AMITY UNIVERSITY
MADHYA PRADESH
(Established by Ritnand Balved Education Foundation)

Date: 10 / 3 / 2021

BOARD OF STUDIES (Computer Science & Engineering)

MINUTES OF THE MEETING

(07 Pages Only)

1. Board of Studies (BoS) meeting for Department of Computer Science & Engineering, Amity School of Engineering & Technology, Amity University Madhya Pradesh held on 10 March 2021 at AUMP, under the Chairmanship of Maj Gen (Dr) S C Jain VSM** (Retd), Director (ASET). The following members attended the meeting: -

   (a) **Chairman:** Maj Gen (Dr) S C Jain VSM** (Retd), Director (ASET)

   (b) **Member:**

   i) Dr. Anirban Mitra, Associate Professor, Dept. of Computer Science and Engineering, Amity University, Kolkata - External Member

   ii) Dr. Venkatadri M., Professor & Head, Dept. of Computer Science and Engineering, Amity University Madhya Pradesh, Gwalior, Member

   iii) Dr. Subhrendu Guha Neogi, Associate Professor, Dept. of Computer Science and Engineering, Amity University Madhya Pradesh, Gwalior, Member.

   iv) Dr. Ashok Kumar Shrivastava, Asst. Professor, Dept. of Computer Science and Engineering, Amity University Madhya Pradesh, Gwalior, Member

2. **The agenda of the meeting included the following:**
   (a) Review of M. Tech (Computer Science& Engineering) curriculum.
   (b) Review of B. Tech (Computer Science& Engineering) curriculum.
   (c) Review of B. Tech (Information Technology) curriculum.
   (d) Review of MCA (Master of Computer Applications) curriculum.
   (e) Review of BCA (Bachelor of Computer Applications) curriculum.
   (f) Review of BSc (Information Technology) curriculum.
   (g) Review of Specializations (AI & ML, Data Science and Internet of Things) curriculum.
   (h) Review of CBCS curriculum.
   (i) Any other point with due permission of the Chairperson.

3. **Discussions/Comments:**

a. (i) Discussion: The syllabus of the courses offered in M. Tech (Computer Science & Engineering) 2021-23 Batch was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus are well aligned.

b. (i) Discussion: The syllabus of the courses offered in B. Tech (Computer Science & Engineering) 2021-25 Batch was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus is well aligned,

c. (i) Discussion: The syllabus of the courses offered in B. Tech (Information Technology) 2021-25 Batch was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus are well aligned, and appropriate changes were recommended.

d. (i) Discussion: The syllabus of the courses offered in MCA 2021-23 Batch was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus is well aligned,

e. (i) Discussion: The syllabus of the courses offered in BCA 2021-24 Batch was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus are well aligned, and appropriate changes were recommended.

f. (i) Discussion: The syllabus of the courses offered in B.Sc. (Information Technology) 2021-24 Batch was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus are well aligned, and appropriate changes were recommended.

g. (i) Discussion: The syllabus of the courses offered in Specialization (AI & ML, Data Science and Internet of Things) was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus is well aligned, and appropriate changes were recommended.

h. (i) Discussion: The syllabus of the courses offered in CBCS was presented before the members of the Board of Studies.

(ii) Comments: The existing Scheme and syllabus are well aligned, and appropriate changes were recommended.

4. **Recommendations for 2021 Batch onwards:**

M. Tech Program:

a) There is no change in the scheme and syllabus of M. Tech (Computer Science & Engineering). (Refer Annexure-1)

B. Tech(CSE) Program:

a) There is no change in the scheme and syllabus of B. Tech (CSE). (Refer Annexure-2)

B. Tech (IT) Program:

a) There is change in the scheme and syllabus of B. Tech (Information Technology). (Refer Annexure-3)

MCA Program:

a) There is no change in the scheme and syllabus of MCA. (Refer Annexure-4)

BCA Program:

a) Minor changes has been incorporated in the scheme and syllabus of BCA. (Refer Annexure-5)

BSc.(IT) Program:

a) Minor changes has been incorporated in the scheme and syllabus of B.Sc.(IT). (Refer Annexure-6)

Specialization:

a) There is change in the scheme and syllabus of AI & ML Specialization. (Refer Annexure-7)

b) There is change in the detailed syllabus of Data Science Specialization. (Refer Annexure-8)

c) There is change in the detailed syllabus of Internet of Things Specialization. (Refer Annexure-9)

Pre Ph.D. Course:

There is no change in the scheme and syllabus of the courses. (Refer Annexure-10)

CBCS:

a) Minor changes has been incorporated in the existing scheme and syllabus of (Cloud Computing) CBCS (Refer Annexure-11)

b) Minor changes has been incorporated in the existing scheme and syllabus of CBCS (Data Analytics) (Refer Annexure-12)

c) Minor changes has been incorporated in the existing scheme and syllabus of CBCS (Network Security) (Refer Annexure-13)

d) Minor changes has been incorporated in the existing scheme and syllabus of CBCS (Web Technology) (Refer Annexure-14)

e) **Introducing new CBCS course with title "IT Skills for Professionals".(Refer Annexure-15)**

All the aforesaid points have been approved by all the board members present in the meeting.

Summary of changes:

Current Syllabus					Proposed Changes/Modifications			
Sr. No.	Course Title	Module of the syllabus	Old Course Code	No. of Credits	Addition/deletion in the Syllabus	New Course Title	New Course Code	No. of Credits
1.	Web Design & Development	I,III and IV	BCA 202 (BCA II Sem)	3	Updated the Syllabus	No Change	No Change	No Change
2.	Web Design & Development Lab	Lab Experiments	BCA 222 (BCA II Sem)	1	Updated the Syllabus	No Change	No Change	No Change
3	Web Design & Development	I,III and IV	BCA 202 (BSc(IT)II Sem)	3	Updated the Syllabus	No Change	No Change	No Change

4	Web Design & Development Lab	Lab Experiments	BCA 222 (BSc(IT)II Sem)	1	Updated the lab experiments as per the theory course	No Change	No Change	No Change
5	Analog Electronic Circuits theory and Analog Electronics Circuits lab	All Module	ECE 406 and ECE 426 (B.Tech- IT IV sem))	3+1	Removed from Scheme			
6	--	--	--	--	Introduced New course for B.Tech IT (IV Sem)	Formal Languages and Automata Theory	IT 401	4
7	Theory of Computation	All Module	CSE 501 (B.Tech- IT V sem)	4	Removed from Scheme			
8	--	--	--	--	Introduced New Course for B.Tech IT (V Sem)	Introduction to Blockchain Technology	IT 501	3
9	Data Communication and Computer Networks	All Module	CSE 601 (B.Tech- IT VI sem)	3	Updated the Syllabus	Computer Networks	IT 601	No Change
10	Introduction to Data Science	All Module	CSD 101 (Specialization)	3	Updated the Syllabus	No Change	No Change	No Change
11	Introduction to Artificial intelligence and Machine Learning	IV,V	CSA 101	3	Updated the syllabus of IV and V Modules	No Change	No Change	No Change
12	Cognitive Science in Artificial Intelligence	I,II,III,IV,V	CSA 301	3	Replaced with new course title and updated the syllabus	Machine Learning Techniques	No Change	No Change
13	Cognitive Science in Artificial Intelligence Lab	I,II,III,IV,V	CSA 321	1	Replaced with new course title and updated the syllabus	Machine Learning Techniques Lab	No Change	No Change
14	Machine Learning Techniques	I,II,III,IV,V	CSA 401	3	Replaced with new course title and updated the syllabus	Neural Networks and Deep Learning	No Change	No Change
15	Machine Learning Techniques Lab	I,II,III,IV,V	CSA 421	1	Replaced with new course title and updated the syllabus	Neural Networks and Deep Learning Lab	No Change	No Change
16	Neural Networks and Deep Learning	I,II,III,IV,V	CSA 501	3	Replaced with new course title and updated the syllabus	Artificial Intelligence for	No Change	No Change

						Robotics		
17	Neural Networks and Deep Learning Lab	I,II,III,IV,V	CSA 521	1	Replaced with new course title and updated the syllabus	Artificial Intelligence for Robotics Lab	No Change	No Change
18	Artificial Intelligence for Robotics	I,II,III,IV,V	CSA 601	3	Replaced with new course title and updated the syllabus	Problem Solving Through AI&ML	No Change	No Change
19	Artificial Intelligence for Robotics Lab	I,II,III,IV,V	CSA 621	1	Replaced with new course title and updated the syllabus	Problem Solving Through AI&ML Lab	No Change	No Change
20	Introduction to Internet of Things	I, II, III, IV	CSI 101	3	Updated the Syllabus	No Change	No Change	No Change
21	Wireless Sensor Networks and IoT Standards	II,III & IV	CSI 301	3	Updated the Syllabus	No Change	No Change	No Change
22	IoT Programming and Big Data	I, II & III	CSI 401	3	Updated the Syllabus	No Change	No Change	No Change
23	TCP/IP	All	CBA 202	3	Replaced with new course title and updated the syllabus	Storage and Computer Virtualization	No Change	No Change
24	Storage and Computer Virtualization	All	CBA 302	3	Replaced with new course title and updated the syllabus	Network Virtualization	No Change	No Change
25	Network Virtualization	All	CBA 402	4	Replaced with new course title and updated the syllabus	Cloud Computing	No Change	No Change
26	Cloud Computing	All	CBA 502	4	Replaced with new course title and updated the syllabus	Advanced Cloud Computing	No Change	No Change
27	Optimization Techniques	I	CBB 102	3	Replaced with new course title and updated the syllabus	Introduction to Data Analytics	No Change	No Change
28	Basic Statistics	II	CBB 202	3	Replaced with new course title and updated the syllabus Randomization Test, Regression & ANOVA Regression ANOVA(Analysis of	Tools and Techniques for Data Analytics	No Change	No Change

					Variance)			
29	Database Management System	III	CBB 302	3	Updated the Syllabus	Data Base Management System	No Change	No Change
30	Data Mining Techniques	IV	CBB 402	4	Replaced with new course title and updated the syllabus	Data Warehousing and Mining	No Change	No Change
31	Introduction to Financial Modelling	V	CBB 502	4	Replaced with new course title and updated the syllabus	Data Analytics for Business	No Change	No Change
32	Introduction to Computer Network	I,II,III, IV	CBC 102	3	Updated the syllabus	No Change	No Change	No Change
33	TCP/IP	I,II,III,IV	CBC 202	3	Replaced with new course title and updated the syllabus	Foundation of Cyber Security	No Change	No Change
34	Network Management	I,II,III,IV	CBC 302	3	Replaced with new course title and updated the syllabus	Secure Electronic Commerce	No Change	No Change
35	Wireless and Mobile Network	I,II,III,IV	CBC 402	4	Replaced with new course title and updated the syllabus	Information and Network Security	No Change	No Change
36	Cryptography and Network Security	I,II,III,IV	CBC 502	4	Replaced with new course title and updated the syllabus	Digital Marketing and Security	No Change	No Change
37	Operating System and Application Program	All Module	CBD 202	3	Replaced with new course title and updated the syllabus	Web Technologies	No Change	No Change
38	Web Technologies	All Module	CBD 302	3	Replaced with new course title and updated the syllabus	Introduction of Client-Side Programming Using Java Script	No Change	No Change
39	Introduction of Client-Side Programming Using Java Script	All Module	CBD 402	4	Replaced with new course title and updated the syllabus	Networking and Operating System Concepts	No Change	No Change

BOARD OF STUDIES (Computer Science & Engineering)

MINUTES OF THE MEETING

Signature of Members:

Dr. Ashok Kumar Shrivastava (Member)	**Dr. Subhrendu Guha Neogi** (Member)	**Dr. Venkatadri M.** (Member) 15.3.2021
Dr. Anirban Mitra External Member	**Prof. (Dr.) Sanjay Kumar Gupta** External Member	**Maj Gen (Dr) S C Jain** Chairman- BOS
	ABSENT	15/03/21
Prof. (Dr.) R. S. Tomar Dean Academics AUMP, Gwalior		**Prof. (Dr.) M.P. Kaushik** Hon'ble Pro Vice Chancellor AUMP, Gwalior

APPROVED BY

16/3/21

Hon'ble Vice Chancellor
AUMP, Gwalior

AMITY UNIVERSITY

MADHYA PRADESH

(Established by Ritnand Balved Education Foundation)

Date: 25/02/2021

BOARD OF STUDIES (Civil Engineering)

MINUTES OF THE MEETING

(03 Pages Only)

1. A meeting of Board of Studies (BoS) of Department of Civil Engineering, Amity School of Engineering & Technology, Amity University Madhya Pradesh was held on 25/02/2021 at AUMP, under the Chairmanship of Maj Gen (Dr) S C Jain VSM** (Retd), Director (ASET). The following members attended the meeting:-

   (a) **Chairman:** Maj Gen (Dr) S C Jain VSM** (Retd), Director (ASET)

   (b) **Member:**

   i) Dr. Manoj Kumar Trivedi, Professor & Head, Department of Civil Engineering MITS Gwalior, External Member

   ii) Dr. Madhuri Kumari, Professor, Department of Civil Engineering, AUUP Noida.

   iii) Dr. V.K. Gupta, Associate Professor and Head of Civil Engineering, Amity University Madhya Pradesh, Gwalior, Member.

   iv) Dr. Mohan Kantharia Asst. Professor, Civil Engineering, Amity University Madhya Pradesh, Gwalior, Member.

   v) Dr. Ripunjoy Gogoi Asst. Professor, Civil Engineering, Amity University Madhya Pradesh, Gwalior, Member.

2. **The agenda of the meeting included the following:**
   (a) Curriculum of First Year B. Tech Civil Engineering Program for 2021-25 Batch.
   (b) Discussion on trends and technologies in Civil Engineering and consideration of its inclusion in syllabus.
   (c) Any other point with due permission of the Chairperson.

3. **Discussions/Comments:**
   a. (i) Discussion: The syllabus of the subjects offered by B. Tech (Civil Engineering) 2021-25 Batch was presented before the members of the Board of Studies. The scheme and syllabus of the courses have been reviewed. The expert emphasized the need of inclusion of any subject related to Machine Learning (ML) along with basics of Python language in the Curriculum of B. Tech (Civil Engineering).

(ii) Comments: The existing Scheme and syllabus is well aligned, and few changes were recommended in few subjects. The subject Machine Learning Techniques (CSA 401) along Machine Learning Techniques Lab (CSA 421) under CBCS course has been fulfilled the requirement of inclusion of the subjected related to machine learning & python.

b. (i) Discussion: The syllabi of M. Tech (Civil Engineering), M. Tech (Structural Engineering), and CBCS subjects was presented to BoS members and reviewed.

(ii) Comments: The syllabus of M. Tech (Civil Engineering) Course and CBCS subjects is well aligned and need no change.

4. Recommendations:

B. Tech. Program

The Scheme and syllabus of the subjects to be offered by Civil Engineering Department to B. Tech. CE for batch 2021-25 was presented before the members of the board of studies. The BOS members approved the CE curriculum and syllabus (Refer Annexure-1) with the following changes:

i) The credits of subject Surveying (CIV 403) and Solid Mechanics (CIV 405) have been changed from 2 to 3 and 3 to 2, respectively.

ii) The name of the Laboratory of Environmental Engineering -II Lab (CIV 623) has been changed to Environmental Engineering Lab (CIV 623).

M. Tech Program:

1. There is no change in the scheme and syllabus of the M. Tech (Civil) course. (Refer Annexure-2).
2. Introducing a new course of M. Tech (Structural Engineering) in Civil Engineering Department. The Scheme & Syllabus for the proposed program is attached. (Annexure-3)

Pre -Ph.D. Course:

There is a no change in the scheme and syllabus of PhD.

CBCS:

There is no change in the scheme and syllabus of the course.

All the aforesaid points have been approved by all the board members present in the meeting.

5. Summary of the changes for B. Tech (Civil Engineering) is given below:

Currents syllabus				Proposed Syllabus /Modification		
Sr. No.	Course Title	Old Course Code	No. of Credits	Changes/Modifications (addition/deletion in the Syllabus)	New Course Code / Course Title	No. of Credits
1	Surveying	CIV 403	2	No Change	No Change	3
2	Solid Mechanics	CIV 405	3	No Change	No Change	2
3	Environmental Engineering -II Lab	CIV 623	1	No Change	Environmental Engineering Lab	1

BOARD OF STUDIES (B.Tech. CE)
MINUTES OF THE MEETING

Signature of Members:

Dr. Mohan Kantharia
(Member)

Dr. Ripunjoy Gogoi
(Member)

Dr. V. K. Gupta
(Member)

Prof. (Dr.) Madhuri Kumari
External Member

(Absent)

Prof. (Dr.) M. K. Trivedi

Maj Gen (Dr) S C Jain
Chairman- BOS

Prof. (Dr.) R. S. Tomar
Dean Academics
AUMP, Gwalior

Prof. (Dr.) M.P. Kaushik
Hon'ble Pro Vice Chancellor
AUMP, Gwalior

APPROVED BY

Hon'ble Vice Chancellor
AUMP, Gwalior

AMITY UNIVERSITY

MADHYA PRADESH

(Established by Ritnand Balved Education Foundation)

Date: 25/02/2021

BOARD OF STUDIES (Electronics & Communication Engineering)
MINUTES OF THE MEETING
(04 Pages Only)

1. A meeting of board of studies of Department of Electronics & Communication Engineering, Amity School of Engineering & Technology, Amity University Madhya Pradesh was held on 25 February 2021at AUMP, under the Chairmanship of Maj Gen (Dr) S C Jain VSM ** (Retd), Director (ASET). The following members attended the meeting:-

   (a) **Chairman:** Maj Gen (Dr) S C Jain VSM **(Retd), Director (ASET)

   (b) **Member**

   i) Prof (Dr) Parthasarathi Mangipudi, Professor, Amity University Uttar Pradesh, Noida, External Member

   ii) Mr. Pankaj Mittal, General Manager, Surya Roshni Ltd, Gwalior, External Member

   iii) Prof (Dr) Raghavendra Sharma, Professor & Head ECE, Member

   iv) Dr. Vivek Singh Kushwah, Associate Professor, ECE, Member

   v) Mrs. Rinkoo Bhatia, Assistant Professor, ECE, Member

2. The agenda of the meeting included the following:
   (a) Curriculum of the First year B.Tech ECE Program for 2021-25 batch.
   (b) Discussion on Trends and Technologies in ECE and consideration of its inclusion in syllabus.
   (c) Any other point with due permission of the Chairperson.

3. Discussions/Comments:

a. (i) Discussion: The Scheme and syllabus of the subjects to be offered by ECE Department to B. Tech. ECE for batch 2021 -2025 was presented before the members of the Board of studies. The Scheme and syllabus of all the subjects was reviewed.

(ii) Comments: The existing scheme and syllabus is well aligned and few changes were recommended in few subjects.

b. (i) Discussion: The syllabus of programme B.Tech in ECE for batches 2018-2022, 2019-2023, 2020-2024 and along with the syllabus of the subjects offered by ECE to other departments was presented to BOS members and reviewed.

(ii) Comments: The syllabus of the mentioned batches and the subjects offered by ECE to other departments is well aligned. No change is recommended for the batches 2018-2022, 2019-2023, 2020-2022 however few changes are recommended in syllabus of some subjects offered by ECE to other departments.

c. (i) Discussion: The syllabus of M. Tech, CBCS and Pre-PhD course work subjects was presented to BOS members and reviewed.

(ii) Comments: The Syllabus of M. Tech., CBCS and Pre-PhD course work subjects is well aligned and needs no change.

4. Recommendations:

B. Tech Program

a. The Scheme and syllabus of the subjects to be offered by ECE Department to B. Tech. ECE for batch 2021 -2025 was presented before the members of the Board of studies. The BOS members approved the ECE curriculum and syllabus. **(Refer Annexure-1)**

b. The modified syllabus of the subject ECE307 (offered to Civil and Mechanical Engineering) was presented before the members of Board of Studies. The BOS members approved the syllabus. **(Refer Annexure-2)**

c. The modified syllabus of the subject ECE407 (offered to Civil Engineering) was presented before the members of Board of Studies. The BOS members approved the syllabus. **(Refer Annexure-3)**

M. Tech Program:

d. There is no change in the scheme and syllabus of the course. **(Refer Annexure-4)**

Pre Ph.D. Course:

e. There is no change in the scheme and syllabus of the course. **(Refer Annexure-5)**

CBCS:

f. There is no change in the scheme and syllabus of the course.

All the aforesaid points have been approved by all the board members present in the meeting.

5. Summary of changes is given below: -

Current Syllabus					Proposed Changes/Modifications			
Sr. No.	**Course Title**	**Module of the syllabus**	**Old Course Code**	**No. of Credits**	**Addition/deletion in the Syllabus**	**New Course Title**	**New Course Code**	**No. of Credits**
1.	Basic Electronics	II,III & IV	ECE 307	2	Deletion of Topics - Voltage Divider Bias Configuration, Topologies, Integrator, Differentiator, Logical ICs	No Change	No Change	No Change
2.	Instrumentation & Sensor Technologies for Civil Engineering Applications	II & III	ECE 407	2	Deletion of Sensor Installation & operation and Addition of Actuators	No Change	No Change	No Change

BOARD OF STUDIES (ECE)
MINUTES OF THE MEETING

Signature of Members:

Dr Vivek Singh Kushwah
Member

Mrs Rinkoo Bhatia
Member

Prof (Dr) Raghavendra Sharma
Member

Maj Gen (Dr) S C Jain
Chairman- BOS

Prof (Dr) Partha Sarathi M
External Member

ABSENT
Mr Pankaj Mittal
External Member

Prof (Dr) R S Tomar
Dean (Academics)
AUMP, Gwalior

Prof (Dr) M P Kaushik
Hon'ble Pro Vice Chancellor
AUMP, Gwalior

APPROVED BY

Hon'ble Vice Chancellor
AUMP, Gwalior

AMITY UNIVERSITY
MADHYA PRADESH
(Established by Ritnand Balved Education Foundation)

Date: 06/03/2021

BOARD OF STUDIES (Mechanical Engineering)
MINUTES OF THE MEETING
(03 Pages Only)

1. A meeting of board of studies of Department of Mechanical Engineering, Amity School of Engineering & Technology, Amity University Madhya Pradesh was held on 06/03/2020 at AUMP, under the Chairmanship of Maj Gen (Dr) S C Jain VSM** (Retd), Director (ASET). The following members attended the meeting: -

   (a) Chairman: Maj Gen (Dr) S. C. Jain VSM ** (Retd), Director (ASET)

   (b) Member

   i) Dr. Nitesh Rajput, Assistant Professor ME, AUR, Jaipur, External Member
   ii) Dr. C. P. Jawahar, Professor & Head ME, Member
   iii) Mr. Nasir Khan, Assistant Professor, ME, Member
   iv) Dr. Manvandra Kumar Singh, Assistant Professor, ME, Member

2. **The agenda of the meeting included the following:**
   (a) Curriculum of First year B.Tech. ME Program for 2021-25 batch.
   (b) Discussion on trends and technologies in ME and consideration of its inclusion in syllabus.
   (c) Any other point with due permission of the Chairperson.

3. **Discussions/Comments:**
   a. (i) Discussion: The Scheme and syllabus of the subjects to be offered by ME Department to B. Tech. ME for batch 2021 -2025 was presented before the members of the Board of studies. The Scheme and syllabus of all the subjects was reviewed.
      (ii) Comments: The existing scheme and syllabus is well aligned, and few changes were recommended in few subjects.
   b. (i) Discussion: The syllabus of Programme B.Tech in ME for batches 2018-2022, 2019-2023, 2020-2024 and along with the syllabus of the subjects offered by ME to other departments was presented to BOS members and reviewed.

(ii) Comments: The syllabus of the mentioned batches and the subjects offered by ME to other departments is well aligned and needs no change.

c. (i) Discussion: The syllabus of M. Tech, CBCS and Pre-PhD course work subjects was presented to BOS members and reviewed.

(ii) Comments: The Syllabus of M. Tech., CBCS and Pre-PhD course work subjects is well aligned and needs no change.

4. **Recommendations:**

B. Tech Program

There is a change in the scheme and syllabus of the courses. (Ref Annexure -1)

BME 710 Green Vehicle Technology - (Credits: 03)

M. Tech Program:

There is no change in the scheme and syllabus of the course. (Ref Annexure-2)

Pre Ph.D. Course:

There is no change in the scheme and syllabus of the courses. (Ref Annexure -3)

CBCS:

There is no change in the scheme and syllabus of the course.

All the aforesaid points have been approved by all the board members present in the meeting.

5. **Summary of changes is given below:-**

Current Syllabus					Proposed Changes/ Modifications			
Sr. No	Program	Course Title	Old Course Code	No. of Credits	Addition/ deletion in the Syllabus	New Course Title	New Course Code	No. of Credits
1	B Tech	Green Vehicle Technology	NA	NA			BME 710	3

BOARD OF STUDIES (ME)
MINUTES OF THE MEETING

Signature of Members:

Dr. Manvandra Kumar Singh
Member

Mr. Nasir Khan
Member

Dr. C. P. Jawahar
Member

Maj Gen (Dr.) SC Jain
Member

Dr. Nitesh Singh Rajput
External Member

ABSENT

Dr. Chaitanya Sharma
External Member

Prof (Dr) R S Tomar
Dean (Academics)
AUMP, Gwalior

Prof (Dr) M P Kaushik
Hon'ble Pro Vice Chancellor
AUMP, Gwalior

APPROVED BY

16/3/21

Hon'ble Vice Chancellor
AUMP, Gwalior

GREEN VEHICLE TECHNOLOGY

Course Code: BME 710

Credit Units: 03
Total Hours: 30

Course Objective:
This course introduces the fundamental concepts, principles, analysis and design of hybrid and electric vehicles. This course aims to cover different configurations of electric vehicles, hybrid vehicle configuration and its components, performance analysis, drive systems and testing of electric vehicles.

Course Contents:

Module I – Introduction (6 Hours)
Overview of green vehicles in India. Benefit of using green vehicles. Economic and environmental impact of electric hybrid vehicle. Comparison of hybrid electric vehicles and conventional vehicles. Introduction to Hybrid Electric Vehicles: History of hybrid and electric vehicles, social and environmental importance of hybrid and electric vehicles, impact of modern drive-trains on energy supplies. Conventional Vehicles: Basics of vehicle performance, vehicle power source characterization, transmission characteristics.

Module II -Hybrid and Electric Drive-trains (6 Hours)
Hybrid Electric Drive-trains: Basic concept of hybrid traction, introduction to various hybrid drive-train topologies, power flow control in hybrid drive-train topologies, fuel efficiency analysis. Electric Drive-trains: Basic concept of electric traction, introduction to various electric drive-train topologies, power flow control in electric drive-train topologies, fuel efficiency analysis.

Module III-Propulsion System (6 Hours)
Introduction to electric components used in hybrid and electric vehicles, Configuration and control of DC Motor drives, Configuration and control of Induction Motor drives, configuration and control of Permanent Magnet Motor drives, Configuration and control of Switch Reluctance Motor drives, drive system efficiency.

Module IV- Energy Storage System (6 Hours)

Introduction to Energy Storage Requirements in Hybrid and Electric Vehicles, Battery based energy storage and its analysis, Fuel Cell based energy storage and its analysis, Super Capacitor based energy storage and its analysis, Flywheel based energy storage and its analysis, Hybridization of different energy storage devices. .

Module V- Testing of Electric Vehicles (6 Hours)

Homologation & its Types, Regulations overview (EEC, ECE, FMVSS, AIS, CMVR), Type approval Scheme. Types of test tracks, Hardware in The Loop (HIL) concepts for EV/HEVs. static testing of vehicle, dynamics testing of vehicle, vehicle component testing.

Course Outcomes:
After completing the course, the students will be able to

- Understand the concepts of electric vehicle technology
- Compare the conventional and hybrid vehicles
- Know the propulsion system in the electric vehicle
- Identify various types of storage system
- Perform the testing of electric vehicles

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	10	8	7	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Attendance

a.p.

Text and References:

- Mehrdad Ehsani, Yimin Gao, Stefano Longo and Kmbiz Ebrahimi, "Modern Electric, Hybrid Electric, and Fuel Cell Vehicles", CRC Press, 3rd edition (2019)
- A.K. Babu, "Electric & Hybrid Vehicles",Khanna Publishing, 1st edition (2019).
- Tom Denton, "Electric and Hybrid Vehicles", Routledge; 1st edition (2016).
- ARAI Standards for Electric Vehicles (https://www.araiindia.com/downloads

Bachelor of Technology
(Mechanical Engineering)

BME

AICTE MODEL CURRICULUM

(2021-25 Batch)

Bachelor of Technology
(Mechanical Engineering)

Programme Code: BME

Duration – 4 Years Full Time

Programme Structure
&
Curriculum & Scheme of Examination

2021-25
(Based on AICTE)

AMITY UNIVERSITY
MADHYA PRADESH

PREAMBLE

Amity University aims to achieve academic excellence by providing multi-faceted education to students and encourage them to reach the pinnacle of success. The University has designed a system that would provide rigorous academic programme with necessary skills to enable them to excel in their careers.

This booklet contains the Programme Structure, the Detailed Curriculum and the Scheme of Examination. The Programme Structure includes the courses (Core and Elective), arranged semester wise. The importance of each course is defined in terms of credits attached to it. The credit units attached to each course has been further defined in terms of contact Hours i.e. Lecture Hours (L), Tutorial Hours (T), Practical Hours (P). Towards earning credits in terms of contact Hours, 1 Lecture and 1 Tutorial per week are rated as 1 credit each and 2 Practical Hours per week are rated as 1 credit. Thus, for example, an L-T-P structure of 3-0-0 will have 3 credits, 3-1-0 will have 4 credits, and 3-1-2 will have 5 credits.

The Curriculum and Scheme of Examination of each course includes the course objectives, course contents, scheme of examination and the list of text and references. The different codes used for the components of evaluation are given below:-

Components	**Codes**
Case Discussion/ Presentation/ Analysis	C
Home Assignment	H
Project	P
Seminar	S
Viva	V
Quiz	Q
Class Test	CT
Attendance	A
End Semester Examination	ESE

It is hoped that it will help the students study in a planned and a structured manner and promote effective learning. Wishing you an intellectually stimulating stay at Amity University.

March 2020

PROGRAM OUTCOMES

PO1. Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. Problem Analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6. The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9. Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO12. Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects

PROGRAM SPECIFIC OUTCOMES

PSO1.Professional Skills: An ability to understand the basic concepts in Mechanical Engineering and to apply them to various areas, like Automobile, power plant, Production, Manufacturing etc., in the design and implementation of complex systems.

PSO2. Problem-solving skills: An ability to solve complex Mechanical Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions.

PSO3. Successful career and Entrepreneurship: An understanding of social-awareness & environmental-wisdom along with ethical responsibility to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an Entrepreneur.

PROGRAMME STRUCTURE

FIRST SEMESTER						
Course Code	**Course Title**	**Lecture (L) Hours Per week**	**Tutorial (T) Hours Per week**	**Practical (P) Hours Per week**	**Total Credits**	**Hours**
MAT101	Applied Mathematics – I (Calculus and Linear Algebra)	3	1	-	4	40
CHE101	Applied Chemistry	3	1	-	4	40
CSE104	Programming for Problem Solving	3	-	-	3	30
BME101	Engineering Graphics & Design	1	-	-	1	10
CIV101	Basic Civil Engineering & Applied Mechanics	2	-	-	2	20
CHE121	Applied Chemistry Lab	-	-	2	1	20
CSE124	Programming for Problem Solving Lab	-	-	4	2	40
BME121	Engineering Graphics & Design Lab	-	-	4	2	40
BCU141	Communication Skills – I	1			1	10
EVS142	Environmental Studies – I	2	-	-	2	20
BSU143	Behavioural Science – I	1	-	-	1	10
FLU144	French –I	2	-	-	2	20
CBCS		3	-	-	3	30
TOTAL CREDITS (Including CBCS)					**28**	
Total Hours Including CBCS per week					**33**	
Total Hours in the Semester					**330**	

SECOND SEMESTER						
Course Code	**Course Title**	**Lecture (L) Hours Per week**	**Tutorial (T) Hours Per week**	**Practical (P) Hours Per week**	**Total Credits**	**Hours**
MAT201	Applied Mathematics–II (Ordinary & Partial Differential Equations and Transform)	3	1	-	4	40
PHY101	Applied Physics – I	3	1	-	4	40
ECE101	Basic Electrical Engineering	3	-	-	3	30
CSE204	Object Oriented Programming Using C++	2	1	-	3	30
BME102	Workshop/ Manufacturing Practices	1	-	-	1	10
PHY121	Applied Physics Lab – I	-	-	2	1	20
ECE121	Basic Electrical Engineering Lab	-	-	2	1	20
CSE224	Object Oriented Programming Using C++ Lab	-	-	2	1	20
BME122	Workshop/ Manufacturing Practices Lab	-	-	4	2	40
BCU241	Communication Skills – II	1	-	-	1	10
EVS242	Environmental Studies – II	2	-	-	2	20
BSU243	Behavioural Science – II	1	-	-	1	10
FLU244	French –II	2	-	-	2	20
CBCS		3	-	-	3	30
TOTAL CREDITS (Including CBCS)					**29**	
Total Hours Including CBCS per week					**34**	
Total Hours in the Semester					**340**	
TERM PAPER DURING SUMMER BREAK						

THIRD SEMESTER						
Course Code	**Course Title**	**Lecture (L) Hours Per week**	**Tutorial (T) Hours Per week**	**Practical (P) Hours Per week**	**Total Credits**	**Hours**
MAT 301	Applied Mathematics – III (Probability, Statistics and Numerical Methods)	3	-	-	3	30
PHY 303	Applied Physics – II	3	-	-	3	30
BME 301	Engineering Mechanics	3	-	-	3	30
BME 302	Material Science & Metallurgy	3	-	-	3	30
BME 303	Thermodynamics	3	-	-	3	30
ECE 307	Basic Electronics	2	-	-	2	20
PHY 323	Applied Physics Lab – II	-	-	2	1	20
BME 321	Engineering Mechanics Lab	-	-	2	1	20
BME 323	Thermodynamics lab	-	-	2	1	20
ECE 327	Basic Electronics lab	-	-	2	1	20
BCU 341	Communication Skills – III	1	-	-	1	10
BSU 343	Behavioural Science – III	1	-	-	1	10
FLU 344	French– III	2	-	-	2	20
NTP 330	**Term paper (Evaluation)**	-	-	-	2	
CBCS		3	-	-	3	30
TOTAL CREDITS (Including CBCS)					**30**	
Total Hrs Including CBCS					**32**	
Total Hrs in the Semester					**320**	

FOURTH SEMESTER						
Course Code	**Course Title**	**Lecture (L) Hours Per week**	**Tutorial (T) Hours Per week**	**Practical (P) Hours Per week**	**Total Credits**	**Hours**
BME 401	Fluid Mechanics	3	-	-	3	30
BME 402	Heat and Mass Transfer	3	-	-	3	30
BME 403	Kinematic of Machine	3	-	-	3	30
BME 404	Manufacturing Machine	3	-	-	3	30
BME 405	Strength of Material	3	-	-	3	30
BME 422	Heat and Mass Transfer Lab	-	-	2	1	20
BME 423	Kinematic of Machine Lab	-	-	2	1	20
BME 424	Manufacturing Machine Lab	-	-	2	1	20
BME 425	Strength of Material & Fluid Mechanics Lab	-	-	2	1	20
BCU 441	Communication Skills – IV	1	-	-	1	10
BSU 443	Behavioural Science – IV	1	-	-	1	10
FLU 444	French– IV	2	-	-	2	20
CBCS		3	1	-	4	40
TOTAL CREDITS (Including CBCS)					**27**	
Total Hrs Including CBCS					**31**	
Total Hrs in the Semester					**310**	
INDUSTRIAL PRACTICAL TRAINING – I: 6 – 8 WEEKS						

FIFTH SEMESTER						
Course Code	**Course Title**	**Lecture (L) Hours Per week**	**Tutorial (T) Hours Per week**	**Practical (P) Hours Per week**	**Total Credits**	**Hours**
BME 501	Applied Thermodynamics	3	-	-	3	30
BME 502	Dynamics of Machines	3	-	-	3	30
BME 503	Machine Design –I	3	-	-	3	30
BME 504	Measurement and Control	3	-	-	3	30
BME 505	Metrology	3	-	-	3	30
BME 522	Dynamics of Machine Lab	-	-	2	1	20
BME 524	Measurement and Control Lab	-	-	2	1	20
BME 525	Metrology lab	-	-	2	1	20
BCU 541	Communication Skills –V	1	-	-	1	10
BSU 543	Behavioural Science – V	1	-	-	1	10
FLU 544	French– V	2	-	-	2	20
NPT 550	**Industrial Practical Training - I (Evaluation)**	-	-	-	3	-
CBCS		3	1	-	4	40
TOTAL CREDITS (Including CBCS)						**29**
Total Hrs Including CBCS						**29**
Total Hrs in the Semester						**290**

SIXTH SEMESTER						
Course Code	**Course Title**	**Lecture (L) Hours Per week**	**Tutorial (T) Hours Per week**	**Practical (P) Hours Per week**	**Total Credits**	**Hours**
BME 601	Fluid Power Systems	3	-	-	3	30
BME 602	IC Engine & Gas Turbine	3	-	-	3	30
BME 603	Machine Design – II	3	-	-	3	30
BME 604	Manufacturing Technology	3	-	-	3	30
BME 621	Fluid Power Systems Lab	-	-	2	1	20
BME 622	IC Engine & Gas Turbine Lab	-	-	2	1	20
BME 623	Machine Design Lab – II	-	-	2	1	20
ELECTIVES (Anyone from following with Practical)					**4**	**50**
BME 606	Mechatronics	3	-	-		
BME 607	Artificial Intelligence and Robotics	3	-	-		
BME 626	Mechatronics Lab	-	-	2		
BME 627	Artificial Intelligence and Robotics lab	-	-	2		
BCU 641	Communication Skills – VI	1	-	-	1	10
BSU 643	Behavioural Science – VI	1	-	-	1	10
FLU 644	French– VI	2	-	-	2	20
NMP 660	**Minor Project**	-	-	-	2	-
CBCS		-	-	-	1	-
TOTAL CREDITS (Including CBCS)					**26**	
Total Hrs Per Week					**27**	
Total Hrs in the Semester					**270**	
INDUSTRIAL PRACTICAL TRAINING –II: 6 – 8 WEEKS						

SEVENTH SEMESTER						
Course Code	Course Title	Lecture (L) Hours Per week	Tutorial (T) Hours Per week	Practical (P) Hours Per week	Total Credits	Hours
BME 701	Operations Research	3	-	-	3	30
BME 702	Computer Aided Manufacturing	3	-	-	3	30
BME 703	Management of Manufacturing Systems	3	-	-	3	30
BME 721	Operations Research (Programming) Lab	-	-	2	1	20
BME 722	Computer Aided Manufacturing Lab	-	-	2	1	20
ELECTIVES (Any one from each category)					**4**	**50**
A (With Practical)						
BME 704	Automotive Engineering	3	-	-		
BME 705	Computer Aided Designing	3	-	-		
BME 724	Automotive Engineering Lab	-	-	2		
BME 725	Computer Aided Designing Lab	-	-	2		
ELECTIVES (Any one from each category)					**3**	**30**
B (Without Practical)						
BME 706	Marketing Management	3	-	-		
BME 707	Solar Energy	3	-	-		
BME 708	Power Plant Practices	3	-	-		
BME 709	Combustion Engine Emissions	3	-	-		
BME 710	Green Vehicle Technology	3	-	-		
BCU 741	Communication Skills – VII	1	-	-	1	10
BSU 743	Behavioural Science – VII	1	-	-	1	10
FLU 744	French– VII	2	-	-	2	20
NPT 750	**Industrial Practical Training– II (Evaluation)**	-	-	-	5	
NMP 760	**Major Project – I**	-	-	-	6	
TOTAL CREDITS					**33**	
Total Hrs Per Week					**25**	
Total Hrs in the Semester					**250**	

EIGHT SEMESTER						
Course Code	**Course Title**	**Lecture (L) Hours Per week**	**Tutorial (T) Hours Per week**	**Practical (P) Hours Per week**	**Total Credits**	**Hours**
BME 801	Quality Control & Quality Assurance	3	-	-	3	30
BME 802	Refrigeration & Air-conditioning	3	-	-	3	30
BME 822	Refrigeration & Air-conditioning Lab	-	-	2	1	20
ELECTIVES (Any one from following with Practical)					**4**	**50**
BME 803	Advanced Methods of Manufacturing	3	-	-		
BME 804	Gear Technology	3	-	-		
BME 823	Advanced Methods of Manufacturing Lab	-	-	2		
BME 824	Gear Technology Lab	-	-	2		
BCU 841	Communication Skills – VIII	1	-	-	1	10
BSU 843	Behavioural Science – VIII	1	-	-	1	10
FLU 844	French– VIII	2	-	-	2	20
NMP 860	**Major Project – II**	-	-	-	9	
TOTAL CREDITS					**24**	
Total Hrs Per Week					**17**	
Total Hrs in the Semester					**170**	