



SATHYABAMA

INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)

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

www.sathyabama.ac.in

SCHOOL OF ELECTRICAL AND ELECTRONICS

Minutes of Board of Studies Meeting held on 7th May 2022

(Virtual Meeting conducted on Zoom Platform (Time: 10.30 a.m. to 12 noon))

- Dr.N.M.Nandhitha, Prof. & Dean School of Electrical and Electronics started the meeting by welcoming both the external and the internal numbers to the Board of Studies meeting (07.05.2022, 10.00 a.m. to 12.00 noon)
- Dr.T.Ravi, Head, Dept. of Electronics and Communication Engineering informed the board that core competencies are identified from the feedback obtained from the students, faculty, Alumni and employers.
- Dr.P.Kavipriya presented the revision carried out in the course Machine Learning Techniques. Dr.M.D.Selvaraj Associate Professor, IIITDM accepted the changes and suggested to include topics such as Occam learning, accuracy and confidence boosting.
- Dr.E.Annadevi suggested to introduce 'IoT in Logistics Sector' in the course IoT for Real Time Application. Dr.N.Sivakumaran Prof.,NIT, Tiruchy accepted the inclusion and also suggested to include Healthcare monitoring Technique for Diabetes Patients.
- Dr.P.Chitra suggested to include the topics 'Machine learning, Artificial neural networks and deep Architectures' in the course Digital Image Processing for Real Time Applications. Dr.Sugudev presented the syllabus revision carried in the course Wireless Communication. Dr.N.Shivakumaran accepted the changes for both the courses.
- Having discussed the revisions in the existing courses, faculty then presented the syllabus for the new courses. Dr.T.Ravi presented the syllabus 'Graphical Programming for Engineers', 'Augmented Reality and Virtual Reality', 'Advanced Electronic Test Engineering' and 'Industry 5.0 for Electronics Engineers' for UG courses. The new syllabus introduced for PG 'Artificial Intelligence for Industrial Applications' and 'Strategies in Industry 5.0' is also briefed by HOD. Dr.M.D.Selvaraj accepted the syllabus for all the courses.

BoS members are happy that the new and the revised courses enhance employability/ Entrepreneurship/Skills of the students.

EXTERNAL MEMBERS:

1. Dr.N.Sivakumaran
2. Dr.M.D.Selvaraj
3. Mr.J.Visweswaran

INTERNAL MEMBERS:

1. Dr.N.M.Nandhitha *MC*
2. Dr.T.Ravi *Oh*
3. Dr.P.Chitra *P.Chitra*
4. Dr.S.Barani *Barani*
5. Dr.S.Poornapushpakala *Sk...*
6. Dr.M.Sumathi *Sum*
7. Dr.S.Lakshmi *lenu*
8. Dr.P.Kavipriya *P*
9. Mr M Sugadev *msug*
10. Ms.E.Anna Devi *E. Anna*
11. Ms.S.Yogalakshmi *yoga*



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SCHOOL OF ELECTRICAL AND ELECTRONICS

Minutes of Board of Studies Meeting held on 26th NOVEMBER 2021

(Virtual Meeting conducted on Zoom Platform (Time: 10.30 a.m. to 12 noon))

- Dr.N.M.Nandhitha, Prof. & Dean School of Electrical and Electronics started the meeting by welcoming both the external and the internal numbers to the Board of Studies meeting (26.11.2021, 10.00 a.m. to 12.00 noon)
- Dr.T.Ravi, Head, Dept. of Electronics and Communication Engineering informed the board that core competencies are identified from the feedback obtained from the students, faculty, Alumni and employers.
- Dr.I.Rexlin sheeba proposed to include Signalling System R2, SS7 Layers and its Protocol topic in Telecommunication and switching System. Dr.M.D.Selvaraj Associate Professor, IITDM accepted the changes and suggested to include topics such as Techniques to improve the Quality of service, Format, Protocol in multicast and IETF Data Tracker.
- Dr.V.VijayaKumar suggested to introduce 'sensor and actuators for IoT Application' in the course Measurement and Instrument. Dr.N.Sivakumaran Prof.,NIT, Tiruchy accepted the inclusion and also suggested to introduce infrared sensors.
- Dr.M.Sumathi suggested to include the topics 'Realizing application in FPGA' in the course Programming in HDL. Dr.N.Shivakumaran accepted the changes.
- Having discussed the revisions in the existing courses, faculty then presented the syllabus for the new courses. Dr.P.Chitra presented the syllabus Deep Learning for Computer Vision and Real-time System Design. Dr.M.D.Selvaraj accepted the syllabus for both the courses.
- Dr.M.Sugadev presented the syllabus for Digital System Design and Verification using System Verilog. Dr.N.Sivakumaran suggested to include Real Time implementation topic in the syllabus.

BoS members are happy that the new and the revised courses enhance employability/ Entrepreneurship/Skills of the students.

EXTERNAL MEMBERS:

1. Dr.N.Sivakumaran
2. Dr.M.D.Selvaraj
3. Mr.J.Visweswaran

INTERNAL MEMBERS:

1. Dr.N.M.Nandhitha *MC*
2. Dr.T.Ravi *Oh*
3. Dr.P.Chitra *Pulita*
4. Dr.S.Barani *Barani*
5. Dr.S.Poornapushpakala. *Shesha*
6. Dr.M.Sumathi *Sam*
7. Dr.S.Lakshmi *lenu*
8. Dr.P.Kavipriya *P*
9. Mr M Sugadev *msug*
10. Ms.E.Anna Devi *E. Anna*
11. Ms.S.Yogalakshmi *yoga*

SECA5209 (NEW)	STRATEGIES IN INDUSTRY 5.0	L	T	P	Credits	Total marks
		2	0	0	2	100
Pre requisite: INDUSTRY 4.0			Co Requisite: NIL			
Course Objectives <ul style="list-style-type: none"> ➤ To acquaint with the digital transformation of Industry 5.0 ➤ To recognize the power of industry to achieve societal goals beyond jobs and growth ➤ To understand the design of personalized electronics products ➤ To focus on methods of interaction between humans and machines in virtual reality ➤ To develop the concept of augmented reality in electronics manufacturing beyond automation and optimization 						
UNIT	CONTENTS					HOURS
1	INDUSTRY 5.0 Evolution from Industry 1.0 to 5.0, Introduction to Industry 5.0, Globalization and Emerging Issues, LEAN Production Systems, Smart and Connected Business Perspective, Smart Factories, Healthcare and Human computer interactions, Next Generation Sensors, Collaborative Platform and Product Lifecycle Management, Big Data and Advanced Analysis.					9
2	DIGITAL TRANSFORMATION TO INDUSTRY 5.0 Digital Transformation, Introduction to Digital Transformation, Digital business transformation, Causes of disruption and transformation, Digital transformation myths and realities, Digital transformation across various industries, Retail industry, Urban Development, e-Governance and the public sector, Insurance industry, Healthcare, Food, Manufacturing, Disaster Control, Elements of Society 5.0, Data Driven to Society, Humanity Vs Society 5.0.					9
3	SMART WORLD Introduction: Sensing & actuation, Communication, Electronics in Smart city, 5G Technology, Communication protocols, Integration of Sensors in Robots and Artificial Intelligence, Human-Machine Interaction, Industrial IoT- Application Domains: Healthcare, Power Plants, Inventory Management & Quality Control, Plant Safety and Security (Including AR and VR safety applications), Facility Management., Intellectual Property Rights- Case Studies - Milk Processing and Packaging Industries.					9
4	CYBER SECURITY IN INDUSTRY 5.0 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, Networking systems for CPS applications, Wearable cyber physical systems and applications, Domain applications of CPS: Agriculture, Infrastructure, Disaster					9

	management, Energy, Intellectual Property Rights (IPR).	
5	AR/VR IN INDUSTRY 5.0 Unity, Basics of Unity, Understanding different panels in Unity, Moving, rotating & scaling Gameobjects in Unity, Game Panel in Unity, Physics in Unity, Increasing the light intensity, Adding colors to Gameobject, Adding textures to Gameobject, Parent and child Gameobjects in Unity. Case Studies- Development of AR/VR Models in Unity.	9

Maximum Hours: 45

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 – Identify the digital transformation power of Industry 5.0 to achieve societal goals beyond jobs and growth

CO2 – Analyze enhanced new production models in electronics

CO3 – Implement various electronics manufacturing technologies of augmented reality beyond automation and optimization

CO4 – Design suitable sensors for smart world real time applications with virtual reality experience

CO5 – Evaluate the performance of various cyber physical systems

CO6 – Create personalized electronics products combining the various industry 5.0 Applications with deep knowledge on Intellectual Property Rights

TEXT / REFERENCE BOOKS

1. S. Misra, A. Mukherjee, and A. Roy, 2020. Introduction to IoT. Cambridge University Press. Availability:https://www.amazon.in/Introduction-IoT-Sudip-Misra/dp/1108959741/ref=sr_1_1?dchild=1&keywords=sudip+misra&qid=1627359928&sr=8-1.
2. S. Misra, C. Roy, and A. Mukherjee, 2020. Introduction to Industrial Internet of Things and Industry 4.0. CRC Press. Availability:https://www.amazon.in/dp/1032146753/ref=sr_1_3?dchild=1&keywords=sudip+misra&qid=1627359971&sr=8-3
3. Klaus Schwab, "Fourth Industrial Revolution", Random House USA Inc, New York, USA, 2017.
4. Oliver Grunow, "SMART FACTORY AND INDUSTRY 4.0. The current state of Application Technologies", Studylab Publications, 2016..
5. Alan B. Craig, Understanding Augmented Reality, Concepts and Applications, Morgan Kaufmann, 2013.

6. Alan Craig, William Sherman and Jeffrey Will, Developing Virtual Reality Applications, Foundations of Effective Design, Morgan Kaufmann, 2009.
7. Grigore C. Burdea, Philippe Coiffet , Virtual Reality Technology, Wiley 2016