

MINUTES OF THE MEETING OF BOARD OF STUDIES IN MECHATRONICS ENGINEERING

MEETING No. 23

DATE : 12-02-2022

TIME : 10.00 AM (Online/ Offline)

Google Meet Id: <https://meet.google.com/grn-qzqa-kom>

The following members were present for the meeting:

	Dr.B. Meenakshipriya Professor and Head, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Chairman
1.	Dr. Megalingam @ Murugan A Associate Professor, Department of Mechatronics Engineering, Bannari Amman Institute of Technology, Alathukombai Post, Sathyamangalam, Erode - 638 401. Tamilnadu. India. E-Mail: megalingama@bitsathy.ac.in Mobile: 98846 46847	University Nominee
2.	Dr. Santhakumar Mohan Associate Professor, Mechanical Engineering, Indian Institute of Technology, Palakkad, Ahalia Integrated Campus, Kozhippara P.O., Palakkad, Kerala – 678557. India. E-Mail: santhakumar@iitpkd.ac.in Mobile: 86029 72799	Academic Council Nominee
3.	Dr.N. Rajasekar Professor, Department of Energy and Power Electronics, School of Electrical Engineering, Vellore Institute of Technology, Vellore Campus, Tiruvalam Rd, Katpadi, Vellore, Tamil Nadu – 632014. India. E-Mail: nrjasekar@vit.ac.in Mobile: 99523 62301	Academic Council Nominee
4.	Mr.K. Srivatsa Technical Lead - CAE, TATA Technologies Pvt. Ltd. 25, Rajiv Gandhi Infotech Park, Hinjewadi, Pune - 411057.India. E-Mail: vatsa41@gmail.com Mobile: 88846 71449	Alumni Representative
5.	Mr. Harish Nachnani, National Sales Manager, Festo India Pvt. Ltd. 237 B, Hosur Road, Bommasandra Industrial Area Bangalore - 560 099. India. E-Mail: harish.nachnani@festo.com Mobile: 99000 39633	Industry Representative
6.	Dr.K. Krishnamurthy Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
7.	Dr.R. Parameshwaran Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
8.	Dr.S. Shankar Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
9.	Dr.C. Maheswari Associate Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
10.	Dr.P. Ravichandran Associate Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
11.	Dr.S. Sathiyavathi Associate Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
12.	Dr.K. Gomathi Associate Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
13.	Dr.V.G. Pratheep Associate Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member

14.	Dr.S.K. Thangarasu Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
15.	Dr. V. Arun Kumar Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
16.	Dr.A. Shanmugam Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
17.	Dr.S. Praveen Kumar Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
18.	Dr. N.Muralidharan Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
19.	Dr. K. Suganeswaran. Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
20.	S. Arun kumar Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
21.	Dr.T. Tamilarasi Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
22.	A. Balaji Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
23.	S. Thangavel Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
24.	N. Saravanan Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
25.	Dr.R. Nithyaprakash Assistant Professor, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Internal Member
26.	Dr.V. K. Gobinath Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Special Invitee
27.	C. Anbu Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Special Invitee
28.	Dr.E. B. Priyanka Assistant Professor SRG, Mechatronics Engineering, Kongu Engineering College, Perundurai, Erode – 638 060.	Special Invitee

The following members were present as special invitees: Nil

The following members have requested for leave of absence: Nil

Meeting of the Mechatronics Board:

Chairman/BoS welcomed the members and briefed on curriculum, syllabi of courses to be added and syllabi of courses to be modified under Regulation 2020 for UG & PG Programmes.

The board discussed and approved the following points as per the agenda:

Item No. 23.1: Ratification of the following items under R2018 & R2020 as given in Annexure-I.

- a. Course and Syllabi for PhD Course work
- b. One / Two credit courses
- c. On line courses
- d. Curriculum and Syllabi amendments under R2018 & R2020 for UG / PG courses
- e. Introduction of new electives under R2018 & R2020 for UG / PG courses
- f. Credit transfer from Foreign Universities, Change of Regulations for readmitted students, Transferred candidates
- g. Other items if any

It is resolved to ratify the above items a, b, c, d, e, f and g as given in Annexure – I.

Item No. 23.2. Approval of the curriculum, syllabi of courses to be added newly and syllabi of courses to be modified from 2nd semester to 8th semester for BE/BTech (Mechatronics Branch) / MSc under R2018 / R2020 and for PG degree programmes under R2020 as given in Annexure-II.

The members discussed the curriculum, syllabi of courses to be added newly and syllabi of courses to be modified from 2nd semester to 8th semester for BE/BTech (Mechatronics Branch) and for PG degree programmes as given in Annexure-II and approved the same.

Item No. 23.3. Approval of the syllabi of courses to be studied for honours degree under R2020 as given in Annexure-III.

The members discussed the syllabi of the courses to be studied for honours degree under R2020 as given in Annexure – III and approved the same

Item No. 23.4. Approval for Value Added Courses (one / two credit courses), on-line courses with syllabi to be offered from first semester onwards, Transfer of credits from UGC & AICTE approved institutions and Credit transfer from foreign universities under R2018 & R2020 as given in Annexure-IV.

The members discussed the value added courses (one/ two credit courses), on-line courses with syllabi to be offered from first semester onwards, Transfer of credits from UGC and AICTE approved institutions including NPTEL, SWAYAM, etc., and Credit transfer from foreign universities under R2018 & R2020 (from the year 2021-22 onwards) as given in Annexure – IV and approved the same.

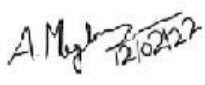

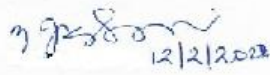

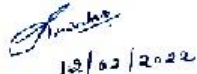
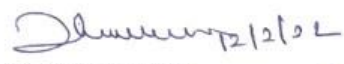





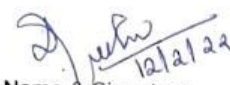
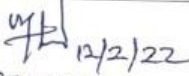

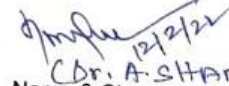
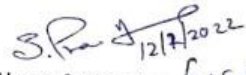

Item No. 23.5. Approval of Syllabus for PhD courses under R2020 as given in Annexure-V.

The members discussed the Syllabus for PhD courses under R2020 (if any from the year 2021-22 onwards) as given in Annexure – V and approved the same.

Reporting Item No. 23.6. Proctored online/ conventional examination system being followed for the November / December 2021 end semester / trimester examinations as given in Annexure-VI.

The members appreciated the proctored online/ conventional examination system being followed for the November / December 2021 end semester / trimester examinations as given in Annexure-VI.

The meeting was concluded with a vote of thanks to the members.

 Name & Signature (member1)	 Name & Signature (member2)
 Name & Signature (member3)	 Name & Signature (member4)
 Name & Signature (member5)	 Name & Signature (member6) CDr. K. KOLSHAMMOORTHY
 Name & Signature (member7) (Dr. B. PARAMESHWARAN)	 Name & Signature (member8) CDr. S. S. HANAKA
 Name & Signature (member9) (Dr. C. Maheswari)	 Name & Signature (member10) (Dr. P. RAVICHANDRAN)
 Name & Signature (member11) DR. S. SATHYAVATHI	 Name & Signature (member12) CDr. K. GOMATHI
 Name & Signature (member13) Dr. V. G. PRATHEEP	 Name & Signature (member14) (Dr. S. K. Thangaraj)
 Name & Signature (member15) V. A. S. KUNDAKURU [Dr. V. A. R. KUNDAKURU]	 Name & Signature (member16) CDr. A. SHANMUGAM
 Name & Signature (member17) [Dr. S. Praveen Kumar]	 Name & Signature (member18) CDr. N. Muralidharan

 Name & Signature (member19) K. Suganeswaran	 Name & Signature (member20) S. Arun Kumar
 Name & Signature (member21) Dr. P. Thamil Arasi	 Name & Signature (member22) N. Balaji
 Name & Signature (member23) S. Thangavel	 Name & Signature (member24) N. Saraparamba
 Name & Signature (member25) R. Nithya Prakash	 Name & Signature (member26) Dr. V. K. Gobin Athi
 Name & Signature (member27) C. Anbu	 Name & Signature (member28) Dr. E. B. Rajapala
	 Name & Signature Chairman/BoS Dr. B. Meenakshipriya

Dr. B. Meenakshipriya

Annexure – I

Ratification items under R2018 & R2020 implemented during the academic year 2021-22 and/or previous years.

a. Course and Syllabi for PhD Course work

Nil

b. One credit courses

- Analog & Digital Circuits Simulations Using OrCAD Pspice
- Fabrication of Printed Circuit Board
- Programming Using Allen Bradley PLC's

c. On line courses

- Introduction to Internet of Things
- Software Testing
- Python for Data Science
- Lighter than Air Systems
- Computer Networks and Internet Protocol
- Introduction to Atmospheric and Space Sciences
- The Joy of Computing using Python
- Automation in Manufacturing
- Cloud Computing

d. Curriculum and Syllabi amendments under R2018 & R2020

Nil

e. Introduction of new electives under R2018 & R2020

Nil

f. Credit transfer from Foreign Universities, Change of Regulations for readmitted students, Transferred candidates

Nil

g. Other items if any

Nil

Annexure - II

(i) Curriculum, syllabi of courses to be added newly and syllabi of courses to be modified from 2nd semester to final semester for BE/BTech (Mechatronics Engineering Branch) /MSe under R2018/ R2020

(a) List of courses newly added:

S.No.	Course Name	Semester	Regulation
1.	20MTE02 Graphical System Design	V	R2020

(b) List of courses modified the syllabus content:

S.No.	Course Code & Course Name	Semester	Regulation
	Nil		

(c) List of courses removed:

S.No.	Course Code & Course Name	Semester	Regulation
1.	20MTE03 Bio Mechatronics	V	R2020

(d) List of courses swapped:

S.No.	Course Code(s) & Course Name(s)	Existing Semester	Swapped Semester	Regulation
1.	20CSC31 Programming in C	III	II	R2020
2.	20CSC41 Python Programming	IV	III	R2020
3.	20MTT21 Fluid Mechanics and Thermodynamics	II	IV	R2020
4.	20MTT53 Strength of Materials	IV	V	R2020
5.	20MTE03 Power Electronics and Drives	IV	V	R2020

Curriculum from 2nd semester to final semester BE (Mechatronics Engineering Branch) under R2020

.....
Syllabi for the courses mentioned in above items (a) and (b) under R2018 / R2020
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20MTE02 GRAPHICAL SYSTEM DESIGN

Programme & Branch	B.E. & Mechatronics Engineering	Sem.	Category	L	T	P	Credit
Prerequisites	Problem Solving and Programming, Sensors and Transducers	5	PE	3	0	0	3

Preamble	This course provides systematic knowledge about the principles in programming technique with different instrument interfaces and virtual instruments and the basics of graphical system introduced in real time systems.	
Unit – I	Introduction to GSD:	9
Historical perspectives, advantages, block diagram and architecture of a virtual instrument, data -flow techniques, graphical programming in Graphical System Design (GSD) - Graphical user interfaces – Controls and Indicators – ‘G’ programming/ modular programming - Data flow programming.		
Unit – II	GSD Programming Techniques:	9
Data types - Editing, Debugging and Running a Virtual Instrument – Graphical programming palettes and tools – Function and Libraries in GSD platform – String and File I/O: High level and Low-level file I/O's- Sub-VI programming.		
Unit – III	GSD Software Tools:	9
Arrays and Clusters – Bundle/Unbundle and Bundle/Unbundle – Plotting data: graphs and charts – Attribute nodes – Local and global variables - Structures: FOR Loops, WHILE loops, Shift Registers, CASE structure, Formula nodes, Sequence structures, Timed looped structures.		
Unit – IV	GSD Data Acquisition Hardware:	9
Basics of DAQ Hardware and Software – Concepts of Data Acquisition – Configuring and addressing the hardware – Real time Data Acquisition using hardware: USB based DAQ with programming.		
Unit – V	GSD tools applications:	9
Advantages and Applications: Introduction to TCP/IP VI's and Instrument Control – Machine vision and acquisition tools– Signal processing/ analysis tools – Control design and simulation tools		

Total:45

TEXT BOOK:

- Jeffery Travis and Jim Kring, “LabVIEW for Everyone: Graphical programming made easy and Fun”, 3rd Edition, Pearson Education, India, 2009.

REFERENCES:

- Gupta, Joseph and John, “Virtual Instrumentation using LabVIEW”, 2nd Edition, Tata McGraw Hill, 2010.
- Rick Bitter, “LabVIEW Advanced Programming Techniques”, 2nd Edition, Taylor & Francis Group, 2006.

COURSE OUTCOMES:		BT Mapped (Highest Level)
On completion of the course, the students will be able to		
CO1	demonstrate the basic concepts about virtual instrumentation	Applying (K3)
CO2	interpret the software tools in virtual instrumentation	Applying (K3)
CO3	develop programming through LabVIEW graphical programming environment	Applying (K3)
CO4	experiment with data acquisition hardware and LabVIEW software	Applying (K3)
CO5	select the hardware and software concept of data acquisition system for advanced applications	Applying (K3)

Mapping of COs with POs and PSOs														
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									2	2	2
CO2	3	3	3		2							2	3	3
CO3	3	3	3		2							2	3	3
CO4	3	3	3		3							2	3	3
CO5	3	3	3	3	3							2	3	3

1 – Slight, 2 – Moderate, 3 – Substantial, BT- Bloom’s Taxonomy

ASSESSMENT PATTERN – THEORY							
Test / Bloom's Category*	Remembering (K1) %	Understanding (K2) %	Applying (K3) %	Analyzing (K4) %	Evaluating (K5) %	Creating (K6) %	Total %
CAT1	40	40	20				100
CAT2	10	30	30	30			100
CAT3	10	30	30	30			100
ESE	15	25	40	20			100

* ±3% may be varied (CAT 1,2,3 – 50 marks & ESE – 100 marks)

B.E. MECHATRONICS ENGINEERING CURRICULUM – R2020

SEMESTER – II									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ES E	Total	
Theory/Theory with Practical									
20EGT21	Advanced Communication Skills	3	0	0	3	50	50	100	HS
20MAC21	Multivariable Calculus and Complex Analysis	3	1	2	4	50	50	100	BS
20PHT22	Materials Science and Metallurgy	3	0	0	3	50	50	100	BS
20CYT22	Chemistry for Mechanical Systems	3	0	0	3	50	50	100	BS
20MTT21 / 20CSC31	Fluid Mechanics and Thermodynamics/Programming in C	3	1/0	0/2	4	50	50	100	PC/ES
20MTT22	Electron Devices and Digital Circuits	3	0	0	3	50	50	100	ES
Practical / Employability Enhancement									
20MTL21	Electron Devices and Digital Circuits Laboratory	0	0	2	1	50	50	100	ES
20PHL22	Physics and Chemistry Laboratory II	0	0	2	1	50	50	100	BS
Mandatory Non Credit									
	Nil								
Total Credits to be earned					22				

SEMESTER – III									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
20CSC31 /20CSC41	Programming in C/Python Programming	3	0	2	4	50	50	100	ES
20MAT31	Probability and Partial Differential Equations	3	1	0	4	50	50	100	BS
20MTT31	Kinematics of Machines	3	1	0	4	50	50	100	ES
20MTT32	Systems and Control Engineering	3	0	0	3	50	50	100	PC
20MTT33	Electrical Machines	3	0	0	3	50	50	100	PC
20MTT34	Manufacturing Processes	3	0	0	3	50	50	100	PC
Practical / Employability Enhancement									
20MTL31	Electrical Machines and Control Laboratory	0	0	2	1	50	50	100	PC
20MTL32	Manufacturing Processes Laboratory	0	0	2	1	50	50	100	PC
Mandatory Non Credit									
20MNT31	Environmental Science	2	0	0	0	100	0	100	MC
Total Credits to be earned					23				

SEMESTER – IV									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
20CSC41 /20MTT21	Python Programming/Fluid Mechanics and Thermodynamics	3	0/1	2/0	4	50	50	100	ES/PC
20MAT41	Statistics and Numerical Methods	3	1	0	4	50	50	100	BS
20MTT41	Machine Dynamics	3	1	0	4	50	50	100	PC
20MTT42	Sensors and Signal Conditioning	3	0	0	3	50	50	100	PC
	Open Elective 1	3	1/0	0/2	4	50	50	100	OE
Practical / Employability Enhancement									
20MTL41	Sensors and Signal Conditioning Laboratory	0	0	2	1	50	50	100	PC
20MTL42	Computer Aided Drafting Laboratory	0	0	2	1	50	50	100	PC
20EGL31	English for work place communication	0	0	2	1	50	50	100	HS
20GET41	Universal Human Values: Understanding Harmony	2	0	0	2	50	50	100	HS
Mandatory Non Credit									
	Nil								
Total Credits to be earned					24				

SEMESTER – V									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ES E	Total	
Theory/Theory with Practical									
20MTT51	CNC and Metrology	3	0	0	3	50	50	100	PC
20MTT52	Microcontroller Programming and Applications	3	0	0	3	50	50	100	PC
20MTT53	Strength of Materials	3	1	0	4	50	50	100	PC
	Professional Elective 1	3	0	0	3	50	50	100	PE
	Open Elective 2	3	1/0	0/2	4	50	50	100	OE
Practical / Employability Enhancement									
20MTL51	CNC and Metrology Laboratory	0	0	2	1	50	50	100	PC
20MTL52	Microcontroller Programming and Applications Laboratory	0	0	2	1	50	50	100	PC
20MTL53	Computer Aided Engineering Laboratory	0	0	2	1	50	50	100	PC
20GEL51	Professional Skills Training 1 / Industrial Training 1\$	--	--	--	2	50	50	100	EC
Total Credits to be earned					22				

\$ Professional Skills Training / Industrial Training for a total period of about 80 hr during the period of 4thsem end summer holidays and 5th sem.

SEMESTER – VI									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ES E	Total	
Theory/Theory with Practical									
20MTT61	Programmable Automation Controllers	3	0	0	3	50	50	100	PC
20MTT62	Mechanics of Serial Manipulator	3	0	0	3	50	50	100	PC
20MTT63	Fluid Power Systems	3	0	0	3	50	50	100	PC
	Open Elective 3	3	0	0	3	50	50	100	OE
Practical / Employability Enhancement									
20MTL61	Programmable Automation Controllers Laboratory	0	0	2	1	50	50	100	PC
20MTL62	Robotics and Control Laboratory	0	0	2	1	50	50	100	PC
20MTL63	Fluid Power Systems Laboratory	0	0	2	1	50	50	100	PC
20GEL61	Professional Skills Training 2 / Industrial Training 2 #	--	--	--	2	100	0	100	EC
20MTP61	Project Work I	0	0	4	2	50	50	100	EC
20GEP61	Comprehensive Test / Viva				2	100	0	100	EC
Mandatory Non Credit									
	Nil								
Total Credits to be earned					21				

Professional Skills Training / Industrial Training for a total period of about 80 hr during 6thsem end summer holidays and 7th sem.

SEMESTER – VII									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ES E	Total	
Theory/Theory with Practical									
20GET71	Economics and Management for Engineers	3	0	0	3	50	50	100	HS
20MTT71	Machine Vision and Image Processing	3	0	0	3	50	50	100	PC
	Professional Elective 2	3	0	0	3	50	50	100	PE
	Professional Elective 3	3	0	0	3	50	50	100	PE
	Professional Elective 4	3	0	0	3	50	50	100	PE
	Professional Elective 5	3	0	0	3	50	50	100	PE
Practical / Employability Enhancement									
20MTP71	Project Work 2 Phase I	0	0	6	3	50	50	100	EC
Mandatory Non Credit									
	Nil								
Total Credits to be earned					21				

\$ Project Work 2 Phase I (7th sem) shall be continuation of Project Work I (6th sem).

Economics and Management for Engineers, Machine Vision and Image Processing, Professional Elective – 02, and Professional Elective – 03 shall be completed in the first half of the semester.

Professional Elective – 04 and Professional Elective – 05 shall be handled in the second half of the semester.

One or both of these two courses can also be completed in 5th semester (fast track). Intern students can study these two courses through NPTEL/MOOC portals also.

SEMESTER – VIII									
Course Code	Course Title	Hours / Week			Credit	Maximum Marks			Category
		L	T	P		CA	ESE	Total	
Theory/Theory with Practical									
	Professional Elective 6	3	0	0	3	50	50	100	PE
	Open Elective 4	3	0	0	3	50	50	100	OE
Practical / Employability Enhancement									
20MTP81	Project work 2 Phase II \$	0	0	14	7	50	50	100	EC
Mandatory Non Credit									
	Nil								
Total Credits to be earned					13				

Internship / Project work for a total period of about 240 hrs.

One or both of the courses of Open Elective – 04 and Professional Elective - 06 can also be completed in 6th semester (fast track). Intern students can study these two courses through NPTEL/MOOC portals also.

PROFESSIONAL ELECTIVE (PE)

Sl.No.	Course Code	Course Name	L	T	P	C	Sem	Domain/Stream
Elective 1								
1.	20MTE01	Design of Mechanical Elements	3	0	0	3	V	PD
2.	20MTE02	Graphical System Design	3	0	0	3	V	AE
3.	20MTE03	Power Electronics and Drives	3	0	0	3	V	AE
4.	20MTE04	Introduction to Industrial Internet of Things	3	0	0	3	V	AE
5.	20MTE05	Operations Research	3	0	0	3	V	PE
6.	20MTE06	Advanced Control Theory	3	0	0	3	V	AS
Elective 2								
7.	20MTE07	Heat and Mass Transfer	3	0	0	3	VII	PD
8.	20MTE08	Machine Drawing	3	0	0	3	VII	PD
9.	20MTE09	Precision Equipment Design	3	0	0	3	VII	PD
10.	20MTE10	Embedded Programming for Mechatronics	3	0	0	3	VII	AE
11.	20MTE11	Machine Learning	3	0	0	3	VII	AS
12.	20MTE12	Automotive Engineering	3	0	0	3	VII	AE
Elective 3								
13.	20MTE13	Fundamentals of Research	3	0	0	3	VII	GE
14.	20MTE14	Computer Integrated Manufacturing	3	0	0	3	VII	PE

15.	20MTE15	Precision Manufacturing	3	0	0	3	VII	PE
16.	20MTE16	Process Control and Instrumentation	3	0	0	3	VII	AE
17.	20MTE17	Cyber Physical Systems	3	0	0	3	VII	AE
18.	20MTE18	Optimal and Adaptive Control	3	0	0	3	VII	AS
		Elective 4						
19.	20MTE19	Machine Tool Control and Condition Monitoring	3	0	0	3	VII	PE
20.	20MTE20	Applied Finite Element Method	3	0	0	3	VII	PD
21.	20MTE21	Additive Manufacturing	3	0	0	3	VII	PE
22.	20MTE22	Industrial Automation Protocols	3	0	0	3	VII	AE
23.	20MTE23	Robot Programming	3	0	0	3	VII	AS
24.	20MTE24	Battery Management System	3	0	0	3	VII	PS
		Elective 5						
25.	20MTE25	Maintenance Engineering	3	0	0	3	VII	PE
26.	20MTE26	Automotive Electronics	3	0	0	3	VII	AE
27.	20MTE27	Micro Electro Mechanical Systems	3	0	0	3	VII	PD
28.	20MTE28	Mobile Robotics	3	0	0	3	VII	AS
29.	20MTE29	Drone Technology	3	0	0	3	VII	AS
30.	20MTE30	Total Quality Management	3	0	0	3	VII	GE
		Elective 6						
31.	20MTE31	Avionics	3	0	0	3	VIII	
32.	20MTE32	Product Design and Development	3	0	0	3	VIII	PD
33.	20MTE33	Production Management	3	0	0	3	VIII	PE
34.	20MTE34	Nanoscience and Technology	3	0	0	3	VIII	PD
35.	20MTE35	Principles of Farm Machineries	3	0	0	3	VIII	PS
Total Credits to be earned							18	

* Domain/Stream Abbreviations: AE- Automation Engineering, AS – Autonomous Systems, PD – Product Design, PS – Production System, GE – General Engineering

LIST OF OPEN ELECTIVES TO OTHER DEPARTMENTS						
Course Code	Course Title	Hours/Week			Credit	CBS
		L	T	P		
SEMESTER IV						
20MTO01	Design of Mechatronics Systems	3	1	0	4	OE
SEMESTER V						
20MTO02	Factory Automation	3	0	2	4	OE
20MTO03	Data Acquisition and Virtual Instrumentation	3	0	2	4	OE
20GEO04	Innovation and Business Model Development	3	1	0	4	OE
SEMESTER VI						
20MTO04	3D Printing and Design	3	0	0	3	OE
20MTO05	Drone System Technology	3	0	0	3	OE
20GEO11	Entrepreneurship Development	3	0	0	3	OE
SEMESTER VIII						
20MTO06	Robotics	3	0	0	3	OE
20MTO07	Virtual and Augment Reality in Industry 4.0	3	0	0	3	OE

(ii) Syllabi of courses to be added newly and syllabi of courses to be modified for PG programme under R2020

(a) List of courses newly added:

S.No.	Course Name	Semester	Regulation
	Nil		

(b) List of courses modified the syllabus content:

S.No.	Course Code & Course Name	Semester	Regulation
	Nil		

(c) List of courses removed:

S.No.	Course Code & Course Name	Semester	Regulation
	Nil		

(d) List of courses swapped:

S.No.	Course Code(s) & Course Name(s)	Existing Semester	Swapped Semester	Regulation
	Nil			

Syllabi for the courses mentioned in above items (a) and (b) under R2020

-NA_

Annexure - III

Syllabi of the courses to be studied for BE (Mechatronics Engineering Branch) with Honours in Intelligent Autonomous Systems under R2020

DEPARTMENT OF MECHATRONICS ENGINEERING

If a candidate earns 18 to 20 credits additionally in any particular specialization during the programme, such candidate can be awarded with Honours degree in that specialization as per the guidelines of AICTE upon getting the approval from Anna University, Chennai. A candidate shall have not less than 8.0 CGPA and no history of arrears to opt for the honours degree and has to maintain the same during the entire programme.

BE Degree in Mechatronics Engineering with Honours in Intelligent Autonomous Systems

List of courses to be studied additionally for Honours degree

S. No.	Course Name	L	T	P	C
1	Data Modeling and Machine Intelligence	3	0	0	3
2	Advanced Control and System Identification	3	0	0	3
3	Multi Sensor and Decision Systems	3	0	0	3
4.	Intelligent Navigation and Mapping	3	0	0	3
5.	Deep Learning	3	0	0	3
6.	Cognitive Engineering	3	0	0	3
	Total Credits				18

Syllabi of the courses additionally to be studied for BE Degree in Mechatronics Engineering with Honours in Intelligent Autonomous Systems

Annexure – IV

List of One / Two credit courses, on-line courses and syllabi, Transfer of credits from UGC and AICTE approved institutions and Credit transfer from foreign universities under R2018 & R2020 (from the year 2021-22 onwards)

List of One / Two credit courses:

- LabVIEW - Core I and Core II Programming
- Maintenance and Troubleshooting of CNC Machines
- Servo Control Using PLC
- Programming using ALLEN BRADLEY PLC's
- Modelling and Analysis of Mechatronics System using Mat LAB
- Design of Experiments
- Lean and Six Sigma
- Vision systems
- Design, Simulation and Fabrication of Printed Circuit Board
- IoT Programming using MCU-ESP8266
- Robot Operating System
- Learning by Teaching with Humanoid Robot
- Vehicle Data Acquisition Systems
- Dynamics and Motion Control of Mobile Manipulators

Certification Courses:

- Certified LabVIEW Associate Developer (CLAD)
- Certified LabVIEW Developer (CLD)
- Certified Solid Works Associate (CSWA)
- Certified Solid Works Professional (CSWP)

Online Courses:

- The Joy of Computing using Python
- Artificial Intelligence Search Methods for Problem Solving
- Programming, Data Structures and Algorithms Using Python
- Data Base Management System
- Cloud Computing
- Programming in Java
- Developing Soft Skills and Personality
- German-I
- Biomechanics of Joints and Orthopaedic Implants
- Discrete Mathematics
- Essential Mathematics for Machine Learning
- Nanomaterials and their properties
- Mechanics and Control of Robotic Manipulators
- Marketing research and analysis
- Python for Data Science
- Software Testing
- Automation in manufacturing
- Introduction to Internet of Things
- Computer Networks and Internet Protocols
- Lighter than Air Systems
- Introduction to Atmospheric and Space Sciences
- Introduction to Industry 4.0 and Industrial Internet of Things

Annexure – V

Syllabi for PhD courses under R2020 from the academic year 2021-22 onwards

-NIL-

Annexure-VI

REPORTING ITEM

Online/ conventional method of examination system being followed for the November / December 2021 (both regular and arrear exams) End Semester / Trimester Examinations to be held in February 2022.

a) As per the directions issued by Anna University and guidelines issued by Higher Education Department, Government of Tamilnadu, BE / BTech, BSc and MSc (Integrated) End Semester Examinations will be conducted through online mode, with students taking up the examinations from their places of stay. Examinations will be proctored by using appropriate software and also be monitored by faculty invigilators.

b) MBA, MCA, ME / MTech and PhD coursework End Semester / Trimester Examinations will be conducted through conventional method (paper and pen) in campus.

c) The above examination procedure shall also be followed for the maximum period exhausted students