



VIGNAN'S

Foundation for Science, Technology & Research

(Deemed to be UNIVERSITY)

-Estd. u/s 3 of UGC Act 1956

Department of Electronics and Communication Engineering

Date: 20-07-2020

Minutes of the Board of studies (BOS) meeting for MTech Embedded Systems(ES) held on 20-07-2020 in Sravanthi Seminar Hall

The following are the members presented for the meeting.

- | | |
|-------------------------------|--|
| 1) Mr.Martin. K. M | - Director and Scientist-F, National Institute of Electronics and information technology, Chennai. |
| 2) Dr Santos Kumar Das | - Assistant Professor, NIT Rourkela |
| 3) Mr.G. Prudviraj | - Principal Engineer, Western Digital, Bangalore. |
| 4) Mr.N. Mallikarjun | - Manager Business Development, Effotronics, Vijayawada. |
| 5) Dr .T. Pitchaiah | - Professor & HOD,ECE |
| 6) Dr. B. Seetharamanjaneyulu | - Professor |
| 7) Dr.Y.Ravi Sekhar | - Associate Professor |
| 8) Dr. V Vijayaragavan | - Associate Professor |
| 9) Mr.P.Reginald | - Co-Ordinator MTech (ES) |

These are the feedback from the external Members

- IOT Should be in 1st semester (as part of embedded software) by Santos
 - Machine Learning should be added
 - Prudhvi said to use embedded as it plays wide range
 - Product development must be introduced.
 - Syllabus should focus on advanced Embedded Systems
 - Fundamentals of internet of things should be changed to design of internet of things
 - Use NVidia processor board Higher version of python, risk 5 board
 - Embedded C Coding standard can be covered in principles of embedded software
 - Advanced instruction and signal functioning should be added
- In SEM III & SEM IV for registration project 1 and project 2 name should be given Real time systems can be shifted to SEM II and keep IOT in Sem 1(can see lab works adjustment)

- Embedded debugging methodologies can be added.
- For applications Automotive-H/W & S/W, FPGA should be added in labs post in GitHub and hack ton, H/W and S/W co design and add 2 processors in syllabus
- Silicon cander board sensitive have 6 sensors(for lab)
- Industrial IOT should along with CIOT which can teach Lora, ZigBee. Use sensitive board along with Raspberry pi



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Outcomes:

1. BOS members approved the revised curriculum (Structure, Syllabus and regulations) of MTech, Embedded Systems and it follows Choice Based Credit System. Course Structure is provided in Appendix A.
2. Major restructuring has taken place in the Curriculum with theory courses integrated with laboratory sessions.
3. All the Courses in the Curriculum are designed to fall under either of the domains of employability (or) skill development (or) Entrepreneurship. The mapping of the courses with employability or skill development is provided in Appendix B.
4. In all the courses of the revised curriculum (R20) substantial changes are made in the content in addition to the inclusion the list of new courses provided in Appendix C.
5. The percentage of revision from R17 to R20 is 50%.
6. Stakeholder's feedback is collected, analyzed and given more priority while designing the curriculum and their suggestions are implemented.

Appendix A
Course Structure -M.Tech (Embedded Systems) 2020
Regulation

I Year - I Semester

Course Code	Course Title	L	T	P	C
Professional Core	Real Time Systems	3	-	-	3
Professional Core	Embedded Systems Architecture	3	-	2	4
Professional Core	Design Of Internet Of Things	3	-	2	4
Professional Core	Advanced Embedded Computing system	3	-	-	3
Total Core Credits					14
Department Elective I	Elective Course – I	3			3
Audit Course I		1	-	-	
Minor Project		-	-	4	2
Total Elective Credits					5
Total Semester Credits					19

I Year - II Semester

Course Code	Course Title	L	T	P	C
Professional Core	Hardware Software Co-design	3	-	2	4
Professional Core	Principles of Embedded software	3	-	2	4
Department Elective-2		3	-	-	3
Department Elective-3		3	-	-	3
Research Methodology and IPR		2	-	-	2
Audit Course 2	Elective Course - III	1	-	-	-
Employment orientation Program	Elective Course - IV	2	-		3
Societal-Centric/Industry-Oriented Project		-	-	3	2
Total Semester Credits					20

Note : The courses that are highlighted denotes implementation of “Choice Based Credit System(CBCS)”.

II Year- Semesters III

Course Title	L	T	P	C
MOOCS Course-1	3	-	-	3
MOOCS Course-2	3	-	-	3
		Total		6

Semester IV

Course Title	L	T	P	C
Project / Internship Phase-1	-	-	20	10
Project / Internship Phase-2	-	-	32	16
				26

Total Credits : 71

Note : The courses that are highlighted denotes implementation of "Choice Based Credit System(CBCS)".


Signature Of BOS Chairman

Electives :

1. Smart sensors and Actuators
2. Industrial Internet Of things
3. Programmable Logic Embedded System Design
4. Digital Image Processing
5. Embedded Machine Vision
6. Embedded System Security
7. Advanced Computer Architecture
8. Wireless Communication and Networks
9. Ad-hoc Sensor Networks
10. DSP Processors
11. Data Communications
12. Artificial Neural Networks and Deep Architectures
13. Design of Fault tolerant systems
14. Hardware architectures for deep learning
15. Data structures and Algorithms for Embedded Programming

AUDIT COURSE 1&2

(Reference from AICTE Model Curriculum 2018)

1. English for Research Paper writing
2. Disaster Management
3. Sanskrit for Technical Knowledge
4. Value Education
5. Constitution of India
6. Pedagogy Studies
7. Stress Management By YOGA
8. Personality development through Life Enlightenment Skills.

APPENDIX – B

List of courses that enable employability or entrepreneurship or skill development in the R-20M.Tech – Embedded Systems

Sl.No	Course Name	Core / Elective	Year	Employability / Skill Development/Entrepreneurship
1	Real Time Systems	Core	I	Skill development
2	Embedded Systems Architecture	Core	I	Employability
3	Design Of Internet Of Things	Core	I	Employability
4	Advanced Embedded Computing system	Core	I	Employability
5	Hardware Software Co-design	Core	I	Skill development
6	Principles of Embedded software	Core	I	Skill development
7	Smart sensors and Actuators	Core	I	Skill development
8	Industrial Internet Of things	Core	I	Employability
9	Programmable Logic Embedded System Design	Elective	I	Skill development
10	Digital Image Processing	Elective	I	Employability

11	Embedded Machine Vision	Elective	I	Entrepreneurship
12	Embedded System Security	Elective	I	Skill development
13	Advanced Computer Architecture	Elective	I	Skill development
14	Wireless Communication and Networks	Elective	I	Skill development
15	Ad-hoc Sensor Networks	Elective	I	Skill development
16	DSP Processors	Elective	I	Employability
17	Data Communications	Elective	I	Employability
18	Artificial Neural Networks and Deep Architectures	Elective	I	Employability
19	Design of Fault tolerant systems	Elective	I	Employability
20	Hardware architectures for deep learning	Elective	I	Employability
21	Data structures and Algorithms for Embedded Programming	Elective	I	Employability

Note: The Courses that are highlighted denotes implementation of "Choice Based Credit System(CBCS)".






 Signature Of BOS Chairman

APPENDIX - C
List of new courses in the R-20 Regulations
MTech – Embedded Systems


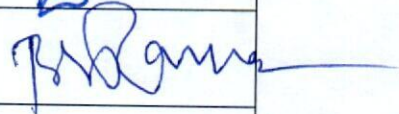
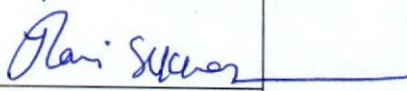


Sl. No	Course Name	Year
1	Real Time Systems	I
2	Embedded Systems Architecture	I
3	Design Of Internet Of Things	I
4	Advanced Embedded Computing system	I
5	Hardware Software Co-design	I
6	Principles of Embedded software	I
7	Smart sensors and Actuators	I
8	Industrial Internet Of things	I
9	Programmable Logic Embedded System Design	I
10	Digital Image Processing	I
11	Embedded Machine Vision	I
12	Embedded System Security	I
13	Advanced Computer Architecture	I
14	Wireless Communication and Networks	I
15	Ad-hoc Sensor Networks	I
16	DSP Processors	I
17	Data Communications	I
18	Artificial Neural Networks ad Deep Architectures	I
19	Design of Fault tolerant systems	I
20	Hardware architectures for deep learning	I
21	Data structures and Algorithms for Embedded Programming	I

The following are the members present for the board of studies meeting held at Department of Electronics and Communication Engineering on 20-07-2020

External Members:

Sl. No.	Name of the Member	Designation	Signature
1.	Mr.Martin. K. M	Director and Scientist-F, NIEIT, Chennai.	
2.	Dr Santos Kumar Das	Assistant Professor, NIT Rourkela	
3.	Mr.G. Prudviraj	Principal Engineer, Western Digital, Bangalore.	
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Internal Members:

Sl. No.	Name of the Member	Designation	Signature
1.	Dr. T.Pitchaiah	Professor and HOD	
2.	Dr.B.Seetharamanjaneyulu	Professor	
3.	Dr.Y.Ravi Sekhar	Associate.Professor	
4.	Dr. V Vijayaragavan	Associate Professor	
5	Mr.P.J.Reginald	Assistant Professor	


Signature of BOS Chairman