

**Banasthali Vidyapith**  
**DEPARTMENT OF AUTOMATION**

**Minutes of the Board of Studies held on 26.12.2018 at 3:00 PM in the Department of  
Automation, Banasthali Vidyapith.**

P R E S E N T

- |     |                           |   |                 |
|-----|---------------------------|---|-----------------|
| 1.  | Prof. Jayshree Vajpai     | : | External Member |
| 2.  | Prof. Bijay Kumar Rout    | : | External Member |
| 3.  | Mr. Abdullah Bin Queyam   | : | Internal Member |
| 4.  | Mr. Ashish Mathur         | : | Internal Member |
| 5.  | Mr. Ashish Chandiook      | : | Internal Member |
| 6.  | Dr. Bharat Bhushan Sharma | : | Internal Member |
| 7.  | Mr. Chandraveer Singh     | : | Internal Member |
| 8.  | Mrs. Debasmita Ghosh Roy  | : | Internal Member |
| 9.  | Mr. Gaurav Kumawat        | : | Internal Member |
| 10. | Mr. Jitendra Maharshi     | : | Internal Member |
| 11. | Dr. Kailash Chand Sharma  | : | Internal Member |
| 12. | Mr. Kishore Chahar        | : | Internal Member |
| 13. | Mr. Lokesh Kumar          | : | Internal Member |
| 14. | Dr. Manish Raj            | : | Internal Member |
| 15. | Ms. Meenu Kaushik         | : | Internal Member |
| 16. | Dr. Nibedita Das          | : | Internal Member |
| 17. | Mr. Parth Patpatiya       | : | Internal Member |
| 18. | Mr. Pawan Kumar Pathak    | : | Internal Member |
| 19. | Mr. Rahul Katiyar         | : | Internal Member |
| 20. | Mr. Rajesh Gurjar         | : | Internal Member |
| 21. | Mr. Sumit Nema            | : | Internal Member |
| 22. | Mr. Vineet Pandey         | : | Internal Member |
| 23. | Prof. Shailly Sharma      | : | Convener        |

Note: Prof. Vijander Singh, NSIT, Delhi (External members) could not attend the meeting.

The meeting started with a welcome of the members, by the convener of Board of Studies for Department of Automation Prof. Shailly Sharma, Head, Department of Automation, Banasthali Vidyapith, Rajasthan.

1. The Board took up the minutes of its last meeting held on March 15<sup>th</sup>, 2012 and resolved that the minutes to be confirmed. In view of the decision of the Academic Council and Executive council from 2009 onwards and the road map prepared by the Academic Council in its meeting held on 26<sup>th</sup> April, 2013 the board has prepared the course structure of B. Tech. Electrical & Electronics (EE) and syllabi of the B.Tech. Electronics and Instrumentation (EI). In Jan, 2016 the board has prepared the course structure of B.Tech. Mechatronics (MCTR) with approval of Academic Council.
2. The Board examined and updated existing panel of examiners for various courses of B.Tech.(EI/EE/MCTR) keeping in view the by-law 15.03.2002 of the Vidyapith and panel of examiners will be submitted in a sealed envelope with soft copy to the Secrecy Section by the Convener.
3. The Board reviewed the courses of study, Curricula and scheme of examination for the following examination.

3.I.(A) B. Tech. Electronics & Instrumentation (EI):

(i)	First Semester Examination, December, 2019	Minor change
(ii)	Second Semester Examination, April/May, 2020	Minor change
(iii)	Third Semester Examination, December, 2020	Minor change
(iv)	Fourth Semester Examination, April/May, 2021	Minor change
(v)	Fifth Semester Examination, December, 2021	Major change
(vi)	Sixth Semester Examination, April/May, 2022	Major change
(vii)	Seventh Semester Examination, December, 2022	Major change
(viii)	Eighth Semester Examination, April/May, 2023	Major change

The board reviewed the courses of Study/Curricula and scheme of Examination. After the discussion, board suggested changes in respect of scheme of examination and syllabi.

- a) B.Tech (EI) : New Scheme is proposed and approved by board.  
Attached as Annexure-1 A.
- b) B.Tech. (EI) VI Sem.: Power Electronics Lab: Board proposed some up-gradation in existing experiment list of the said courses. The

Board discussed the proposed experiment list and approved the same. The new experiment list is given in Annexure-II A.

- c) B.Tech. (EI) V Sem.: Board proposed that the Control System (Theory and Lab) should be replaced with Linear Control System (Theory and Lab) of B.Tech. (MCTR). The Board discussed the proposed syllabus and approved the same. The syllabus is given in Annexure-II A.
- d) B.Tech. (EI) V Sem.: Board proposed that the Transducers (Theory and Lab) should be replaced with Industrial Instrumentation (Theory and Lab). The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II A.
- e) B.Tech. (EI) VI Sem.: Board proposed that Industrial Automation (Theory and Lab) should be adopted as a new course from MCTR scheme. The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II A.
- f) B.Tech. (EI) VI Sem.: Board proposed Process Control & Instrumentation (Theory and Lab) should be implemented in place of subject Process Control (Theory and Lab). The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure II B.
- g) B.Tech. (EI) VII Sem.: Board proposed that there should be two papers on Mechatronics subject, one for MCTR/EI stream and named as “Mechatronics System” and another is common to all other branches as an Elective paper “Mechatronics”. The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II C.
- h) B.Tech. (EI) VIII Sem.: Board proposed to consider the following papers as Electives - Analytical Instrumentation, Fiber Optic and Laser Instrumentation, Biomedical Instrumentation, Virtual Instrumentation. The Board discussed and approved the same. The syllabus is given in Annexure II A.
- i) B.Tech. (EI) VII Sem.: Board proposed the amended list of electives in the curricula as follows:
  - Artificial Neural Network and Fuzzy Logic

- Energy Efficiency and Conservation
- Non Linear Control System
- Digital Control System
- Analytical Instrumentation
- Fiber Optic and Laser Instrumentation
- Biomedical Instrumentation
- Virtual Instrumentation
- Power Plant Engineering

j) B.Tech. (EI) VIII Sem.: Board proposed a list of online courses with their source institution as reading electives paper to final year students in place of existing reading elective paper. The List of Reading Paper is given in Annexure-II B.

Course	Source Institution	Duration
Fundamental of Semiconductor Devices	NPTEL	12 Weeks
Principles of Signals and Systems	NPTEL	12 Weeks
Antennas	NPTEL	12 Weeks
Introduction to Photonics	NPTEL	12 Weeks
Electromagnetic Waves in guided and wireless media	NPTEL	12 Weeks
Biomedical signal processing	NPTEL	12 Weeks
Advanced IOT Applications	NPTEL	8 Weeks
Mathematical methods and techniques in signal processing	NPTEL	12 Weeks
Electronics Modules for industrial applications using OPAMP	NPTEL	8 weeks
Industrial Automation and Control	Swayam	8 weeks
Control Engineering	Swayam	12 Weeks
Chemical Process Instrumentation	NPTEL	12 Weeks
Quality Control	NSI	16 weeks
Interfacing with Arduino	Coursera	----
Robotica	Coursera	----
Analyzing data with Python	Edx	----
Industry 4.0	Edx	----
Internet of Things	MSME	3 Weeks
Industrial Robotics	MSME	4 weeks
SCADA	MSME	4 weeks
PLC	MSME	4 weeks

3.I.(B) B. Tech. Electrical & Electronics Engineering (EE):

(i)	First Semester Examination, December, 2019	Minor change
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(ii)	Second Semester Examination, April/May, 2020	Minor change
(iii)	Third Semester Examination, December, 2020	Minor change
(iv)	Fourth Semester Examination, April/May, 2021	Minor change
(v)	Fifth Semester Examination, December, 2021	Major change
(vi)	Sixth Semester Examination, April/May, 2022	Major change
(vii)	Seventh Semester Examination, December, 2022	Major change
(viii)	Eighth Semester Examination, April/May, 2023	Major change

The board reviewed the courses of Study/Curricula and scheme of Examination. After the discussion, board suggested changes in respect of scheme of examination and syllabi.

- a) B.Tech (EE): New Scheme is proposed and approved by board. Attached as Annexure-1 B.
- b) B.Tech. (EE) V Sem.: Electrical Machine-I Lab: Board suggested some minor modification in existing syllabus of said course. The revised syllabus is given in Annexure-II B.
- c) B.Tech. (EE) V Sem.: Power Electronics Lab: Board proposed some up-gradation in existing experiment list of the said courses. The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II B.
- k) B.Tech. (EE) V/VI Sem.: Board proposed that the Control System (Theory and Lab) should be replaced with Linear Control System (Theory and Lab) of B.Tech. (MCTR). The Board discussed the proposed syllabus and approved the same. The syllabus is given in Annexure-II B.
- d) B.Tech. (EE) V Sem.: The syllabus of Elements of Power System (Theory and Lab) has been modified and renamed as Power System-I (Theory and Lab). The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II B.
- e) B.Tech. (EE) V Sem.: The syllabus of Power System Analysis (Theory and Lab) has been modified and renamed as Power System-II (Theory and Lab). The Board discussed the proposed

syllabus and approved the same. The new syllabus is given in Annexure-II B.

- f) B.Tech. (EE) VII Sem.: Switchgear and Protection: Board proposed minor changes in existing syllabus of the said course and is shifted from list of elective to new scheme as a compulsory paper and Lab is also introduced. The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II B.
- g) B.Tech. (EE) VII Sem.: Board proposed to consider the following papers as Electives with lab practices. The syllabus of electives is given in Annexure-II B.
- Electric Drives and Control
  - Mechatronics
  - Robotics and Automation
  - Process Control
  - Industrial Automation
- h) B.Tech. (EE) VIII Sem.: Board proposed a list of online courses with source as reading elective paper to final year students in addition to existing reading elective paper. The List of Reading Paper is given in Annexure-II B.

Course	Source	Duration
Fundamental of Semiconductor Devices	NPTEL	12 Weeks
Principles of Signals and Systems	NPTEL	12 Weeks
Computer Aided Power System Analysis	NPTEL	12 Weeks
Power System Dynamics, Control and Monitoring	NPTEL	12 Weeks
Advance Power Electronics and Control	NPTEL	8 Weeks
Electromagnetic Compatibility	NPTEL	8 Weeks
Antennas	NPTEL	12 Weeks
Introduction to Photonics	NPTEL	12 Weeks
Electromagnetic Waves in guided and wireless media	NPTEL	12 Weeks
Biomedical signal processing	NPTEL	12 Weeks
Advances in UHV transmission and distribution	NPTEL	8 Weeks
Advanced IOT Applications	NPTEL	8 Weeks
Mathematical methods and techniques in signal processing	NPTEL	12 Weeks
Electronics Modules for industrial applications using OPAMP	NPTEL	8 weeks
Industrial Automation and Control	Swayam	8 weeks
Control Engineering	Swayam	12 Weeks
Chemical Process Instrumentation	NPTEL	12 Weeks
Quality Control	NSI	16 weeks
Interfacing with Arduino	Coursera	----
Robotica	Coursera	----

Analyzing data with Python	Edx	----
Industry 4.0	Edx	----
Internet of Things	MSME	3 Weeks
Industrial Robotics	MSME	4 weeks
SCADA	MSME	4 weeks
PLC	MSME	4 weeks

3.I.(C) B. Tech. Mechatronics (MCTR):

(i)	First Semester Examination, December, 2019	Minor change
(ii)	Second Semester Examination, April/May, 2020	Minor change
(iii)	Third Semester Examination, December, 2020	Minor change
(iv)	Fourth Semester Examination, April/May, 2021	Minor change
(v)	Fifth Semester Examination, December, 2021	Major change
(vi)	Sixth Semester Examination, April/May, 2022	Major change
(vii)	Seventh Semester Examination, December, 2022	Major change
(viii)	Eighth Semester Examination, April/May, 2023	Major change

The board reviewed the courses of Study/Curricula and scheme of Examination. After the discussion, board suggested changes in respect of scheme of examination and syllabi.

- a) B.Tech (MCTR): New Scheme is proposed and approved by board.  
Given in Annexure-1 C.
- b) B.Tech. (MCTR) IV Sem.: Electrical Machine-I Lab: Board suggested some minor modification in existing syllabus of above courses.  
The revised syllabus is given in Annexure-II C.
- c) B.Tech. (MCTR) VI Sem.: Board proposed that there should be two papers on Robotics subject, one for MCTR stream named as “Robotics and Control” and another is common to all other branches as an Elective paper “Robotics and Automation”. The Board discussed the proposed syllabus and approved the same.  
The syllabus is given in Annexure II C.
- d) B.Tech. (MCTR) VIII Sem.: Board proposed that there should be two papers on Mechatronics subject, one for MCTR stream and named as “Mechatronics System” and another is common to all other branches as an Elective paper “Mechatronics”. The Board

discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II C.

- e) B.Tech. (MCTR) VIII Sem.: Board proposed syllabus of Computer Integrated Manufacturing System (CIMS) (Theory and Lab). The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II C.
- f) B.Tech. (MCTR) VIII Sem.: Board proposed elective subjects - Non-Linear Control System, Power Plant Engineering, Operation Research, Industrial Engineering, Manufacturing Science and Production Technology. The Board discussed the proposed syllabus and approved the same. The new syllabus is given in Annexure-II C.
- g) B.Tech. (MCTR) VIII Sem.: Board proposed to consider the following list of electives:
- Biomedical Instrumentation
  - Energy Efficiency and Conservation
  - Power Plant Engineering
  - Operation Research
  - Industrial Engineering
  - Manufacturing Science
  - Production Technology
  - Microprocessor & Microcontroller
- h) B.Tech. (MCTR) VII Sem.: Board proposed a list of online courses with source as reading elective paper to final year students. The List of Reading Paper is given in Annexure-II C.

Course	Source	Duration
Fundamental of Semiconductor Devices	NPTEL	12 Weeks
Principles of Signals and Systems distribution	NPTEL	12 Weeks
Advanced IOT Applications	NPTEL	8 Weeks
Mathematical methods and techniques in signal processing	NPTEL	12 Weeks
Electronics Modules for industrial applications using OPAMP	NPTEL	8 weeks
Industrial Automation and Control	Swayam	8 weeks
Control Engineering	Swayam	12 Weeks
Chemical Process Instrumentation	NPTEL	12 Weeks
Quality Control	NSI	16 weeks
Interfacing with Arduino	Coursera	----
Robotica	Coursera	----
Analyzing data with Python	Edx	----
Industry 4.0	Edx	----



CNC Machining Turning	MSME	4 weeks
Solar PV Technology	MSME	4 weeks
Internet of Things	MSME	3 Weeks
AUTOCAD	MSME	4 weeks
Industrial Robotics	MSME	4 weeks
SCADA	MSME	4 weeks
PLC	MSME	4 weeks

Programme educational objective, programme specific outcomes and the list of disciplinary courses of the B.Tech. (EIE/EEE/MCTR) programme is attached and marked as **Annexure-I (A, B & C)**.

The revised syllabus, learning outcomes, list of suggested books and e-resources of the B.Tech. (EIE/EEE/MCTR) programme is attached and marked as **Annexure-II (A, B & C)**.

4. Board reviewed the reports received from the examiners of the different examinations. All the reports were found to be with good remarks. A very few reports had "average" remarks. The information about these reports has been conveyed to the respective instructors for the action against the same. The analysis of the reports received is enclosed in **Annexure-III**.
5. The board evaluated the periodical and semester examination papers and found that most of them were analytic and application based depending on the nature of course. In some of the papers, few typographical errors and incomplete questions were found. There was a discussion to evolve a method that can be used to overcome this problem. The analysis of question papers is enclosed in **Annexure-IV**.
6. The board recommended that reading electives can be replaced with online courses for which student need to submit the certificate of equivalent credit. The list of reading electives approved by board is enclosed in **Annexure-V**.

The meeting ended with the vote of thanks.

## Curriculum Structure

### B. Tech. (Electronics and Instrumentation)

First Year											
Semester - I					Semester - II						
Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C
	General English / General Hindi	2	0	0	2		General Hindi / General English	2	0	0	2
	Core Foundation Course - I	2	0	0	2		Core Foundation Course - II	2	0	0	2
MATH 103/107	Calculus/ Linear Algebra	3	1	0	4	MATH 107/103	Linear Algebra/ Calculus	3	1	0	4
PHY 101/106	Applied Optics/ Modern Physics	3	1	0	4	PHY 106/101	Modern Physics/ Applied Optics	3	1	0	4
CHEM 101/ .....	Chemistry/ Biology	3	1	0	4	..... / CHEM 101	Biology/ Chemistry	3	1	0	4
CHE 101/ PHY 105	Thermodynamics/ Engineering Mechanics	3	1	0	4	PHY 105/ CHE 101	Engineering Mechanics/ Thermodynamics	3	1	0	4
CS 109/ EEE 101	Computer Fundamentals & Programming/ Electrical Engineering	4	0	4	6	EEE 101/ CS 109	Electrical Engineering / Computer Fundamentals & Programming	4	0	4	6
ENGG 101L/ .....	Engineering Drawing & Graphics/ Measurement Techniques Lab	0	0	6	3	..... /ENGG 102L	Measurement Techniques Lab /Engineering Drawing & Graphics	0	0	6	3
<b>Semester Wise Total:</b>		<b>20</b>	<b>4</b>	<b>10</b>	<b>29</b>	<b>Semester Wise Total:</b>		<b>20</b>	<b>4</b>	<b>10</b>	<b>29</b>

Second Year											
Semester - III					Semester - IV						
Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C
	Core Foundation Course - III	2	0	0	2		Core Foundation Course - IV	2	0	0	2
	Elective Foundation Course - I	2	0	0	2		Elective Foundation Course - II	2	0	0	2
	Complex Variables/Differential Equations	3	1	0	4		Differential Equations/Complex Variables	3	1	0	4
ENGG 201/202	Structure and Properties of Materials/Basic Electronics	4	0	0	4	ENGG 202/201	Basic Electronics/Structure and Properties of Materials	4	0	0	4
CS 209	Data Structures	4	0	4	6	CS 214	Object Oriented Programming	4	0	4	6
EEE 203	Network Analysis and Synthesis	4	0	2	5	EIE 202	Electrical and Electronics Measurements	4	0	2	5
ELE 201	Digital Electronics	4	0	2	5	MCTR 201	Pneumatic Engineering	4	0	2	5
ELE 203S	Seminar	0	0	2	1						
<b>Semester Wise Total:</b>		<b>23</b>	<b>1</b>	<b>10</b>	<b>29</b>	<b>Semester Wise Total:</b>		<b>23</b>	<b>1</b>	<b>8</b>	<b>28</b>

Third Year											
Semester - V					Semester - VI						
Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C
	Vocational Course - I	2	0	0	2		Vocational Course - II	2	0	0	2
	Core Foundation Course - V/Elective Foundation Course - III	2	0	0	2		Elective Foundation Course - III/Core Foundation Course - V	2	0	0	2
	Economics/Principles of Management	3	0	0	3		Principles of Management/Economics	3	0	0	3
	Probability and Statistical Methods/Numerical Methods	3	1	0	4		Numerical Methods/Probability and Statistical Methods	3	1	0	4
ELE 301	Analog Integrated Circuits	3	1	2	5		Robotics and Control	4	0	2	5
ELE 306	Microprocessor & Microcontroller	4	0	2	5	EEE 304	Power Electronics	4	0	2	5
EIE 308	Industrial Instrumentation	4	0	2	5	EIE 307	Industrial Automation	4	0	2	5
EIE 309	Linear Control System	3	1	2	5		Project	0	0	4	2
<b>Semester Wise Total:</b>		<b>24</b>	<b>3</b>	<b>8</b>	<b>31</b>	<b>Semester Wise Total:</b>		<b>22</b>	<b>1</b>	<b>10</b>	<b>28</b>

Fourth Year											
Semester - VII					Semester - VIII						
Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C
EIE 310	Process Control	4	0	2	5	EIE 407P	UIL Project	0	0	48	24
ECE 302	Communication Engineering	4	0	0	4		Reading Elective	2	0	0	2
	Mechatronics Systems	4	0	4	6						
ELE 304	Digital Signal Processing	3	1	2	5						
	Discipline Elective	4	0	0	4						
	Open Elective	4	0	0	4						
<b>Semester Wise Total:</b>		<b>23</b>	<b>1</b>	<b>8</b>	<b>28</b>	<b>Semester Wise Total:</b>		<b>2</b>	<b>0</b>	<b>48</b>	<b>26</b>

List of Core Foundation Course	L	T	P	C
Environment Studies	2	0	0	2
Indian Heritage/Indial Cultural Heritage	2	0	0	2
Selected Writings of Great Authors - I	2	0	0	2
Women in Indian Society	2	0	0	2
Parenthood and Family Relation	2	0	0	2

List of Electives	L	T	P	C
Artificial Neural Network and Fuzzy Logic	4	0	0	4
Energy Efficiency and Conservation	4	0	0	4
Non-linear Control system	4	0	0	4
Digital Control Systems	4	0	0	4
Analytical Instrumentation	4	0	0	4
Fiber Optic and Laser Instrumentation	4	0	0	4
Biomedical Instrumentation	4	0	0	4
Virtual Instrumentation	4	0	0	4
Power Plant Engineering	4	0	0	4

List of Elective Foundation Course	L	T	P	C
Science of Happiness	2	0	0	2
Human Anatomy and Physiology	2	0	0	2
Design Thinking	2	0	0	2
Universal Human Values	2	0	0	2
Selected Writings of Great Authors - II	2	0	0	2

List of Vocational Course	L	T	P	C
Basic Dress Making	0	0	4	2
Dress Designing	0	0	4	2
Entrepreneurship - I	2	0	0	2
Entrepreneurship - II	2	0	0	2
Radio Production - I	2	0	0	2
Radio Production - II	2	0	0	2
Web Designing & Internet Technology-I	1	0	2	2
Web Designing & Internet Technology-II	1	0	2	2
Library Science - I	1	0	2	2
Library Science - II	1	0	2	2
Photography - I	2	0	0	2
Photography - II	2	0	0	2

List of Reading Electives	Source Institution
Introduction to Photonics	NPTEL
Fundamentals of Semiconductor devices	NPTEL
Advanced IOT Applications	NPTEL
Principles of Signals and Systems	NPTEL
Biomedical Signal Processing	NPTEL
Electromagnetic Waves in guided and wireless media	NPTEL
Control Engineering	Swayam
Industrial Automation and Control	Swayam
Mathematical Methods and techniques in signal processing	NPTEL
Electronics Modules for Industrial Applications using Opamps	NPTEL
Chemical Process Instrumentation	NPTEL
Quality Control	National Sugar Institute
Interfacing with Arduino	Coursera
Robotica	Coursera
Analyzing Data with Python	Edx
Industry 4.0	Edx
Internet of Things	MSME
Industrial Robotics	MSME
SCADA	MSME
PLC	MSME
Electromagnetic Compatibility	NPTEL
Antennas	NPTEL

Student can opt for at least 2 additional Open (Generic) audit/credit Elective from other disciplines opting most 1 per semester in Semesters III, IV, V or VI with prior permission of respective heads.

Every Student shall also opt for:

Five Fold Education: Physical Education I, Physical Education II,  
 Five Fold Education: Aesthetic Education I, Aesthetic Education II,  
 Five Fold Education: Practical Education I, Practical Education II  
 doing one each semester

Every discipline should having 4-5 electives.

# Curriculum Structure

## B. Tech. (Electrical and Electronics)

First Year											
Semester - I					Semester - II						
Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C
	General English/General Hindi	2	0	0	2		General Hindi/General English	2	0	0	2
	Core Foundation Course - I	2	0	0	2		Core Foundation Course - II	2	0	0	2
MATH 103/107	Calculus/Linear Algebra	3	1	0	4	MATH 107/103	Linear Algebra/Calculus	3	1	0	4
PHY 101/106	Applied Optics/Modern Physics	3	1	0	4	PHY 106/101	Modern Physics/ Applied Optics	3	1	0	4
CHEM 101/ .....	Chemistry/Biology	3	1	0	4	..... / CHEM 101	Biology/Chemistry	3	1	0	4
CHE 101/ PHY 105	Thermodynamics/Engineering Mechanics	3	1	0	4	PHY 105/ CHE 101	Engineering Mechanics/Thermodynamics	3	1	0	4
CS 109/EEE 101	Computer Fundamentals & Programming/ Electrical Engineering	4	0	4	6	EEE 101/CS 109	Electrical Engineering / Computer Fundamentals & Programming	4	0	4	6
ENGG 101L/.....	Engineering Drawing & Graphics/ Measurement Techniques Lab	0	0	6	3	..... /ENGG 102L	Measurement Techniques Lab /Engineering Drawing & Graphics	0	0	6	3
<b>Semester Wise Total:</b>		<b>20</b>	<b>4</b>	<b>10</b>	<b>29</b>	<b>Semester Wise Total:</b>		<b>20</b>	<b>4</b>	<b>10</b>	<b>29</b>

Second Year											
Semester - III					Semester - IV						
Course Code	Course Name	L	T	P	C	Course Code	Course Name	L	T	P	C
	Core Foundation Course - III	2	0	0	2		Core Foundation Course - IV	2	0	0	2
	Elective Foundation Course - I	2	0	0	2		Elective Foundation Course - II	2	0	0	2
	Complex Variables/Differential Equations	3	1	0	4		Differential Equations/Complex Variables	3	1	0	4
ENGG 201/202	Structure and Properties of Materials/Basic Electronics	4	0	0	4	ENGG 202/201	Basic Electronics/Structure and Properties of Materials	4	0	0	4
CS 209	Data Structures	4	0	4	6	CS 214	Object Oriented Programming	4	0	4	6
ELE 202	Electromagnetic Field Theory	3	1	0	4	EIE 202	Electrical and Electronics Measurements	4	0	2	5
ELE 201	Digital Electronics	4	0	2	5	EEE 203	Network Analysis and Synthesis	3	1	2	5
ELE 203S	Seminar	0	0	2	1						
<b>Semester Wise Total:</b>		<b>22</b>	<b>2</b>	<b>8</b>	<b>28</b>	<b>Semester Wise Total:</b>		<b>22</b>	<b>2</b>	<b>8</b>	<b>28</b>

### Third Year

Semester - V					
Course Code	Course Name	L	T	P	C
	Vocational Course - I	2	0	0	2
	Core Foundation Course - V/Elective Foundation Course - III	2	0	0	2
	Economics/Principles of Management	3	0	0	3
	Probability and Statistical Methods/Numerical Methods	3	1	0	4
ELE 301	Analog Integrated Circuits	3	1	2	5
EEE 202	Electrical Machines -I	3	1	2	5
	Power System-I	3	1	2	5
EIE 309	Linear Control System	3	1	2	5
<b>Semester Wise Total:</b>		<b>22</b>	<b>5</b>	<b>8</b>	<b>31</b>

Semester - VI					
Course Code	Course Name	L	T	P	C
	Vocational Course - II	2	0	0	2
	Elective Foundation Course - III/Core Foundation Course - V	2	0	0	2
	Principles of Management/Economics	3	0	0	3
	Numerical Methods/Probability and Statistical Methods	3	1	0	4
EEE 301	Electrical Machines-II	3	1	2	5
EEE 304	Power Electronics	3	1	2	5
	Power System-II	4	0	2	5
	Project	0	0	4	2
<b>Semester Wise Total:</b>		<b>20</b>	<b>3</b>	<b>10</b>	<b>28</b>

### Fourth Year

Semester - VII					
Course Code	Course Name	L	T	P	C
ELE 304	Digital Signal Processing	3	1	2	5
	Switch Gear and Protection	4	0	2	5
ECE 302	Communication Engineering	4	0	0	4
ELE 306	Microprocessors and Microcontrollers	4	0	2	5
	Discipline Elective	4	0	2	5
	Open Elective	4	0	0	4
<b>Semester Wise Total:</b>		<b>23</b>	<b>1</b>	<b>8</b>	<b>28</b>

Semester - VIII					
Course Code	Course Name	L	T	P	C
EEE 405P	UIL Project	0	0	48	24
	Reading Elective	2	0	0	2
<b>Semester Wise Total:</b>		<b>2</b>	<b>0</b>	<b>48</b>	<b>26</b>

List of Core Foundation Course	L	T	P	C
Environment Studies	2	0	0	2
Indian Heritage/Indial Cultural Heritage	2	0	0	2
Selected Writings of Great Authors - I	2	0	0	2
Women in Indian Society	2	0	0	2
Parenthood and Family Relation	2	0	0	2

List of Electives	L	T	P	C
Electric Drives and Control	4	0	2	5
Mechatronics	4	0	2	5
Robotics and Automation	4	0	2	5
Industrial Automation	4	0	2	5
Process Control	4	0	2	5
Power System Operation and Control	4	0	2	5

List of Elective Foundation Course	L	T	P	C
Science of Happiness	2	0	0	2
Human Anatomy and Physiology	2	0	0	2
Design Thinking	2	0	0	2
Basic Human Values	2	0	0	2
Selected Writings of Great Authors - II	2	0	0	2

List of Vocational Course				
Basic Dress Making	0	0	4	2
Dress Designing	0	0	4	2
Entrepreneurship - I	2	0	0	2
Entrepreneurship - II	2	0	0	2
Radio Production - I	2	0	0	2
Radio Production - II	2	0	0	2
Web Designing & Internet Technology-I	1	0	2	2
Web Designing & Internet Technology-II	1	0	2	2
Library Science - I	1	0	2	2
Library Science - II	1	0	2	2
Photography - I	2	0	0	2
Photography - II	2	0	0	2

List of Reading Electives	Source
Computer Aided Power System Analysis	NPTEL
Fundamentals of Semiconductor devices	NPTEL
Advanced IOT Applications	NPTEL
Principles of Signals and Systems	NPTEL
Antennas	NPTEL
Electromagnetic Waves in guided and wireless media	NPTEL
Control Engineering	Swayam
Industrial Automation and Control	Swayam
Power System Dynamics, Control and Monitoring	NPTEL
Advance Power Electronics and Control	NPTEL
Introduction to Photonics	NPTEL
Biomedical Signal Processing	NPTEL
Interfacing with Arduino	Coursera
Robotica	Coursera
Analyzing Data with Python	Edx
Industry 4.0	Edx
Internet of Things	MSME
Industrial Robotics	MSME
SCADA	MSME
PLC	MSME
Advances in UHV Transmission & Distribution	NPTEL
Advanced IOT Applications	NPTEL
Mathematical Methods and techniques in signal processing	NPTEL
Electronics Modules for industrial applications using opamp	NPTEL
Quality Control	National Sugar Institute
Electromagnetic Compatibility	NPTEL

Student can opt atmost 2 additional Open (Generic) audit/credit Elective from other disciplines opting most 1 per semester in Semesters III, IV, V or VI with prior permission of respective heads

Every Student shall also opt for:

Five Fold Education: Physical Education I, Physical Education II,

Five Fold Education: Aesthetic Education I, Aesthetic Education II,

Five Fold Education: Practical Education I, Practical Education II

doing one each semester

Every discipline should having 4-5 electives

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# Curriculum Structure

## B. Tech. (Mechatronics)

First Year																
Semester - I											Semester - II					
Course Code	Course Name	L	T	P	C						Course Code	Course Name	L	T	P	C
	General English / General Hindi	2	0	0	2							General Hindi/General English	2	0	0	2
	Core Foundation Course - I	2	0	0	2							Core Foundation Course - II	2	0	0	2
MATH 103/107	Calculus/Linear Algebra	3	1	0	4						MATH 107/103	Linear Algebra/Calculus	3	1	0	4
PHY 101/106	Applied Optics/Modern Physics	3	1	0	4						PHY 106/101	Modern Physics/Applied Optics	3	1	0	4
CHEM 101/.....	Chemistry/Biology	3	1	0	4						..... / CHEM 101	Biology/Chemistry	3	1	0	4
CHE 101/PHY 105	Thermodynamics/Engineering Mechanics	3	1	0	4						PHY 105/ CHE 101	Engineering Mechanics/Thermodynamics	3	1	0	4
CS 109/EEE 101	Computer Fundamentals & Programming/Electrical Engineering	4	0	4	6						EEE 101/CS 109	Electrical Engineering / Computer Fundamentals & Programming	4	0	4	6
ENGG 101L/.....	Engineering Drawing & Graphics/ Measurement Techniques Lab	0	0	6	3						..... /ENGG 102L	Measurement Techniques Lab /Engineering Drawing & Graphics	0	0	6	3
<b>Semester Wise Total:</b>		<b>20</b>	<b>4</b>	<b>10</b>	<b>29</b>						<b>Semester Wise Total:</b>		<b>20</b>	<b>4</b>	<b>10</b>	<b>29</b>

Second Year																
Semester - III											Semester - IV					
Course Code	Course Name	L	T	P	C						Course Code	Course Name	L	T	P	C
	Core Foundation Course - III	2	0	0	2							Core Foundation Course - IV	2	0	0	2
	Elective Foundation Course - I	2	0	0	2							Elective Foundation Course - II	2	0	0	2
	Complex Variables/Differential Equations	3	1	0	4							Differential Equations/Complex Variables	3	1	0	4
ENGG 201/202	Structure and Properties of Materials/Basic Electronics	4	0	0	4						ENGG 202/201	Basic Electronics/Structure and Properties of Materials	4	0	0	4
CS 209	Data Structures	4	0	4	6						CS 214	Object Oriented Programming	4	0	4	6
MCTR 201	Pneumatic Engineering	4	0	2	5						EIE 202	Electrical and Electronics Measurements	4	0	2	5
ELE 201	Digital Electronics	3	1	2	5						ELE 202	Electrical Machine-I	4	0	2	5
ELE 203S	Seminar	0	0	2	1											
<b>Semester Wise Total:</b>		<b>22</b>	<b>2</b>	<b>10</b>	<b>29</b>						<b>Semester Wise Total:</b>		<b>23</b>	<b>1</b>	<b>8</b>	<b>28</b>

**Third Year**

Semester - V					
Course Code	Course Name	L	T	P	C
	Vocational Course - I	2	0	0	2
	Core Foundation Course - V/Elective Foundation Course - III	2	0	0	2
	Economics/Principles of Management	3	0	0	3
	Probability and Statistical Methods/Numerical Methods	3	1	0	4
ELE 301	Analog Integrated Circuits	3	1	2	5
EEE 301	Electrical Machine II	4	0	2	5
EIE 308	Industrial Instrumentation	4	0	2	5
EIE 309	Linear Control System	3	1	2	5
<b>Semester Wise Total:</b>		<b>24</b>	<b>3</b>	<b>8</b>	<b>31</b>

Semester - VI					
Course Code	Course Name	L	T	P	C
	Vocational Course - II	2	0	0	2
	Elective Foundation Course - III/Core Foundation Course - V	2	0	0	2
	Principles of Management/Economics	3	0	0	3
	Numerical Methods/Probability and Statistical Methods	3	1	0	4
	Robotics and Control	4	0	2	5
EIE 307	Industrial Automation	4	0	2	5
MCTR 301	Hydraulics Engineering	3	1	2	5
MCTR 302P	Project	0	0	4	2
<b>Semester Wise Total:</b>		<b>21</b>	<b>2</b>	<b>10</b>	<b>28</b>

**Fourth Year**

Semester - VII					
Course Code	Course Name	L	T	P	C
	UIL Project	0	0	48	24
	Reading Elective	2	0	0	2
<b>Semester Wise Total:</b>		<b>2</b>	<b>0</b>	<b>48</b>	<b>26</b>

Semester - VIII					
Course Code	Course Name	L	T	P	C
EIE 310	Process Control	4	0	2	5
	Computer Integrated Manufacturing System	4	0	2	5
	Mechatronics Systems	4	0	4	6
EIE 306	Microprocessors and Microcontrollers	4	0	2	5
	Discipline Elective	4	0	0	4
	Open Elective	4	0	0	4
<b>Semester Wise Total:</b>		<b>24</b>	<b>0</b>	<b>10</b>	<b>29</b>

List of Core Foundation Course	L	T	P	C
Environment Studies	2	0	0	2
Indian Heritage/Indial Cultural Heritage	2	0	0	2
Selected Writings of Great Authors - I	2	0	0	2
Women in Indian Society	2	0	0	2
Parenthood and Family Relation	2	0	0	2

List of Electives	L	T	P	C
Energy Efficiency and Conservation	4	0	0	4
Biomedical Instrumentation	4	0	0	4
Power Plant Engineering	4	0	0	4
Operation Research	4	0	0	4
Industrial Engineering	4	0	0	4
Manufacturing Science	4	0	0	4
Production Technology	4	0	0	4

List of Elective Foundation Course	L	T	P	C
Science of Happiness	2	0	0	2
Human Anatomy and Physiology	2	0	0	2
Design Thinking	2	0	0	2
Universal Human Values	2	0	0	2
Selected Writings of Great Authors - II	2	0	0	2

List of Vocational Course	L	T	P	C
Basic Dress Making	0	0	4	2
Dress Designing	0	0	4	2
Entrepreneurship - I	2	0	0	2
Entrepreneurship - II	2	0	0	2
Radio Production - I	2	0	0	2
Radio Production - II	2	0	0	2
Web Designing & Internet Technology-I	1	0	2	2
Web Designing & Internet Technology-II	1	0	2	2
Library Science - I	1	0	2	2
Library Science - II	1	0	2	2
Photography - I	2	0	0	2
Photography - II	2	0	0	2

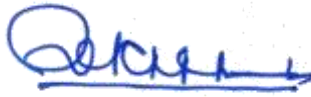
List of Reading Electives	Source Institution
Advances in UHV Transmission & Distribution	NPTEL
Fundamentals of Semiconductor devices	NPTEL
Advanced IOT Applications	NPTEL
Principles of Signals and Systems	NPTEL
Control Engineering	Swayam
Industrial Automation and Control	Swayam
Mathematical Methods and techniques in signal processing	NPTEL
Electronics Modules for Industrial Applications using Opamps	NPTEL
Chemical Process Instrumentation	NPTEL
Quality Control	National Sugar Institute
Interfacing with Arduino	Coursera
Robotica	Coursera
Analyzing Data with Python	Edx
Industry 4.0	Edx
Internet of Things	MSME
Industrial Robotics	MSME
CNC Machining Turning	MSME
Autocad	MSME
Solar PV Technology	MSME

Student can opt for most 2 additional Open (Generic) audit/credit Elective from other disciplines opting most 1 per semester in Semesters III, IV, V or VI with prior permission of respective heads.

Every Student shall also opt for:

Five Fold Education: Physical Education I, Physical Education II,  
 Five Fold Education: Aesthetic Education I, Aesthetic Education II,  
 Five Fold Education: Practical Education I, Practical Education II  
 doing one each semester

Every discipline should having 4-5 electives.

Verified  
  
 Offg. Secretary  
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