINABLE BUILT ENVIRONMENT**7 Hrs.**

Introduction - Technological developments in Architectural, Engineering and Construction (AEC) - Building Information Modelling (BIM) using Cloud computing technology and Internet of things (IoT) - Unmanned Aerial Vehicles, sensors - Additive manufacturing in construction - Concrete 3D printing - Materials used - Lightweight and functionally graded structures - Net Zero Energy buildings, Bioswales, Biofiltration pond, Ecosan systems- Recent developments in Waste water Management, Air pollution control, waste disposal - Integration of energy, water and environmental systems for a sustainable development- Emerging Technologies: Robot Highway- Vertical farming - Intellectual Property rights: Case studies.

UNIT 4 SMART MANUFACTURING**8 Hrs.**

Smart factories and interconnection, Smart Manufacturing - automation systems, Additive Manufacturing, Smart grids, Micro Electro Mechanical Systems (MEMS), Stealth technology, Metal Finishing, Self-propelled vehicles, e mobility, Green fuels, drones - unmanned aerial vehicles(UAVs), aerodynamics. Robotic Automation and Collaborative Robots - Augmented reality and haptics, engineering cybernetics and artificial intelligence (AI), Disruptive Technologies - Frugal Innovations - Emerging Technologies- Autonomous Robots, Swam Robot, Modular Robotics, Space craft, Intellectual Property Rights (IPR): Case Studies.

UNIT 5 SMART WORLD**8 Hrs.**

Smart Sensors and IIOT, Smart grid, Hybrid renewable energy systems, Electronics in Smart city, Integration of Sensors in Robots and Artificial Intelligence, 5G Technology, Communication protocols, Human-Machine Interaction, Virtual Reality, Quantum Computing: Changing trends in transistor technology: Processor, Emerging Trends: Deep Space, Swarm Robots, Cyborg, Geofencing, Pervasive Computing, Intellectual Property Rights- Case Studies.

UNIT 6 CYBER PHYSICAL SYSTEMS**8 Hrs.**

Introduction to Cyber Physical Systems (CPS), Architecture of CPS, Data science and technology for CPS, Prototypes of CPS, Emerging applications in CPS including social space, crowd sourcing, healthcare and human computer interactions, Industrial Artificial Intelligence, Deep Learning, Gamification, Networking systems for CPS applications, Wearable cyber physical systems and applications, Domain applications of CPS: Agriculture, Infrastructure, Disaster management, Energy, Transportation, Intellectual Property Rights (IPR) : Case Studies.

Max. 45 Hrs.**COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1 - Apply the basic concepts for electro optical sensing technology and selection of materials.
- CO2 - Analyze the technology on AI and Big Data for biomedical applications.
- CO3 - Elaborate the various technologies for sustainable built environment..
- CO4 - Evaluate different smart manufacturing technologies for industrial robotics-based automation.
- CO5 - Compare various advanced technologies for development of smart city..
- CO6 - Build Cyber physical systems using AI for Industry, Agriculture and disaster management applications.

TEXT / REFERENCE BOOKS

1. William D. Callister, "Materials Science and Engineering, An Introduction", John Wiley and Sons Inc. Singapore, 2001.
2. V. Raghavan, "Physical Metallurgy: Principle and Practice", Prentice Hall India Pvt Ltd., 2006.
3. FlavioCraveiro, Jose Pinto Duarte, Helena Bartolo and Paulo JorgeBartolo, "Additive manufacturing as an enabling technology for digital construction: A perspective on Construction 4.0", Automation in Construction, Vol. 103, 2019.
3. Klaus Schwab, "Fourth Industrial Revolution", Random House USA Inc, New York, USA, 2017.



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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING - Academic year 2019-2020

The periodic Board of studies meeting, for the Department of Civil Engineering, School of Building and Environment will be held on 10.12.2019 at 10.00 Am

Internal members

1. Dr.Devyani Gangopadhyay, Dean, School of Building and Environment
2. Dr.S.Packialakshmi, Associate Professor, Department of Civil Engineering
3. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
4. Dr.V.Sampathkumar, Professor, Department of Civil Engineering
5. Dr.S.Nandhakumar, Assistant Professor, Department of Civil Engineering

External members

1. Dr.R.Santhakumar, Professor, Department of Civil Engineering, NITTTR, Chennai
2. Dr.R.Saravanan, Associate Professor, CWR, Anna University, Chennai

Agenda:

1. Review of Curriculum for the upcoming semester courses for both UG and PG programmes
2. Implementation of Disaster Management for UG Programmes

Convenor/Dean

HOD

Expert member



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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

Minutes of the BOS Meeting - Academic year 2019-2020

The Board of Studies Meeting for both UG and PG programme is held on 10th December, 2019 at 10.00 AM.

Members Present

- | | |
|--|---------------|
| 1. Dr.Devyani Gangopadhyay
Dean , School of Building and Environment | Convenor |
| 2. Dr.R.Santhakumar
Professor, Department of Civil Engineering, NITTTR, Chennai | Expert Member |
| 3. Dr.R..Saravanan
Associate Professor, CWR, Anna University, Chennai | Expert Member |
| 4. Dr.R.Padmapriya
Associate Professor, Department of Civil Engineering | Member |
| 5. Dr.S.Packialakshmi,
Associate Professor, Department of Civil Engineering | Member |
| 6. Dr.V.Sampathkumar,
Professor, Department of Civil Engineering | Member |
| 7. Dr.S.Nandhakumar
Assistant Professor, Department of Civil Engineering | Member |



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After a detailed discussion on the review of curriculum, the agenda were taken up for discussion and as per the suggestions given by Dr. R. Santhakumar, Professor, Department of Civil Engineering, NITTTR, Chennai and Dr. R. Saravanan, Associate Professor, CWR, Anna University, Chennai, the following points were taken up into considerations;

- Implementation of Disaster Management as per the guidelines of AICTE regulations and also to acquire knowledge on handling the disaster keeping in mind the standard operating procedures of various types of disasters
- The students must acquire knowledge on skill development courses in relation with industry and additional credits can also be given for the same.
- The Curriculum for the courses in the upcoming semester is reviewed and met out the requirements of skill development / Employability / Entrepreneurship liability for the students.

Convenor/Dean

HOD

Expert member

SCIA4001	DISASTER MANAGEMENT	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVE

- To create an awareness towards natural and man-made disasters, disaster preparedness and disaster management

UNIT 1 INTRODUCTION TO DISASTERS**12 Hrs.**

Natural resources and its importance - understanding on fragile eco-system - characteristics and types of Disasters, Geological and Mountain Area Disasters: Earthquakes, Volcanic eruption, landslides - Wind and Water Related Natural Disaster: Floods, Droughts, Cyclones, Tsunamis - Man Made Disasters: Forest fires, Nuclear, Biological and Chemical disaster - Causes and effects - Disaster Profile of India - Disaster Management cycle.

UNIT 2 DISASTER PREPAREDNESS**8 Hrs.**

Disaster management, mitigation and preparedness: Disaster Preparedness for People and Infrastructure, Community based Disaster Preparedness Plan - Roles & Responsibilities of Different Agencies and Government: Education, Communication & Training, Central, State, District and local administration, Armed Forces, Police, Para Military Forces, International Agencies, and NGO's - Disaster Mitigation: Strategies, Emerging Trends, Mitigation management and Role of Team and Coordination.

UNIT 3 REHABILITATION, RECONSTRUCTION AND RECOVERY**10 Hrs.**

Damage assessment – Development of Physical and Economic Infrastructure - Nature of Damage to Houses and Infrastructure due to Disasters - Funding Arrangements for Reconstruction - Monitoring and Evaluation of Rehabilitation Work: Training, Rescue and planning the rescue activities and rehabilitations - Role of Government and NGO's - Participative Rehabilitation Process: Case Studies

UNIT 4 DISASTER RESPONSE AND DISASTER MANAGEMENT**8 Hrs.**

Disaster Response Plan: Communication, Participation and Activation of Emergency Preparedness Plans, Search, Rescue, Evacuation and other logistic management - Human Behaviour and Response Management: Psychological Response and Psychological Rehabilitation, Trauma and Stress Management, rumour and Panic Management, Medical and Health Response to Different Disasters - Relief Measures: Minimum Standard of Relief, essential components of Relief Management, and funding.

UNIT 5 RISK ASSESSMENT AND VULNERABILITY ANALYSIS**7 Hrs.**

Hazard, Risk and Vulnerability: Concept and Relationship: Disaster Risk Reduction, People Participation in Risk Assessment - Vulnerability Analysis, Vulnerability Identification - Vulnerability profile of India - Strategies for Survival - Social Infrastructure for Vulnerability Reduction.

Max. 45 Hrs.**COURSE OUTCOMES**

On completion of the course, student will be able to

- CO1 - Know the fragile ecosystem and the types of the disasters
- CO2 - Acquire the preparedness and the responsibilities of different agencies on Disaster
- CO3 - Understand the rescue, rehabilitation and reconstruction process of disaster management
- CO4 - Understand the disaster response and relief measures
- CO5 - Understand the concepts of disaster risk
- CO6 - Understand the concepts of vulnerability reduction

TEXT / REFERENCE BOOKS

1. Bryant Edwards, "Natural Hazards", Cambridge University Press, U.K, 2005
2. Carter, W. Nick, "Disaster Management, Asian Development Bank", Manila, 1991.
3. Government of India, "Vulnerability Atlas of India", New Delhi, 1997.
4. Sahni, Pardeep et.al. (eds.), "Disaster Mitigation Experiences and Reflections", Prentice Hall of India, New Delhi, 2002
5. Sahni, Pardeep and Ariyabandu, "Disaster risk reduction in South Asia", Phi learning pvt. Ltd., New Delhi, 2012.
6. Sharma, R.K. & Sharma, G.,(ed), "Natural Disaster", APH Publishing Corporation, New Delhi, 2005.
7. Taori, K, "Disaster Management through Panchayati Raj", Concept Publishing Company, New Delhi, 2005.
8. NOAA Coastal Services Center, "Linking People Information and Technology",

END SEMESTER EXAMINATION QUESTION PAPER PATTERN**Max. Marks: 100****Exam Duration: 3Hrs.****PART A:** 10 Questions of 2 marks each – No choice**20 Marks****PART B:** 2 Questions from each unit of internal choice each carrying 16 marks**80 Marks**



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SCHOOL OF BUILDING AND ENVIRONMENT DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING - Academic year 2018-2019

The periodic Board of studies meeting for the Department of Civil Engineering, School of Building and Environment will be held on 11.11.2018 at 10.00 am

Internal members

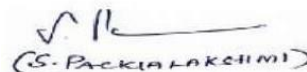
1. Dr.S.Packialakshmi, Head and Associate Professor, Department of Civil Engineering
2. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
3. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
4. Mrs. A. Annadurai, Associate Professor, Department of Civil 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 Non-linear Analysis of Structures for PG programme



(S. Packialakshmi)

HOD/CIVIL



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Minutes of the BOS Meeting - Academic year 2018-2019

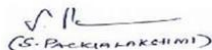
The periodic Board of Studies Meeting for the Academic Year 2018-2019 (both UG and PG programme) is held on 11.11.2018 at 10.00 am at CADD Lab - I, Civil Engineering Dept.

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
7. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
8. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
9. Mrs. A. Annadurai, Associate Professor, Department of Civil Engineering

The discussion of Board of Studies meeting were pointed 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 the suggestions given from Dr. Arul Jayachandran. Professor, Division of Structural Engineering, IIT Madras, Chennai, the Elective Course Non-linear Analysis of Structures must be included to learn the students to understand the behaviour of Structures.


(S. Packialakshmi)

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5. 

HOD/CIVIL

EXPERT MEMBERS

SCIA7012	NON LINEAR ANALYSIS OF STRUCTURES	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVE

- To study the concept of nonlinear behaviour and analysis of elements and simple structures.

UNIT 1 INTRODUCTION**9 Hrs.**

Introduction- Types of Non-Linearities-Non-linear Governing equations for Beams-Geometrically non linear beams for various supports- vibrations of Beams with various boundary conditions-forced vibrations of Beams-Post buckling of Column- Behaviour of Beams with Material Non linearity.

UNIT 2 RECTANGULAR PLATES**9 Hrs.**

Governing Non linear equations of Plates-Boundary conditions –Large deflections of Rectangular plates- Free and forced vibration of Rectangular plates- Free and forced vibration of Non Rectangular plates-Large deflections of Rectangular, Non Rectangular plates- Post buckling of Plates- Effects of Transverse Shear Deformation.

UNIT 3 SHELLS**9 Hrs.**

Non linear analysis of Shells-Circular Cylindrical shells-Shallow Spherical shells-Non Circular Cylindrical shells-Forced Non-linear vibration of shells-Post buckling of shells.

UNIT 4 TRUSSES AND FRAMES**9 Hrs.**

Non linear analysis of curved beams-trusses-frames- Three Dimensional Mechanism-Large and small deformation and large angle of rotation- classical linear theory- Non linear material properties – finite element method- stiffened structures.

UNIT 5 COMPOSITE MATERIAL**9 Hrs.**

Non linear analysis of composite materials- composite beams- non linear vibrations- Post buckling behavior- composite plates governing equation-laminated plates cylindrical bending- laminated plates large amplitude vibration.

Max. 45 Hrs.**TEXT / REFERENCE BOOKS**

1. Fertis, D.G., "Nonlinear Mechanics", CRC Press, 1999.
2. Reddy.J.N., "Non linear Finite Element Analysis", Oxford University Press, 2008.
3. Sathyamoorthy M., "Nonlinear Analysis of Structures", CRC Press, 2010.

END SEMESTER EXAMINATION QUESTION PAPER PATTERN**Max. Marks: 100****Exam Duration: 3 Hrs.****PART A:** 5 Questions of 6 Marks each – No choice**30 Marks****PART B:** 2 Questions from each unit of internal choice, each carrying 14 Marks**70 Marks**



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BOARD OF STUDIES MEETING - Academic year 2018-2019

The periodic Board of studies meeting for the Department of Civil Engineering, School of Building and Environment will be held on 06.06.2018 at 10.00 am

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. Mrs. 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 for the upcoming Academic Year
2. Implementation of Computer Applications in Civil Engineering for UG Programmes



(S. Packialakshmi)

HOD/CIVIL



SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE

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SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

Minutes of the BOS Meeting - Academic year 2018-2019

The periodic Board of Studies Meeting for the Academic Year 2018-2019 (both UG and PG programme) is held on 06.06.2018 at 10.00 am 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
7. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
8. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
9. Mrs. A. Annadurai, Associate Professor, Department of Civil Engineering



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

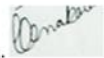
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After a discussion on industrial demands of Civil Engineering field in view of agenda focused, the Board of Studies members Ar. Rajan Venkateshwaran, Head, centre for Excel & Future Development, L&T and Dr. K. Gunasekaran, Associate Professor, Division of Transportation Engineering, Anna University has given suggestions to equip the students, the Computer Applications in Civil Engineering Course must be incorporated in the curriculum of UG programmes.


(S. Packialakshmi)

HOD/CIVIL

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EXPERT MEMBERS

SCI1615	COMPUTER APPLICATIONS IN CIVIL ENGINEERING	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVE

To study and understand the software requirements of computer, programming, optimization techniques, inventory models and scheduling techniques applied to civil engineering.

UNIT 1 INTRODUCTION**9 Hrs.**

Overview of software application in civil - Structural engineering, Transportation Engineering, Foundation and Soil mechanics, Construction Management, Environmental Engineering, Water resources and Irrigation Management - Application.

UNIT 2 SOFTWARE APPLICATION IN STRUCTURAL ENGINEERING**9 Hrs.**

Introduction - Drafting software - Auto CAD, Building information modeling - Revit Architecture, Design and Analysis of structure - STAAD Pro and ETABS, Structural design and detailing - STRUDS, Simulation software Finite Element Analysis - Casestudy.

UNIT 3 SOFTWARE APPLICATION IN TRANSPORTATION ENGINEERING AND SOIL MECHANICS**9 Hrs.**

Introduction - Transportation planning - CUBE and TRANSCAD, Alignment software - MX Roads, Pavement design software - HDM4, Signal Co-ordination - TRANSYT, Simulation software - VISSIM and VISSUM - Case study. Sub soil investigation - DC Software, Finite Element Analysis - Plaxis - 2D and 3D, Soil displacement and stability Oasys - Case study.

UNIT 4 SOFTWARE APPLICATION IN CONSTRUCTION MANAGEMENT AND ENVIRONMENTAL ENGINEERING**9 Hrs.**

Introduction - Planning and resource assessment - Microsoft Project, Project and resource management Primavera, Matchware Mind view, Project kick start, Rational plan multi project - Case study. Introduction - Finite element program for analyzing the ground water seepage - Pak P, Risk assessment tool - E-FRAT, Simulation software - BIOSCREEN - Case study.

UNIT 5 SOFTWARE APPLICATION IN WATER RESOURCES ENGINEERING**9 Hrs.**

Surface water models (HMS) - Storm Water Management Models (SWMM) - culvert hydraulic design(HY) River Analysis system models (HEC-RAS)-Ground Water Flow models - Groundwater transport models. Soil water assessment simulation models (SWAT) - Basin simulation models (MITSIM, VASIM) Real time operation models Water Resources Information System, Management Information System. Decision support system for Irrigation management.

Max. 45 Hours**TEXT / REFERENCE BOOKS**

1. Billy E.Gillet., "Introduction to Operations Research: A Computer - Oriented Algorithmic Approach", Tata McGraw Hill Education, 1979.
2. Paulson, B.R., "Computer Applications in Construction", Mc Graw Hill, 1995
3. Feigenbaum,L., Construction Scheduling with Primavera Project Planner Prentice Hall Inc., 2002
4. Kazda, I., "Finite element Techniques in ground water flow studies (with Applications in Hydraulic and Geotechnical Engineering)", Elsevier, 1990.

END SEMESTER EXAM QUESTION PAPER PATTERN**Max. Marks: 80****Exam Duration : 3 Hrs.****PART A** : 10 questions of 2 marks each - No choice**20 Marks****PART B** : 2 questions from each unit of internal choice, each carrying 12 marks**60 Marks**



SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING - Academic year 2017-2018

The second Board of studies meeting for the Department of Civil Engineering, School of Building and Environment will be held on 22.11.2017 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. Mrs. 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 for the upcoming Academic Year
2. Implementation of Elective Course Structural Optimization for PG programme


(S. Packialakshmi)

HOD/CIVIL



SCHOOL OF BUILDING AND ENVIRONMENT

DEPARTMENT OF CIVIL ENGINEERING

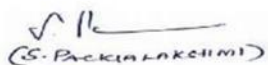
Minutes of Board of Studies Meeting - Academic year 2017-2018

The second periodic Board of Studies Meeting for the Academic Year 2017-2018 (both UG and PG programme) is held on 22nd November, 2017 at 1.00 pm at CADD Lab - I, Civil Engineering Dept.

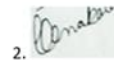
Members Present

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
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7. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
8. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
9. Mrs. A. Annadurai, Associate Professor, Department of Civil Engineering

The discussion in Board of Studies meeting on the industrial demands of the Civil Engineering field in light of the agenda, the member Dr. Arul Jayachandran, Structural Engineering Division, IIT Madras, India has appreciated the review of curriculum and recommended to include the Elective course Structural Optimization for the PG programme.


(S. Packialakshmi)

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EXPERT MEMBERS

SCI5610	STRUCTURAL OPTIMIZATION	L	T	P	Credits	Total Marks
		3	1	0	4	100

COURSE OBJECTIVE

To study the optimization methodologies applied to structural engineering.

UNIT 1 BASIC PRINCIPLES AND CLASSICAL OPTIMIZATION TECHNIQUES 12 Hrs.

Definition - Objective Function; Constraints - Equality and inequality - Linear and non-linear, Side, Non-negativity, Behaviour and other constraints - Design space- Feasible and infeasible - Convex and Concave - Active constraint - Local and global optima. Differential calculus - Optimality criteria - Single variable optimization - Multivariable optimization with no constraints - (Lagrange Multiplier method) - with inequality constraints (Kuhn - Tucker Criteria).

UNIT 2 LINEAR AND NON-LINEAR PROGRAMMING 12 Hrs.

LINEAR PROGRAMMING: Formulation of problems - Graphical solution - Analytical methods - Standard form - Slack, surplus and artificial variables - Canonical form - Basic feasible solution - simplex method - Two phase method - Penalty method - Duality theory - Primal - Dual algorithm.

NON LINEAR PROGRAMMING: One Dimensional minimization methods: Unidimensional - Unimodal function - Exhaustive and unrestricted search - Dichotomous search - Fibonacci Method – Golden section method – Interpolation methods. Unconstrained optimization Techniques.

UNIT 3 GEOMETRIC PROGRAMMING 13 Hrs.

Posynomial - degree of difficulty - reducing G.P.P to a set of simultaneous equations - Unconstrained and constrained problems with zero difficulty – Concept of solving problems with one degree of difficulty.

UNIT 4 DYNAMIC PROGRAMMING 12 Hrs.

Bellman's principle of optimality - Representation of a multistage decision problem - concept of sub-optimization problems using classical and tabular methods.

UNIT 5 STRUCTURAL APPLICATIONS – Genetic Algorithms, Fuzzy optimization Techniques 12 Hrs.

Methods for optimal design of structural elements, continuous beams and single storied frames using plastic theory - Minimum weight design for truss members - Fully stressed design - Optimization principles to design of R.C. structures such as multistorey buildings, water tanks and bridges.

Max. 60 Hours

COURSE OUTCOME

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

- CO1 - Apply the knowledge of engineering fundamentals to formulate and solve the engineering problems by classical optimization techniques.
- CO2 - Identify, formulate and solve engineering problems by linear and non-linear programming.
- CO3 - Analyse the problem and reducing G.P.P to a set of simultaneous equations.
- CO4 - Apply the Engineering knowledge to understand the concept of dynamic programming.
- CO5 - Design various structural elements with minimum weight.
- CO6 - Explain Bellman's principle of optimality

TEXT / REFERENCE BOOKS

1. Rao, S.S. "Optimization theory and applications", Wiley Eastern (P) Ltd., 1984
2. Uri Krish, "Optimum Structural Design", McGraw Hill Book Co. 1981
3. Spunt, "Optimization in Structural Design", Civil Engineering and Engineering Mechanics Services, Prentice-Hall, New Jersey 1971.
4. Iyengar, N.G.R and Gupta, S.K, "Structural Design Optimisation", Affiliated East West Press Ltd, New Delhi, 1997.

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



SCHOOL OF BUILDING AND ENVIRONMENT
DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING - Academic year 2017-2018

The periodic Board of studies meeting for the Department of Civil Engineering, School of Building and Environment will be held on 17.04.2017 at 1.00 pm

Internal members

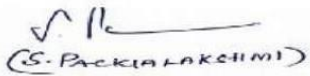
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4. Mrs. A. Annadurai, Associate Professor, Department of Civil Engineering

External members

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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 for the upcoming Academic Year
2. Implementation of Professional Training - II for UG Programmes


(S. Packialakshmi)

HOD/CIVIL



SATHYABAMA UNIVERSITY

(Established under Section 3 of UGC Act, 1956)
Jeppiaar Nagar, Rajiv Gandhi Salai, Chennai - 600 119
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SCHOOL OF BUILDING AND ENVIRONMENT DEPARTMENT OF CIVIL ENGINEERING

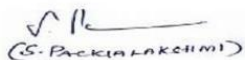
Minutes of Board of Studies Meeting - Academic year 2017-2018

The first periodic Board of Studies Meeting for the Academic Year 2016-2017 (both UG and PG programme) is held on 17th April, 2017 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
7. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
8. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
9. Mrs. A. Annadurai, Associate Professor, Department of Civil Engineering

The discussion in Board of Studies meeting on the industrial demands of the Civil Engineering field in light of the agenda, the members Dr. S.T. Ramesh, Associate Professor, NIT Trichy and Dr. V. Balakumar, Geotechnical Consultant have given suggestions that the Curriculum for the courses in the upcoming semester is reviewed to meet the requirements of the students. To gain knowledge on industrial projects, the second phase of Professional Training Course must be included in the curriculum of the fourth semester of UG programmes.


(S. Packialakshmi)

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EXPERT MEMBERS

PROGRAMME: B.E. CIVIL ENGINEERING CURRICULUM

SEMESTER I

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SMT 1101	Engineering Mathematics I	3	1	0	4	1
2.	SPH 1101	Physics of Engineering Materials	3	0	0	3	2
3.	SCY 1101	Engineering Chemistry	3	0	0	3	4
4.	SCS 1102	Fundamentals of Programming	3	0	0	3	5
5.	SCI 1101	Engineering Mechanics	3	0	0	3	6
6.	SCI 1102	Construction Materials	3	0	0	3	7
7.	SCI 4051	Engineering Graphics Lab	0	0	4	2	9
8.	SCS 4101	Programming in C Lab	0	0	4	2	11
Total Credits							23

SEMESTER II

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SHS 1101	English for Science and Technology	3	0	0	3	12
2.	SMT1105	Engineering Mathematics II	3	1	0	4	14
3.	SPH 1102	Physics of Electronic Devices	3	0	0	3	15
4.	SCY 1103	Chemistry of Industrial Materials	3	0	0	3	17
5.	SCI 1103	Construction Technology	3	0	0	3	18
6.	SCI 1104	Functional Design of Buildings	3	0	0	3	20
7.	SCI 4052	Material Testing Lab	0	0	4	2	22
8.	SPH 4051	Engineering Physics Lab	0	0	2	1	23
9.	SCY 4051	Engineering Chemistry Lab	0	0	2	1	24
Total Credits							23

L - LECTURE HOURS, T – TUTORIAL HOURS, P – PRACTICAL HOURS, C – CREDITS

SEMESTER III

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SMT1201	Engineering Mathematics III	3	1	0	4	25
2.	SCI 1201	Mechanics of Solids I	3	1	0	4	27
3.	SCI 1202	Mechanics of Fluids	3	0	0	3	29
4.	SCI 1203	Surveying I	3	0	0	3	31
5.	SCI 1204	Highway Engineering	3	0	0	3	33
6.	SCI 1205	Engineering Geology	3	0	0	3	34
7.	SCI 4053	Surveying Lab I	0	0	4	2	36
8.	SCI 4054	Building Planning and Drawing	0	0	4	2	37
Total Credits						24	

SEMESTER IV

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SMT 1204	Engineering Mathematics IV /	3	1	0	4	38
2.	SCI 1206	Mechanics of Solids II	3	1	0	4	40
3.	SCI 1207	Applied Hydraulic Engineering	3	1	0	4	42
4.	SCI 1208	Railways, Airport and Harbour Engineering	3	0	0	3	44
5.	SCI 1209	Surveying II	3	0	0	3	46
6.	SCI 1210	Environmental Engineering I	3	0	0	3	48
7.	SCI 4055	Surveying Lab II	0	0	4	2	50
8.	SCI 4056	Hydraulic Engineering Lab	0	0	4	2	51
9.	S20 PT1	Professional Training I	0	0	10	5	
Total Credits						30	

SEMESTER V

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SCI 1301	Structural Analysis I	3	1	0	4	52
2.	SCI 1302	Reinforced Concrete Structures I	3	1	0	4	53
3.	SCI 1303	Design of Steel Structures I	3	1	0	4	54
4.	SCI 1304	Soil Mechanics	3	0	0	3	55
5.	SCI 1305	Water Resources Engineering	3	0	0	3	57
6.	SCI 1306	Environmental Engineering II	3	0	0	3	59
7.	SCI 4057	Concrete Technology Lab	0	0	4	2	61
8.	SCI 4058	Environmental Engineering Lab	0	0	4	2	62
Total Credits						25	

SEMESTER VI

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SCI 1307	Structural Analysis II	3	1	0	4	63
2.	SCI 1308	Reinforced Concrete Structures II	3	1	0	4	65
3.	SCI 1309	Design of Steel Structures II	3	1	0	4	67
4.	SCI 1310	Foundation Engineering	3	0	0	3	69
5.	SCI 1311	Estimation, Costing & Valuation	3	0	0	3	71
6.		Elective 1	3	0	0	3	
7.	SCI 4059	Soil Mechanics Lab	0	0	4	2	72
8.	SCI 4061	Computer Aided Design and Drafting Lab I	0	0	4	2	73
9.	S20 PT2	Professional Training II	0	0	10	5	
TotalCredits							30

SEMESTER VII

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SBA 1101	Principles of Management & Professional Ethics	3	0	0	3	74
2.	SCI 1401	Irrigation Engineering	3	0	0	3	75
3.		Elective 2	3	0	0	3	
4.		Elective 3	3	0	0	3	
5.	SCI 4060	Highway Lab	0	0	4	2	77
6.	SCI 4062	Computer Aided Design and Drafting Lab II	0	0	4	2	78
7.		Project Work (Phase I)					
TotalCredits							16

SEMESTER VIII

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SCI 1402	Prestressed Concrete Structures	3	0	0	3	79
2.	SCI 1403	Construction Management	3	0	0	3	81
3.		Elective 4	3	0	0	3	
4.	S20 PROJ	Project Work (Phase I & II)	0	0	30	15	
Total Credits							24

Total Credits for the Programme 195



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

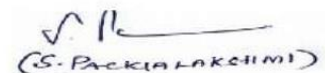
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4. Mr. A. Annadurai, Associate Professor, Department of Civil Engineering

External members

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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



FACULTY OF BUILDING AND ENVIRONMENT
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
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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

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(S. Packialakshmi)

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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. Dattoo, "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**



FACULTY OF BUILDING AND ENVIRONMENT
DEPARTMENT OF CIVIL ENGINEERING

BOARD OF STUDIES MEETING - Academic year 2016-2017

The periodic Board of studies meeting for the Department of Civil Engineering, School of Building and Environment will be held on 20.04.2016 at 1.00 pm

Internal members

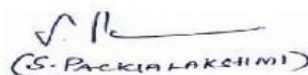
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2. Dr. K. Gunasekaran, Associate Professor, Division of Transportation Engineering, Anna University
3. Dr. S.T. Ramesh, Associate Professor, NIT Trichy
4. Dr. V. Balakumar, Senior Consultant at Simplex Infrastructurs Ltd
5. Ar. Rajan Venkateshwaran,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

Agenda:

1. Review of Curriculum of both UG and PG programmes for the upcoming Academic Year
2. Implementation of Professional Training - I for UG Programmes


(S. Packialakshmi)

HOD/CIVIL



FACULTY OF BUILDING AND ENVIRONMENT
DEPARTMENT OF CIVIL ENGINEERING

Minutes of the BOS Meeting - Academic year 2016-2017

The first periodic Board of Studies Meeting for the Academic Year 2016-2017 (both UG and PG programme) is held on 20th April, 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
7. Dr.R.Padmapriya, Associate Professor, Department of Civil Engineering
8. Mrs. C. S Danee Joycee, Associate Professor, Department of Civil Engineering
9. Mrs. A. Annadurai, Associate Professor, Department of Civil Engineering



- After a detailed discussion on industrial demands of Civil Engineering field in view of agenda focused, the Board of Studies members Ar. Rajan Venkateshwaran, Head, centre for Excel & Future Development, L&T and Dr. V. Balakumar, Geotechnical Consultant has given suggestions that the Curriculum for the courses in the upcoming semester is reviewed and to meet out the requirements of skill development / Employability / Entrepreneurship liability for the students, the Professional Training Course must be incorporated in the curriculum of second year of UG programmes to acquire knowledge on the industrial projects.


(S. Packialakshmi)

HOD/CIVIL

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EXPERT MEMBERS

PROGRAMME: B.E. CIVIL ENGINEERING CURRICULUM

SEMESTER I

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SMT 1101	Engineering Mathematics I	3	1	0	4	1
2.	SPH 1101	Physics of Engineering Materials	3	0	0	3	2
3.	SCY 1101	Engineering Chemistry	3	0	0	3	4
4.	SCS 1102	Fundamentals of Programming	3	0	0	3	5
5.	SCI 1101	Engineering Mechanics	3	0	0	3	6
6.	SCI 1102	Construction Materials	3	0	0	3	7
7.	SCI 4051	Engineering Graphics Lab	0	0	4	2	9
8.	SCS 4101	Programming in C Lab	0	0	4	2	11
Total Credits							23

SEMESTER II

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SHS 1101	English for Science and Technology	3	0	0	3	12
2.	SMT1105	Engineering Mathematics II	3	1	0	4	14
3.	SPH 1102	Physics of Electronic Devices	3	0	0	3	15
4.	SCY 1103	Chemistry of Industrial Materials	3	0	0	3	17
5.	SCI 1103	Construction Technology	3	0	0	3	18
6.	SCI 1104	Functional Design of Buildings	3	0	0	3	20
7.	SCI 4052	Material Testing Lab	0	0	4	2	22
8.	SPH 4051	Engineering Physics Lab	0	0	2	1	23
9.	SCY 4051	Engineering Chemistry Lab	0	0	2	1	24
Total Credits							23

L - LECTURE HOURS, T – TUTORIAL HOURS, P – PRACTICAL HOURS, C – CREDITS

SEMESTER III

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SMT1201	Engineering Mathematics III	3	1	0	4	25
2.	SCI 1201	Mechanics of Solids I	3	1	0	4	27
3.	SCI 1202	Mechanics of Fluids	3	0	0	3	29
4.	SCI 1203	Surveying I	3	0	0	3	31
5.	SCI 1204	Highway Engineering	3	0	0	3	33
6.	SCI 1205	Engineering Geology	3	0	0	3	34
7.	SCI 4053	Surveying Lab I	0	0	4	2	36
8.	SCI 4054	Building Planning and Drawing	0	0	4	2	37
Total Credits						24	

SEMESTER IV

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SMT 1204	Engineering Mathematics IV /	3	1	0	4	38
2.	SCI 1206	Mechanics of Solids II	3	1	0	4	40
3.	SCI 1207	Applied Hydraulic Engineering	3	1	0	4	42
4.	SCI 1208	Railways, Airport and Harbour Engineering	3	0	0	3	44
5.	SCI 1209	Surveying II	3	0	0	3	46
6.	SCI 1210	Environmental Engineering I	3	0	0	3	48
7.	SCI 4055	Surveying Lab II	0	0	4	2	50
8.	SCI 4056	Hydraulic Engineering Lab	0	0	4	2	51
9.	S20 PT1	Professional Training I	0	0	10	5	
Total Credits						30	

SEMESTER V

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SCI 1301	Structural Analysis I	3	1	0	4	52
2.	SCI 1302	Reinforced Concrete Structures I	3	1	0	4	53
3.	SCI 1303	Design of Steel Structures I	3	1	0	4	54
4.	SCI 1304	Soil Mechanics	3	0	0	3	55
5.	SCI 1305	Water Resources Engineering	3	0	0	3	57
6.	SCI 1306	Environmental Engineering II	3	0	0	3	59
7.	SCI 4057	Concrete Technology Lab	0	0	4	2	61
8.	SCI 4058	Environmental Engineering Lab	0	0	4	2	62
Total Credits						25	

SEMESTER VI

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SCI 1307	Structural Analysis II	3	1	0	4	63
2.	SCI 1308	Reinforced Concrete Structures II	3	1	0	4	65
3.	SCI 1309	Design of Steel Structures II	3	1	0	4	67
4.	SCI 1310	Foundation Engineering	3	0	0	3	69
5.	SCI 1311	Estimation, Costing & Valuation	3	0	0	3	71
6.		Elective 1	3	0	0	3	
7.	SCI 4059	Soil Mechanics Lab	0	0	4	2	72
8.	SCI 4061	Computer Aided Design and Drafting Lab I	0	0	4	2	73
9.	S20 PT2	Professional Training II	0	0	10	5	
TotalCredits						30	

SEMESTER VII

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SBA 1101	Principles of Management & Professional Ethics	3	0	0	3	74
2.	SCI 1401	Irrigation Engineering	3	0	0	3	75
3.		Elective 2	3	0	0	3	
4.		Elective 3	3	0	0	3	
5.	SCI 4060	Highway Lab	0	0	4	2	77
6.	SCI 4062	Computer Aided Design and Drafting Lab II	0	0	4	2	78
7.		Project Work (Phase I)					
TotalCredits						16	

SEMESTER VIII

Sl. No.	COURSE CODE	COURSE TITLE	L	T	P	C	PAGE No.
1.	SCI 1402	Prestressed Concrete Structures	3	0	0	3	79
2.	SCI 1403	Construction Management	3	0	0	3	81
3.		Elective 4	3	0	0	3	
4.	S20 PROJ	Project Work (Phase I & II)	0	0	30	15	
Total Credits						24	

Total Credits for the Programme 195