



ST. VINCENT PALLOTTI COLLEGE OF ENGINEERING & TECHNOLOGY, NAGPUR

(An autonomous institution affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)

B. Tech. Scheme of Examination & Syllabus 2026-27 ELECTRICAL ENGINEERING

Annexure – I

CREDIT FRAMEWORK STRUCTURE

Semester		I	II	III	IV	V	VI	VII	VIII	Total Credits
Basic Science Course	BSC/ESC	7	7	-	-	-	-	-	-	14
Engineering Science Course		6	6	-	-	-	-	-	-	12
Program Core Course (PCC)	Program Courses	2	2	13	10	7	4	6		44
Program Elective Course (PEC)		-	-	-	-	4	6	6	4	20
Multidisciplinary Minor (MDM)	Multidisciplinary Courses	-	-	2	3	3	3	3	-	14
Open Elective (OE) Other than a particular program		-	-	-	-	2	3	3	-	08
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	-	2	1	1	2	2	-	-	08
Ability Enhancement Course (AEC -01, AEC-02)	Humanities Social Science and Management (HSSM)	1	1	-	-	2	-	-	-	04
Entrepreneurship/Economics/Management Courses		-	-	2	2	-	-	-	-	04
Indian Knowledge System (IKS)		2	-	-	-	-	-	-	-	02
Value Education Course (VEC)		-	-	2	2	-	-	-	-	04
Research Methodology	Experiential Learning Courses	-	-	-	-	-	-	-	4	04
Comm. Engg. Project (CEP)/ Field Project (FP)		-	-	-	2	-	-	-	-	02
Project		-	-	-	-	-	2	2	-	04
Internship/OJT		-	-	-	-	-	-	-	12	12
Co-curricular Courses (CC)	Liberal Learning Courses	2	2	-	-	-	-	-	-	04
Total Credits (Major)		20	20	20	20	20	20	20	20	160

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ELECTRICAL ENGINEERING

SEMESTER I

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1	BSC	26EE101T	Applied Physics	2	-	-	2	10	10	30	50	23	1.5
2	BSC	26EE101P	Applied Physics Lab	-	-	2	1	-	25	25	50	25	-
3	BSC	26EE102T	Linear Algebra and Calculus	3	-	-	3	20	20	60	100	45	3
4	BSC	26EE102P	Linear Algebra and Calculus Lab	-	-	2	1	-	25	25	50	25	-
5	ESC	26EE103T	Basic Electrical Engineering	3	-	-	3	20	20	60	100	45	3
6	ESC	26EE103P	Basic Electrical Engineering Lab	-	-	2	1	-	25	25	50	25	-
7	ESC	26EE104T	Engineering Graphics	3	-	-	3	20	20	60	100	45	3
8	ESC	26EE104P	Engineering Graphics Lab	-	-	2	1	-	25	25	50	25	-
9	AEC	26EE106P	Business Communication Skills – I Lab	-	-	2	1	-	25	25	50	25	-
10	SEC	26EE207T	Design Thinking #	2	-	-	2	10	10	30	50	23	1.5
11	CC	26EE108P	Co-curricular Courses - I	-	-	4	2	-	50	-	50	25	-
Total				13	0	14	20	80	255	365	700	-	-

Course to be completed through NPTEL platform

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ELECTRICAL ENGINEERING

SEMESTER II

Sr. No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1	BSC	26EE201T	Applied Chemistry	2	-	-	2	10	10	30	50	23	1.5
2	BSC	26EE201P	Applied Chemistry Lab	-	-	2	1	-	25	25	50	25	-
3	BSC	26EE202T	Statistics and Transforms	3	-	-	3	20	20	60	100	45	3
4	BSC	26EE202P	Statistics and Transforms Lab	-	-	2	1	-	25	25	50	25	-
5	PCC	26EE203T	Electrical Measurement and Instrumentation	3	-	-	3	20	20	60	100	45	3
6	PCC	26EE203P	Electrical Measurement and Instrumentation Lab	-	-	2	1	-	25	25	50	25	-
7	ESC	26EE204T	Basic Electronics Circuits	3	-	-	3	20	20	60	100	45	3
8	ESC	26EE204P	Basic Electronics Circuits Lab	-	-	2	1	-	25	25	50	25	-
9	AEC	26EE206P	Business Communication Skills – II Lab	-	-	2	1	-	25	25	50	25	-
10	IKS	26EE107T	Indian Knowledge Systems #	2	-	-	2	10	10	30	50	23	1.5
11	CC	26EE208P	Co-curricular Courses – II	-	-	4	2	-	50	-	50	25	-
Total				13	-	14	20	80	255	365	700	-	-

Course to be completed through NPTEL platform

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SEMESTER III

Sr. No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1	PCC	26EE301T	Network Analysis	3	-	-	3	20	20	60	100	45	3
2	PCC	26EE 302T	Electrical Machines - I	3	-	-	3	20	20	60	100	45	3
3	PCC	26EE302P	Electrical Machine - I Lab	-	-	2	1	-	25	25	50	25	-
4	PCC	26EE303T	Electrical Power System	3	-	-	3	20	20	60	100	45	3
5	PCC	26EE304T	Renewable Energy Sources	2	-	-	2	10	10	30	50	23	1.5
6	PCC	26EE304P	Renewable Energy Sources Lab	-	-	2	1	-	25	25	50	25	-
7	VEC	26EE401T	Environmental Science	2	-	-	2	10	10	30	50	23	1.5
8	HSSM	26EE402T	Fundamentals of Economics and Management	2	-	-	2	10	10	30	50	23	1.5
9	SEC	26EE341P	Career Development - I	-	-	2	1	-	50	-	50	25	-
10	MDM	26EE331M	Multidisciplinary Minor - I (Refer MDM basket)	2	-	-	2	10	10	30	50	23	1.5
Total				17		6	20	100	200	350	650		

Course Code	Multidisciplinary Minor - I
26EE331M	

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SEMESTER IV

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No. of Hrs for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1	PCC	26EE401T	Elements of Electromagnetics	3	-	-	3	20	20	60	100	45	3
2	PCC	26EE402T	Computer Programming	2	-	-	2	10	10	30	50	25	1.5
3	PCC	26EE402P	Computer Programming Lab	-	-	2	1	-	25	25	50	25	-
4	PCC	26EE403T	Electrical Machines-II	3	-	-	3	20	20	60	100	45	3
5	PCC	26EE403P	Electrical Machines- II Lab	-	-	2	1	-	25	25	50	25	-
6	VEC	26EE301T	Constitution of India	2	-	-	2	10	10	30	50	23	1.5
7	HSSM	26EE302T	Fundamentals of Entrepreneurship	2	-	-	2	10	10	30	50	23	1.5
8	SEC	26EE441P	Career Development - II	-	-	2	1	-	50	-	50	-	-
9	CEP	26EE404P	Mini Project*	-	-	4	2	-	50	-	50	-	-
10	MDM	26EE431M	Multidisciplinary Minor -II (Refer the basket)	3	-	-	3	20	20	60	100	45	3
Total				15	-	10	20	90	240	320	650		

* Field Project or Community engagement project in the major discipline

Course Code	Multidisciplinary Minor - II
26EE431M	

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SEMESTER V

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1	PCC	26EE501T	Power Electronics	3	-	-	3	20	20	60	100	45	3
2	PCC	26EE501P	Power Electronics Lab	-	-	2	1	-	25	25	50	25	-
	PCC	26EE502P	Electrical Engineering Drawing and Simulation Lab	-	-	2	1	-	25	25	50	25	-
3	PCC	26EE503T	Electrical Machine Design	3	-	-	3	20	20	60	100	45	3
4	PEC	26EE504T	Program Elective - I	3	-	-	3	20	20	60	100	45	3
6	VSC	26EE506P	Technical Skill Development - I	-	-	4	2	-	50	-	50	-	-
7	AEC	26EE541P	English for Engineers	-	-	4	2	-	50	-	50	-	-
8	MDM	26EE531M	Multidisciplinary Minor – III (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
9	OE	26EE561O	Open Elective – I (Refer OE basket)	2	-	-	2	10	10	30	50	23	1.5
Total				14	-	12	20	90	240	320	650		

Course Code	Multidisciplinary Minor - III
26EE531M	

Program Elective - I	
26EE504T(i)	Electric Vehicle Architecture
26EE504T(ii)	PLC and Industrial Automation

Course Code	Open Elective - I
26EE561O(i)	Power Plant Engineering
26EE561O(ii)	PLC and SCADA Systems

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SEMESTER VI

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1	PCC	26EE601T	High Voltage Engineering	2	-	-	2	20	20	60	100	45	3
2	PCC	26EE601P	High Voltage Engineering Lab	-	-	2	1	-	25	25	50	25	-
3	PCC	25EE602T	Control System Engineering	3	-	-	3	20	20	60	100	45	3
4	PCC	25EE602P	Control System Engineering Lab	-	-	2	1	-	25	25	50	25	-
5	PCC	25EE605P	Electrical Engineering Workshop Lab	-	-	2	1	-	50	-	50	25	-
6	PEC	26EE604T	Program Elective - II (Refer PE basket)	2	-	-	2	-	25	25	50	25	-
7	PROJ	26EE605P	Project - I	-	-	4	2	-	50	50	100	50	-
8	VSC	26EE606P	Technical Skill Development - II	-	-	4	2	-	50	-	50	-	-
9	MDM	26EE631M	Multidisciplinary Minor – IV (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
10	OE	26EE661O	Open Elective – II (Refer OE basket)	3	-	-	3	20	20	60	100	45	3
Total				13	0	14	20	80	305	365	750		

Course Code	Multidisciplinary Minor - III
26EE631M	

Program Elective - II	
26EE604T(i)	PE – II Electric Drives
26EE604T(ii)	PE – II Computer Applications in Power System

Course Code	Open Elective - II
26EE661O(i)	OE – II Electric Vehicle
26EE661O(ii)	OE – II Monitoring & Testing of Electrical Machines

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SEMESTER VII

Sr No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	No of Hours for ESE
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1	PCC	26EE701T	Switchgear and Protection	3	-	-	3	20	20	60	100	45	3
2	PCC	26EE701P	Switchgear and Protection Lab	-	-	2	1	-	25	25	50	25	-
3	PCC	26EE702P	Power System Simulation Lab	-	-	2	1	-	25	25	50	25	-
4	PCC	25EE706P	Capstone Course	-	-	2	1	-	50	-	50	25	-
5	PEC	26EE703T	Program Elective - III (Refer PE basket)	3	-	-	3	20	20	60	100	45	3
6	PEC	26EE704T	Program Elective - IV (Refer PE basket)	3	-	-	3	20	20	60	100	45	3
7	PROJ	26EE705P	Project - II	-	-	4	2	-	50	50	100	50	-
8	MDM	26EE731M	Multidisciplinary Minor – V (Refer MDM basket)	3	-	-	3	20	20	60	100	45	3
9	OE	26EE761O	Open Elective – III (Refer OE basket)	3	-	-	3	20	20	60	100	45	3
Total				15	0	10	20	100	250	400	750	15	-

Course Code	Multidisciplinary Minor - III
26EE731M	

Program Elective - III	
26EE703T(i)	Battery Management Systems
26EE703T(ii)	Electrical Installation and Design

Course Code	Open Elective - III
26EE761O(i)	MATLAB Programming
26EE761O(ii)	Utilization of Electrical Energy

Program Elective - IV	
26EE704T(i)	Energy Management and Audit
26EE704T(ii)	Electrical Distribution System

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SEMESTER VIII

Option A

Sr. No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	Duration of ESE (hrs.)
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1.	RM	26EE801T	Research Methodology [#]	2	-	-	2	10	10	30	50	23	1.5
2.	RM	26EE801P	Research Methodology Lab [#]	-	-	4	2	-	25	25	50	25	-
3.	PEC	26EE802T	Program Elective – V [#]	3	-	-	3	20	20	60	100	45	3
4.	PEC	26EE803P	Program Elective – V Lab [#]	-	-	2	1	-	25	25	50	25	-
5.	OJT	26EE804P(i)	Industry/Research Internship*	-	-	24	12	-	200	200	400	200	-
Total				5	0	30	20	30	280	340	650	-	-

Option B

Sr. No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				Minimum Passing Marks	Duration of ESE (hrs.)
				L	T	P		Mid Sem Exam	Continual Assessment	End Sem Exam	Total		
1.	RM	26EE801T	Research Methodology [#]	2	-	-	2	10	10	30	50	23	1.5
2.	RM	26EE801P	Research Methodology Lab [#]	-	-	4	2	-	25	25	50	25	-
3.	PEC	26EE802T	Program Elective – V [#]	3	-	-	3	20	20	60	100	45	3
4.	PEC	26EE803P	Program Elective – V Lab [#]	-	-	2	1	-	25	25	50	25	-
5.	ELC	26EE804P(ii)	Institutional Internship [§] & Project – III	-	-	24	12	-	200	200	400	200	-
Total				5	0	30	20	30	280	340	650	-	1.5

Option B is available to students only after recommendation of the concerned Head of the department. The project and internship should contribute towards career development plan of the students.

Courses to be mapped with NPTEL/SWAYAM/MOOC offered courses in that semester.

* One semester internship in any industry/ Research Institute is to be carried out.

§ One Semester Internship offered by Institute Level Cells such as TPDC/ IEDC/ E-Yantra/ Team Ashwa Riders along with project in the Major Discipline assigned by department to be carried out.

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Basket for Program Elective Courses (PEC)

B. Electrical Engineering

Semester	Course Category	Course Code	Name of Course	Credits
V	PEC-I	26EE505T(i)	Electric Vehicle Architecture	3
V	PEC-I	26EE505T(ii)	PLC & Industrial Automation	3
VI	PEC-II	26EE602T(i)	Electric Drives	3
VI	PEC-II	26EE602T(ii)	Computer Applications in Power System	3
VI	PEC-III	26EE703T(i)	Battery Management Systems	3
VI	PEC-III	26EE703T(ii)	Electrical Installation and Design	3
VI	PEC-IV	26EE704T(i)	Energy Management and Audit	3
VI	PEC-IV	26EE704T(ii)	Electrical Distribution System	3

Basket for Open Elective Courses (OE)

C. Electrical Engineering

Semester	Course Category	Course Code	Name of Course	Credits
V	OE - I	26EE561O (i)	Power Plant Engineering	2
V	OE - I	26EE561O (ii)	PLC & SCADA Systems	
VI	OE - II	26EE661O(i)	Electric Vehicle	3
VI	OE - II	26EE661O(ii)	Monitoring & Testing of Electrical Machines	
VII	OE - III	26EE761O(i)	MATLAB Programming	3
VII	OE - III	26EE761O(ii)	Utilization of Electrical Energy	



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EXIT OPTIONS

Award of UG Certificate in Major with 40 credits and an additional 8 credits (After First Year)

EXIT COURSES (FIRST COURSE Compulsory and Any TWO courses from remaining courses list)			
S.N.	Course name	Mode of conduction	Credits
1.	Basic electrical circuits	NPTEL-Online	2
2.	Electrical Measurement and Electronic Instruments	NPTEL-Online	3
3.	Network Analysis	NPTEL-Online	3
4.	Power System Engineering	NPTEL-Online	3
5.	Electrical Machines - I	NPTEL-Online	3
6.	Electrical Machines	NPTEL-Online	3
7.	Power system analysis	NPTEL-Online	3
8.	A Basic Course on Electric and Magnetic Circuits	NPTEL-Online	3

Award of UG Diploma in Major with 80credits and an additional 8 credits (After Second Year)

EXIT COURSES (FIRST COURSE Compulsory and Any TWO courses from remaining courses list)			
S.N.	Course name	Mode of conduction	Credits
1.	Power Electronics	NPTEL-Online	2
2.	Control engineering	NPTEL-Online	3
3.	Power System Protection	NPTEL-Online	3
4.	Fundamental of Power Electronics	NPTEL-Online	3
5.	Fundamentals of Electric Drives	NPTEL-Online	3
6.	Power System Protection and Switchgear	NPTEL-Online	3
7.	Sustainable Power Generation Systems	NPTEL-Online	3
8.	DC Power Transmission Systems	NPTEL-Online	3



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Award of UG Degree in Major with 120credits and an additional 8 credits (After Third Year)

EXIT COURSES (FIRST COURSE Compulsory and Any TWO courses from remaining courses list)			
S.N.	Course name	Mode of conduction	Credits
1.	Computer Aided Power System Analysis	NPTEL-Online	2
2.	Digital Protection of Power System	NPTEL-Online	3
3.	Modeling, Analysis and Estimation of Three Phase Unbalanced Power Network	NPTEL-Online	3
4.	Smart Grid: Basics to Advanced Technologies	NPTEL-Online	3
5.	Power Quality	NPTEL-Online	3
6.	Operation and Planning of Power Distribution Systems	NPTEL-Online	3
7.	Advance Power Electronics	NPTEL-Online	3
8.	Design Of Electric Motors	NPTEL-Online	3

Scheme of Examination -Minors

ELECTRIC VEHICLES (MINORS)

Sr. No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total	
1.	Minor	26EEM401T	Electric Vehicle Architecture	-	-	-	3	-	-	-	-	NPTEL/MOOCs
2.	Minor	26EEM501T	Electric Vehicle Drives	-	-	-	3	-	-	-	-	NPTEL/MOOCs
3.	Minor	26EEM601T	Vehicle Dynamics	-	-	-	3	-	-	-	-	NPTEL/MOOCs
4.	Minor	26EEM701T	Battery Management Systems	-	-	-	3	-	-	-	-	NPTEL/MOOCs
5.	Minor	26EEM801T	Project	-	-	-	3	-	-	-	-	NPTEL/MOOCs
Total				-	-	-	18	-	-	-	-	

Attached Details of NPTEL Courses with Link



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Scheme of Examination - Honors

Title: Industrial Automation, AIML and Robotics

Sr. No	Course Category	Course Code	Course Title	Hours per Week			Credits	Maximum Marks				No of Hours for ESE
				L	T	P		Mid-Sem Examination	Continual Assessment	End Sem Examination	Total	
1.	Honor	26EEH401T	Program Elective – I (Refer PE – I basket)	-	-	-	3	-	-	-	-	NPTEL/MOOCs
2.	Honor	26EEH501T	Program Elective – II (Refer PE – II basket)	-	-	-	3	-	-	-	-	NPTEL/MOOCs
3.	Honor	26EEH601T	Program Elective – III (Refer PE – III basket)	-	-	-	3	-	-	-	-	NPTEL/MOOCs
4.	Honor	26EEH701T	Wheeled Mobile Robots (Refer NPTEL mapped course)	-	-	-	3	-	-	-	-	NPTEL/MOOCs
5.	Honor	26EEH801T	Program Elective – IV (Refer PE – IV basket)	-	-	-	3	-	-	-	-	NPTEL/MOOCs
6.	Honor	26EEH802T	Deep Learning (Refer NPTEL mapped course)	-	-	-	3	-	-	-	-	NPTEL/MOOCs
Total				-	-	-	18	-	-	-	-	-

Attached Details of NPTEL Courseas with Link:

[A] (i) Program Elective – I (Industrial Automation) Select Any 1 Course

Sr. No	Mapped NPTEL Course	Course ID	Instructor	Institute	Duration
1.	Fundamentals of Power Electronics	108101126	Prof. Vivek Agarwal, Prof. L Umanand	IISc Bangalore	12 weeks
2.	Embedded Systems Design	106105159	Prof. Anupam Basu	IIT , Kharagpur	12 Weeks
3.	Microprocessors and Microcontrollers	108105102	Prof. Santanu Chattopadhyay	IIT , Kharagpur	12 Weeks
4.	Sensors & Actuators	108108147	Prof Hardik J Pandya	IISc Bangalore	12 Weeks



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(ii) Program Elective – II (Industrial Automation) - Select Any 1 Course

Sr. No	Mapped NPTEL Course	Course ID	Instructor	Institute	Duration
1.	Industrial Automation and Control	108105088	Prof. Siddhartha Mukhopadhyay	IIT Kharagpur	12 weeks
2.	Modelling and Simulation of Dynamic Systems	112107214	Prof. Pushparaj Mani Patha	IIT Roorkee	8 Weeks
3.	Design of Mechatronic Systems	112101304	Prof. Prasanna Gandhi	IIT Bombay	12 weeks

[B] Program Elective – III (Robotics) Select Any 2 Courses

Sr. No	Mapped NPTEL Course	Course ID	Instructor	Institute	Duration
1.	Introduction To Robotics	107106090	Prof. Asokan T Prof. Balaraman Ravindran Prof. Krishna Vasudevan	IIT Madras	12 weeks
2.	Introduction to Robotics	112104298	Prof. Ashish Dutta	IIT Kanpur	12 weeks
3.	Advanced Robotics Applications	112104620	Prof. Ashish Dutta	IIT Kanpur	8 Weeks
4.	Robotics	112105249	Prof. D.K.Pratihar	IIT, Kharagpur	8 Weeks

Wheeled Mobile Robots - NPTEL mapped course

Sr. No	Mapped NPTEL Course	Course ID	Instructor	Institute	Duration
1.	Wheeled Mobile Robots	112106298	Prof. Asokan Thondiyath Prof. Santhakumar Mohan	IIT Madras	8 Weeks

C] Program Elective – IV (Artificial Intelligence & Machine Learning) Select Any 1 Course



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Sr. No	Mapped NPTEL Course	Course ID	Instructor	Institute	Duration
1.	Fundamentals of Artificial Intelligence	112103280	Prof. Shyamanta M. Hazarika	IIT Guwahati	12 weeks
2.	An Introduction to Artificial Intelligence	106102220	Prof. Mausam	IIT Delhi	12 weeks
3.	Introduction to Machine Learning	106106139	Prof. Balaraman Ravindran	IIT, Madras	12 weeks
4.	Introduction to Machine Learning	106105152	Prof. Sudeshna Sarkar	IIT, K	8 Weeks

Deep Learning - NPTEL mapped courses- Select Any 1 Course

Sr. No	Mapped NPTEL Course	Course ID	Instructor	Institute	Duration
1.	Deep Learning	106106184	Prof. Sudarshan Iyengar	IIT, Madras	12 weeks
2.	Deep Learning	106105215	Prof. Prabir Kumar Biswas	IIT , Kharagpur	12 Weeks

Note:

- 1) Total courses of min 18 credits are compulsory to get an Honor degree
- 2) Students can register for 1/2 ongoing NPTEL course in one semester
- 3) After submitting the all NPTEL course certificates (as mentioned above) at the end of 8th semester, student will get Honor degree