Due to file size constraints, few supporting documents have been included in the present document. However, all the reports relevant to the information provided in response to the metric 7.3, Institute Distinctiveness, are available on the institute website.

7.3.1 – Portray the performance of the institution in one area distinctive to its priority and thrust in not more than 200 words.

Institutional Distinctiveness: Innovative Approaches towards Academic Flexibility

In view of the Autonomous Status conferred on Vidyalankar Institute of Technology with effect from the Academic Year 2022-23, and considering the changing needs of the current generation of tech-savvy learners, there has been an increased emphasis on flexibility in the learning experience at the Institute. As per NEP 2020, one of the fundamental guiding principles is "**flexibility**, so that learners have the ability to choose their learning trajectories and programmes, and thereby choose their own paths in life according to their talents and interests". As the priority and thrust of Vidyalankar Institute of Technology is learner-centricity, the institute has taken innovative and proactive steps in offering a unique and distinctively flexible learning environment to its learners under the aegis of Autonomy, and in sync with NEP implementation.

The Institute also offers substantial academic flexibility by allowing students to take the courses they want and finish them at their own pace. Although each 4-year UG degree programme has a defined set of recommended courses for each semester based on the knowledge map, all courses offered by the institute, irrespective of the programme, will be open to students for registration. Students may enrol in the courses they want to take as long as they meet the prerequisite requirements for those courses. This enables students to enrol in courses at their own pace as faculty may offer courses in both the odd and even semesters.

Multimodal flexibility is being offered to the students at the Institute in terms of:

A. Making "My Timetable"

B. Course Selection

C. Flexibility in choice of Advanced Learning Course

D. Faculty Choice

A. Flexibility in Making "My Timetable":

In a unique initiative of VIT, which was implemented from the second half of the Academic Year 2022-23, students are given the opportunity to design their own timetable. They have the flexibility to choose the courses, day, time slot, course instructor, subject to availability. The entire platter of courses offered in a particular semester is elaborated in a booklet called "Evolve through Education", including the time slots in which the course is available, so that students can make an informed choice. Under this initiative, students of various programs sit together in the same classroom to learn from the same instructor (in case the course is common to all programs, e.g. Structured Programming). This collaborative learning attempt helps them to interact with a diverse set of students and develop insights related to engineering programs other than their own. The Departments help them to prepare a clash-free timetable.

B. Flexibility in Course Selection:

To achieve holistic development of students, courses in UG programme contribute 50% towards Knowledge component, 30% towards Skill component and 20% towards Attitude component. The Institute offers substantial academic flexibility by allowing students to take the courses they want and finish them at their own pace. Although each 4-year UG degree programme has a defined set of recommended courses for each semester based on the knowledge map, all courses offered by the institute, irrespective of the programme, will be open to students for registration. Students may enrol in the courses they want to take as long as they meet the prerequisite requirements for those courses. This enables students to enrol in courses at their own pace as faculty may offer courses in both the odd and even semesters.

I. Core course offered by Home Department

A student can select core courses offered by the Home Department (which is conducting the Engineering program from which student will graduate), and it will be considered as a part of his stipulated program credit structure (160-165 credits).

II. Core course offered by Other Engineering Departments

In case a student selects core courses other than those offered by the Home Department, it may not be considered as a part of his stipulated program credit structure (160-165 credits). It will be considered under extra credits towards earning minor degree.

III. Co-curricular/Liberal Learning Courses

Students can opt for Co-curricular/Liberal Learning Courses of their choice, subject to a maximum of 15 credits which will be considered as a part of the stipulated 160-165 credits required to graduate as an Engineer from the Institute.

Students can also opt to pursue courses of higher semesters (additional learning courses), so that they can utilize the time saved, later in project work or internship.

C. Flexibility in choice of Advanced Learning Course:

The students have the flexibility of choosing when they would like to complete the course. For instance, some students may decide to complete more number of courses as per their inclination and capability (while taking into consideration the upper cap of credits mentioned earlier, and subject to fulfilment of prerequisite courses).

For example, a student is able to complete all the courses required for 160-165 credits in approximately 3.5 years and wishes to work on a research project/industry internship/certification course abroad for 6 months, he will have the flexibility to choose accordingly. Extra credits earned may help to be considered during admission to higher studies.

D. Flexibility in Faculty Choice:

Flexibility is also offered to students in choice of faculty members. The factors affecting this choice could be availability of time slot of the faculty member, subject expertise, mode of learning (offline/online/hybrid), preference of the student.

The Institute's curriculum under autonomy offers depth by concentrating on a particular area of study through professional electives, as well as breadth by providing courses under categories like open electives, general education etc. and exposing students to a diverse range of domains. Academic freedom is pivotal to the learning experience at an autonomous institute, as it serves as the cornerstone for sharing knowledge and encourages students to choose interdisciplinary courses as per their needs and interest.

My Time Table

VIT is implementing The National Education Policy (NEP) framework in its curriculum for the students admitted in AY 2023-24. This framework empowers learners with flexibility in terms of choosing courses across different faculties and modes of learning. This enhances the scope for diverse learning opportunities, strengthens their toolset, skillset, and mindset and aims for their holistic personality development.

My Timetable is a unique initiative of VIT wherein students can design their own schedule. This flexibility will encourage learners to follow their passion and inherent interests, and learn at a pace that they are comfortable with, as we believe that "one size does not fit all". Learners can make informed choices about:

- Courses they would like to enrol for
- Days of the week for learning
- Timing slot of learning
- Faculty they wish to learn from

The sample of implementation the My Time Table for First year department day wise is as follows:

	A	B	C	D	E	F	G
1	**First Year Engineering**		**Innovation Lounge Workshop**				
2	**2023-24**		**Time = 2 Hours**				
3			**Batch Size = 30-35 Students**				
4	**LW SLOT**	**DAY**	**TIME**	**VENUE**	**FACULTY Co-ordinator**	**FACULTY ADVISOR**	**IN-CHARGE**
5	P8	MON	09.00-11.00	D301	RMP	Prof. Anuradha Joshi	Prof. Amol Sakhalkar
6	P7	MON	11.15-1.15	F305	MSM	Dr. Umesh Kulkarni	Prof. Amol Sakhalkar
7	P9	TUES	1.45-3.45	D202	ICU	Prof Deepali Shrikhande	Prof. Amol Sakhalkar
8	P6	WED	09.00-11.00	D302	NSM	Prof. Santosh Jagtap	Prof. Amol Sakhalkar
9	P5	WED	11.15-1.15	D204	ICU	Prof. Akshay Loke	Prof. Amol Sakhalkar
10	P11	WED	1.45-3.45	D202	ANY	Prof. Sneha Annappanavar	Prof. Amol Sakhalkar
11	P4	THURS	09.00-11.00	D202	NSM	Prof. Akhil Masurkar	Prof. Amol Sakhalkar
12	P3	THURS	11.15-1.15	D202	RMP	Prof. Dattatray Bade	Prof. Amol Sakhalkar
13	P2	THURS	1.45-3.45	D302	PGH	Prof. Arunkumar Ram	Prof. Amol Sakhalkar
14	P1	FRI	09.00-11.00	D201	MSM	Dr. Ravindra Sangle	Prof. Amol Sakhalkar
15	P10	FRI	11.15-1.15	D302	GM	Prof Samuel Jacob	Prof. Amol Sakhalkar

1		MONDAY										
2	Time	FE All										
3	9.00 am to 10.00 am	EMI IC	SP	P8- FCHN	EG	P6- SP P13- FLC	FCHN	EMI EEB	P8- ILW P8- LIBRARY	BEE	EM	P2- PBE P26- SP
4	Faculty	NAA	BGT	P8- KGD	GM	P6- SDE P13- ANJ	CAD	AVD	P8- RMP P8-	AM	ICU	P2- PGH P26- VSW
5	Batch	L1	L7		L1		L4	L1		L3	L4	
6	Venue	D202	D201	P8- L06B	D105	P6- M512A P13- M201B	D301	D204	P8- E101 P8-	D302	D304	P2- L09A P26-
7	10.00 am to 11.00 am	EMI IC	SP	P8- FCHN	EG	P6- SP P13- FLC	FCHN	EMI EEB	P8- ILW P8- LIBRARY	BEE	EM	P2- PBE P26- SP
8	Faculty	NAA	BGT	P8- KGD	GM	P6- SDE P13- ANJ	CAD	AVD	P8- RMP P8-	AM	ICU	P2- PGH P26- VSW
9	Batch	L1	L7		L1		L4	L1		L3	L4	
10	Venue	D202	D201	P8- L06B	D105	P6- M512A P13- M201B	D301	D204	P8- E101 P8-	D302	D304	P2- L09A P26-
11	11.00 am to 11.15											
12	11.15 am to 12.15 pm	Phy	FCHN	P4- FLC P7- PHY P1- SP	SP	FLC	EMI IC	P1- DE	EP	P7- ILW/ P7- LIBRARY	P13- SP P4- BEE P10- FCHN	EMI EEB
13	Faculty	RM	ARK	P4- ASR P7- PGH P1- DN	SDE	GGI	VMP	P1- AP	ANY	P7- MSM P7- VARTAK	P13- VK P4- HJA P10- CAD	SBP
14	Batch	L1	L1		L2	L6	L5		L2			L5
15	Venue	D204	D201	P4- M201A P7- L09A	D105	D301	D302	P1- M414B	D202	P7- IL P7- LIBRARY	P13- M512B P4- L12A P10- L11B	D304
16	12.15 pm to 1.15 pm	Phy	FCHN	P4- FLC P7- PHY P1- SP	SP	FLC	EMI IC	P1- DE	EP	P7- ILW/ P7- LIBRARY	P13- SP P4- BEE P10- FCHN	EMI EEB
17	Faculty	RM	ARK	P4- ASR P7- PGH P1- DN	SDE	GGI	VMP	P1- AP	ANY	P7- MSM P7- VARTAK	P13- VK P4- HJA P10- CAD	SBP
18	Batch	L1	L1		L2	L6	L5		L2			L5
		D204	D201	P4-	D105	D301	D302	P1-	D202	P7- IL	P13- M512B	D304

Library Slots | ILW slots | **Monday** | Tuesday | Wednesday | Thursday | Friday | 28 Oct

	A	B	C	D	E	F	G	H	I	J	K	L
1							TUESDAY					
2	Time	FE All										
3	9.00 am to 10.00 am	SP	FLC	P16- FLC	EMI IC	FCHN	P7- EG P11- FCHN	EM	P1- EP P29- SP P3- DE	EMI EEB	P6- BEE	BEE
4	Faculty	BGT	KGD	P16- KSS	NAA	CAD	P7- RMP P11- HAR	MSM	P1- PGH P29- ATA P3- AP	AVD	P6- HJA	JRP
5	Batch	L8	L1		L4	L6		L1		L3		L1
6	Venue	D202	D201	P16- M414B	D105	D301	P7- M411B P11- L11B	D204	P1- L09A P29- L07C P3- M414A	D302	P6- L12A	D304
7	10.00 am to 11.00 am	SP	FLC	P16- FLC	EMI IC	FCHN	P7- EG P11- FCHN	EM	P1- EP P29- SP P3- DE	EMI EEB	P6- BEE	BEE
8	Faculty	BGT	KGC	P16- KSS	NAA	CAD	P7- RMP P11- HAR	MSM	P1- PGH P29- ATA P3- AP	AVD	P6- HJA	JRP
9	Batch	L8	L1		L4	L6		L1		L3		L1
10	Venue	D202	D201	P16- M414B	D105	D301	P7- M411B P11- L11B	D204	P1- L09A P29- L07C P3- M414A	D302	P6- L12A	D304
11	11.00 am to 11.15 am											
12	11.15 am to 12.15 pm	EMI IC	Phy	P5- FLC	FLC		P23- SP P8- EG P12-	P2- EP P30- SP	P6- DE	EC	SP	EMI EEB
13	Faculty	NAA	RM	P5- KGD	RS		P23- DN P8- RMP P12- CAD	P2- PGH P30- ATA	P6- AP	SYB	VK	SBP
14	Batch	L1	L2		L4					L1	L6	L5
15	Venue	D202	D201	P5- M201B	D105		P23- L11A P8- M411B	P2- L09A P30- M516A	P6- M201A	D204	D304	D301
16	12.15 pm to 1.15 pm	EMI IC	Phy	P5- FLC	FLC		P23- SP P8- EG P12-	P2- EP P30- SP	P6- DE	EC	SP	EMI EEB
	Faculty	NAA	RM	P5- KGD	RS		P23- DN P8- RMP	P2- PGH	P6- AP	SYB	VK	SBP

Library Slots | ILW slots | Monday | **Tuesday** | Wednesday | Thursday | Friday | 28 Oct | 4 Nov | 18 Nov

	A	B	C	D	E	F	G	H	I	J	K	L
1		WEDNESDAY										
2	Time	FE All										
3	9.00 am to 10.00 am	FLC	EMI IC	SP	P3- SP	P6- ILW P6- LIBRARY		DE	P3- EM P3- EP	P11- SP P8- BEE	EMI EEB	
4	Faculty	KSS	NAA	SDE	P3- MS	P6- NSM P6-		AP	P3- MSM P3- PGH	P11- VK P8- AM	AVD	
5	Batch	L2	L2	L3				L1			L4	
6	Venue	D202	D201	D105	P3- M516	P6- D302 P6- LIBRARY		D204	P3- M411B P3- L09A	P11- L07D P8- L12A	D301	
7	10.00 am to 11.00 am	FLC	EMI IC	SP	P3- SP	P6- ILW P6- LIBRARY		DE	P3- EM P3- EP	P11- SP P8- BEE	EMI EEB	
8	Faculty	KSS	NAA	SDE	P3- MS	P6- NSM P6-		AP	P3- MSM P3- PGH	P11- VK P8- AM	AVD	
9	Batch	L2	L2	L3				L1			L4	
10	Venue	D202	D201	D105	P3- M516	P6- D302 P6- LIBRARY		D204	P3- M411B P3- L09A	P11- L07D P8- L12A	D301	
11	11.00 am to 11.15 am											
12	11.15 am to 12.15 pm	FCHN		EMI IC	P6- FLC P9- PHY P13- FCHN	EG	P5- ILW P5- LIBRARY HR	P31- SP	EMI EEB	SP	EC	P27- SP P1- BEE
13	Faculty	ARK		NAA	P6- KGD P9- ANY P13- CAD	GM	P5- ICU P5- VARTAK	P31- ATA	AVD	AO	NSM	P27- VSW P1- JRP
14	Batch	L2		L3		L2			L2	L4	L2	
15	Venue	D202		D105	P6- M201A P9- L09A P13- L11B	D301	P5- D204 P5- LIBRARY	P31- M516A	D201	D302	D304	P27- L07C P1- L12A
16	12.15 pm to 1.15 pm	FCHN		EMI IC	P6- FLC P9- PHY P13- FCHN	EG	P5- ILW P5- LIBRARY HR	P31- SP	EMI EEB	SP	EC	P27- SP P1- BEE
17	Faculty	ARK		NAA	P6- KGD P9- ANY P13- CAD	GM	P5- ICU P5- VARTAK	P31- ATA	AVD	AO	NSM	P27- VSW P1- JRP
18	Batch	L2		L3		L2			L2	L4	L2	

Library Slots | ILW slots | Monday | Tuesday | **Wednesday** | Thursday | Friday | 28 Oct | 4 Nov | 18 N

The sample of implementation the My Time Table for EXTC department day wise is as follows:

	Subject Code	Type	Lecture/Practical/Tutorial Number	Shortname	Name of Subject	Year	Slot1	Faculty1 Shortname	Day 1	Time Slot 1	Room No 1	Slot2	Faculty2 Shortname	Day 2	Time Slot 2	Room No 2	Slot3	Faculty3 Shortname	Day 3	Time Slot 3	Roo
2	BS33	L	L1	EM-III	EXTC - BS33 - Engineering Mathematics-III	SE	S02	VMP	Monday	9.00 am to 10.00 am	M301	S03	VMP	Monday	10.00 am to 11.00 am	M301	S14	VMP	Tuesday	11.15 am to 12.15 pm	M
3	BS33	L	L2	EM-III	EXTC - BS33 - Engineering Mathematics-III	SE	S02	USK	Monday	9.00 am to 10.00 am	M309	S03	USK	Monday	10.00 am to 11.00 am	M309	S36	USK	Thursday	1.45 pm to 2.45 pm	M
4	ET01P	P	P1	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S04	ART	Monday	11.15 am to 12.15 pm	M401A	S05	ART	Monday	11.15 am to 12.15 pm	M401A					
5	ET01P	P	P2	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S16	ART	Tuesday	1.45 pm to 2.45 pm	M401A	S17	ART	Tuesday	2.45 pm to 3.45 pm	M401A					
6	ET01P	P	P3	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S36	ART	Thursday	1.45 pm to 2.45 pm	M401A	S37	ART	Thursday	2.45 pm to 3.45 pm	M401A					
7	ET01P	P	P4	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S22	SMA	Wednesda	9.00 am to 10.00 am	M401A	S23	SMA	Wednesda	10.00 am to 11.00 am	M401A					
8	ET01P	P	P5	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S34	SWA	Thursday	11.15 am to 12.15 pm	M401A	S35	SWA	Thursday	12.15 pm to 1.15 pm	M401A					
9	ET01P	P	P6	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S42	SWA	Friday	9.00 am to 10.00 am	M401B	S43	SWA	Friday	10.00 am to 11.00 am	M401B					
10	ET01T	L	L1	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S34	ART	Thursday	11.15 am to 12.15 pm	M301	S35	ART	Thursday	12.15 pm to 1.15 pm	M301					
11	ET01T	L	L2	EDC	EXTC - ET01T - Electronic Devices and Circuits	SE	S32	SMA	Thursday	9.00 am to 10.00 am	M315	S33	SMA	Thursday	10.00 am to 11.00 am	M315					
	ET02P	P	P1	PCOM	EXTC - ET02P - Principles of Communication Engineering	SE	S24	DMP	Wednesda	11.15 am to 12.15 pm	M514B	S25	DMP	Wedne sday	12.15 pm to 1.15 pm	M514B					

EXTC

First Year Engineering 2023-24 Orientation Programme Towards New Educational Perspectives

VIT Vidyalankar Institute of Technology
Accredited A+ by NAAC

First Year Engineering 2023-24 Orientation Programme

Towards New Educational Perspectives

Presented by

Dr. Sangeeta Joshi
Professor & Technical Advisor,
Director, IQAC & NAAC Convener
Monday, August 21, 2023

VIT Vidyalankar Institute of Technology
Accredited A+ by NAAC

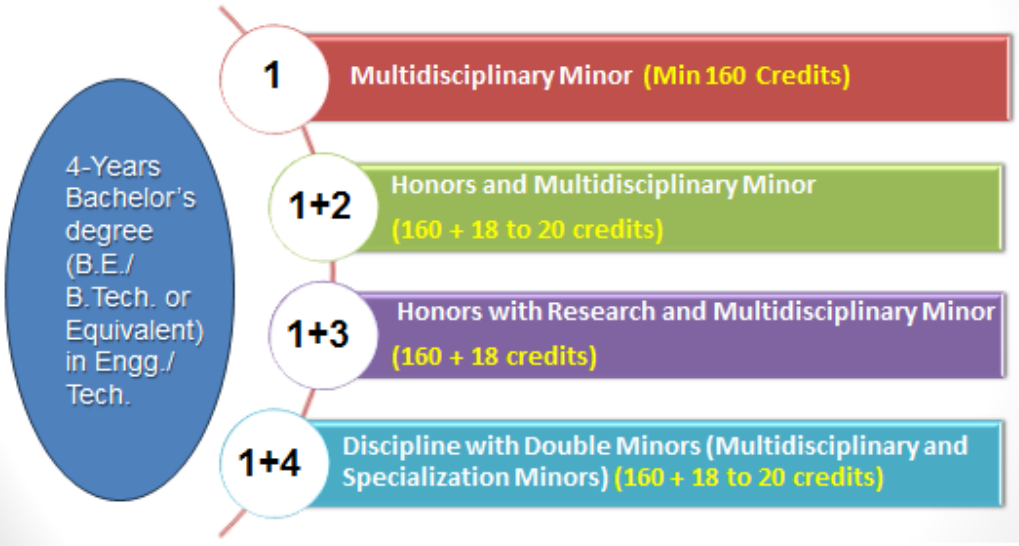
Outline of the talk

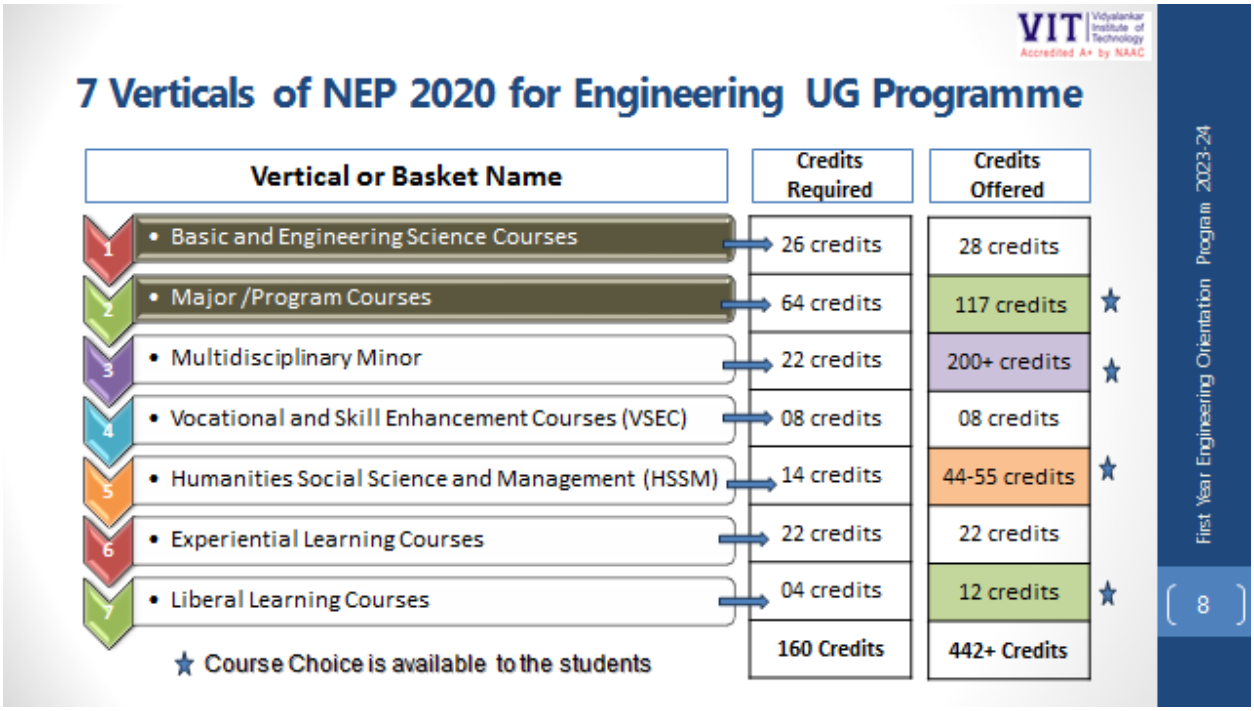
- Salient Features of NEP 2020 for Engineering Curriculum
- NEP Verticals for Engineering Undergraduate Curriculum
- Implementation of Autonomy and NEP at VIT
- Course Structure and Assessment Guidelines
- Pace and Interest of Learning

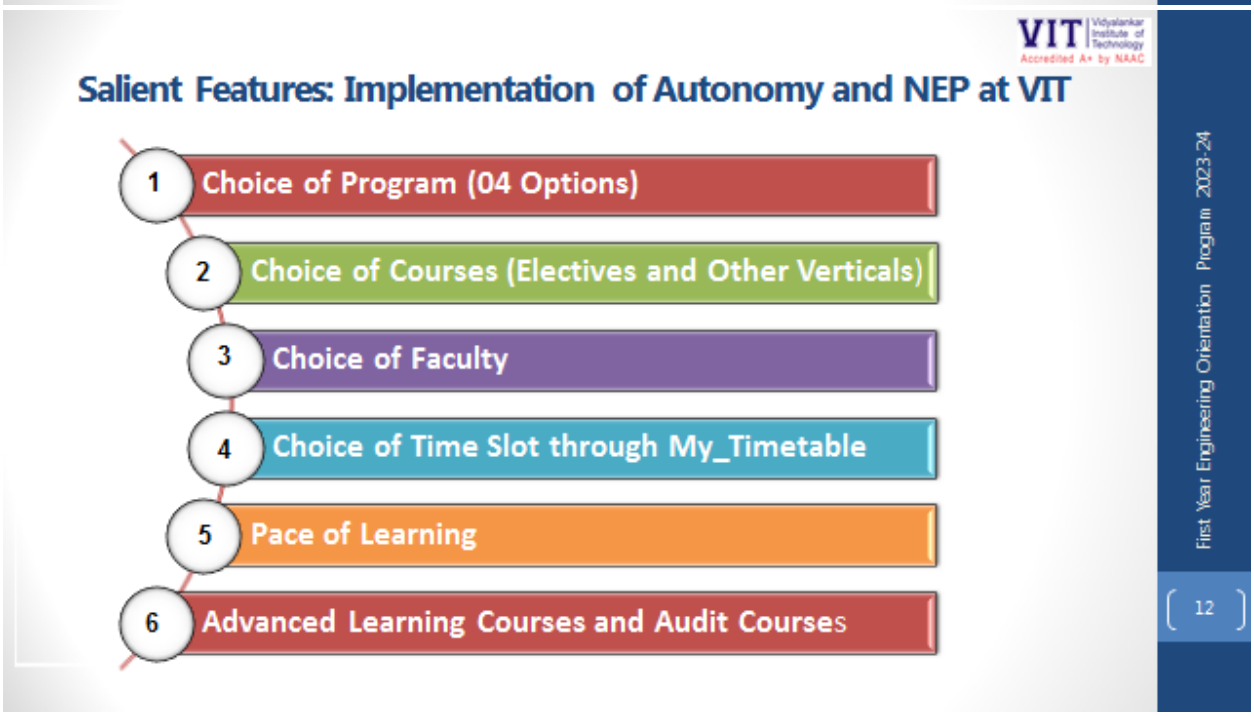
Salient Features of NEP 2020 for Engineering Curriculum

- **Multi-disciplinarity and holistic education** across sciences, commerce, management, technical education, social sciences, arts, sports by integration of General and Vocational Education
- Multi exit and Multi entry provision
- 4 Options for the award of B.E./B.Tech. Degree
- One Semester On Job Training /Internship
- Assignment, Accumulation, Storage, and Transfer of Credits in ABC.
- Pace of Learning with Academic Flexibility

Options for Four-year Bachelor's Multidisciplinary Engineering UG Programme




VIT Vidyalankar Institute of Technology Accredited A+ by NAAC
7 Verticals of NEP 2020 for Engineering UG Programme
Vertical or Basket Name
Credits Required
Credits Offered
1 • Basic and Engineering Science Courses
26 credits
28 credits
2 • Major /Program Courses
64 credits
117 credits
3 • Multidisciplinary Minor
22 credits
200+ credits
4 • Vocational and Skill Enhancement Courses (VSEC)
08 credits
08 credits
5 • Humanities Social Science and Management (HSSM)
14 credits
44-55 credits
6 • Experiential Learning Courses
22 credits
22 credits
7 • Liberal Learning Courses
04 credits
12 credits
160 Credits
442+ Credits
Course Choice is available to the students
First Year Engineering Orientation Program 2023-24
8


VIT Vidyalankar Institute of Technology Accredited A+ by NAAC
Salient Features: Implementation of Autonomy and NEP at VIT
1 Choice of Program (04 Options)
2 Choice of Courses (Electives and Other Verticals)
3 Choice of Faculty
4 Choice of Time Slot through My_Timetable
5 Pace of Learning
6 Advanced Learning Courses and Audit Courses
First Year Engineering Orientation Program 2023-24
12

First Year B.Tech. Electronics and Computer Science Course Structure and Assessment Guidelines

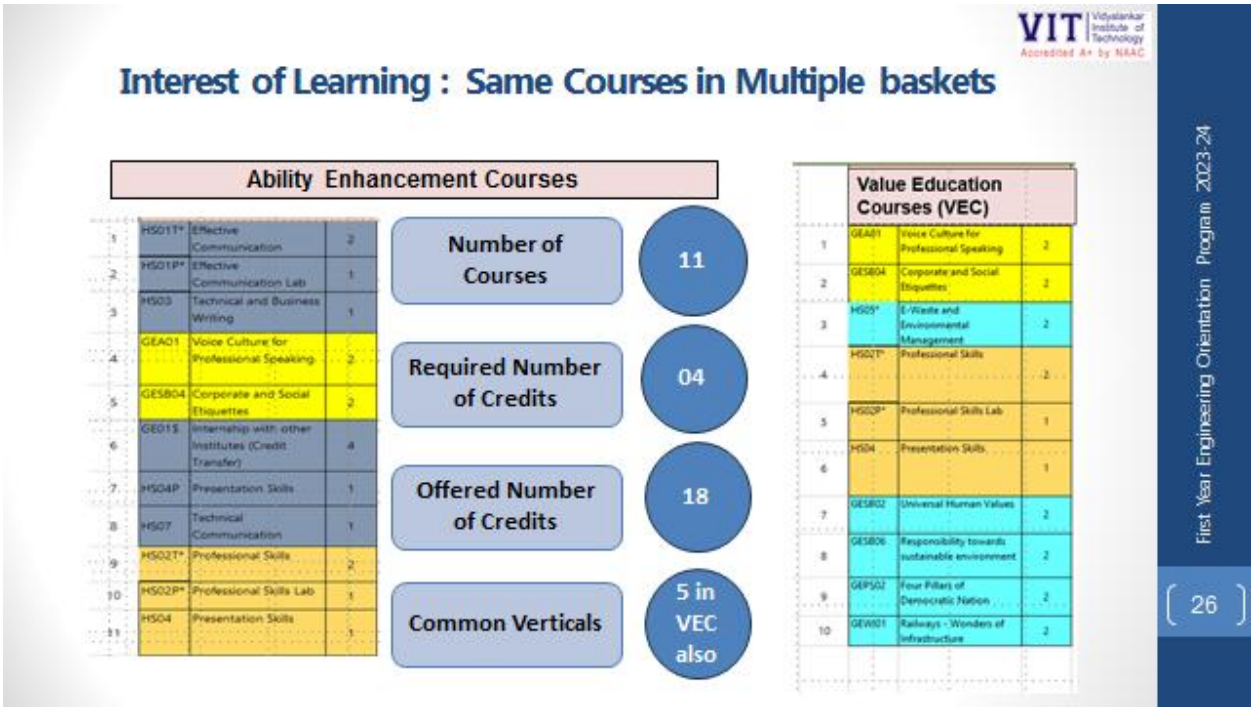
Preferred Semester-1

NEP-Vertical	Course Code	Course Name	Head of Learning	Credits	Assessment Guidelines (Marks) ISA	MSE	ESE	Total marks (Passing@40% of total marks)
BSC	BS01	Engineering Mathematics-I	Theory	3	20	30	50	100
	BS14T	Physics	Theory	2	15	20	40	075
	BS14P	Physics Lab	Lab	1	25	-	25	050
ESC	ES06T	Fundamentals of Computer Hardware and Networking	Theory	2	15	20	40	075
	ES06P	Fundamentals of Computer Hardware and Networking Lab	Lab	1	25	-	25	050
	ES07T	Fundamental of Logic Circuits	Theory	2	15	20	40	075
	ES07P	Fundamental of Logic Circuits Lab	Lab	1	25	-	25	050
SC-VSEC	ES04T	Structured Programming	Theory	2	15	20	40	075
	ES04P	Structured Programming Lab	Lab	1	25	-	25	050
HSSM-AEC	HSXXT	Any HSSM_AEC course offered	Theory	2	15	20	40	075
	HSXXP		Practical	1	25	-	25	050
LLC_CC	GEXX*	Any LLC_CC course from the list	Theory	2	25	-	50	075
			Total Credits Required	20				
			Total Credits offered	31				

First Year B.Tech. Computer Science and Engg. Course Structure and Assessment Guidelines

Preferred Semester-1

NEP-Vertical	Course Code	Course Name	Head of Learning	Credits	Assessment Guidelines (Marks) ISA	MSE	ESE	Total marks (Passing@40% of total marks)
BSC	BS01	Engineering Mathematics-I	Theory	3	20	30	50	100
	BS14T	Physics	Theory	2	15	20	40	075
	BS14P	Physics Lab	Lab	1	25	-	25	050
ESC	ES06T	Fundamentals of Computer Hardware and Networking	Theory	2	15	20	40	075
	ES06P	Fundamentals of Computer Hardware and Networking Lab	Lab	1	25	-	25	050
	ES07T	Fundamental of Logic Circuits	Theory	2	15	20	40	075
	ES07P	Fundamental of Logic Circuits Lab	Lab	1	25	-	25	050
SC-VSEC	ES04T	Structured Programming	Theory	2	15	20	40	075
	ES04P	Structured Programming Lab	Lab	1	25	-	25	050
HSSM-AEC	HSXXT	Any HSSM_AEC course offered	Theory	2	15	20	40	075
	HSXXP		Practical	1	25	-	25	050
LLC_CC	GEXX*	Any LLC_CC course from the list	Theory	2	25	-	50	075
			Total Credits Required	20				
			Total Credits offered	31				



Pace of Learning

1. There are a few courses that fall into multiple vertical baskets. This allows students to take more course credits than are required from a single vertical basket and claim those credits under other vertical common baskets.

2. Although a typical list of courses is presented against the Multidisciplinary basket, all courses other than those required for the award of a degree in the Home discipline will also be considered under Multidisciplinary basket. So Students are encouraged to take courses of their interest in other than Home disciplines and apply those credits towards the Multidisciplinary Basket.

Imp Takeaway from NEP- 2020

Indeed, with the quickly changing

- Knowledge landscape,
- employment landscape and
- global ecosystem,

it is becoming increasingly critical that children not only learn, but more importantly **learn how to learn**. Education thus, must move towards less content, and more towards learning about **how to think critically** and **solve problems**, **how to be creative and multidisciplinary, and how to innovate, adapt, and absorb new material in novel and changing fields.**

Vidyalankar Institute of Technology
First Year Engineering
Odd Semester 2023-24

2 September 2023

Notice
Implementation of My Timetable for FE students

VIT is implementing The National Education Policy (NEP) framework in its curriculum for the students admitted in AY 2023-24. This framework empowers learners with flexibility in terms of choosing courses across different faculties and modes of learning. This enhances the scope for diverse learning opportunities, strengthens their toolset, skillset, and mindset and aims for their holistic personality development.

My Timetable is a unique initiative of VIT wherein students can design their own schedule. This flexibility will encourage learners to follow their passion and inherent interests, and learn at a pace that they are comfortable with, as we believe that "one size does not fit all". Learners can make informed choices about:

- Courses they would like to enroll for
- Days of the week for learning
- Timing slot of learning
- Faculty they wish to learn from

Plan of Action

1. On Monday, 4 September 2023, **Evolve through Education** booklets will be distributed to all the students of 11 divisions of First Year at 11 AM
2. Students will have regular lecture schedule from 9 AM -1.15 PM
3. 'MY TIMETABLE' process will start from 2 PM onwards.
4. Attendance is mandatory.
5. The process includes programme specific credits details session by Faculty advisors, Dry run on Moodle of MY TT with the help of FE faculty coordinators and senior students.
6. Actual Implementation of MY TT will be from 8 PM on Monday to 8 AM on Tuesday (online process from home for FE students with mentoring by SE students).
7. Grievances in TT will be solved from Tuesday, 5 September 2023 to Thursday, 7 September 2023 from 4 PM to 6 PM (D 103).
8. Gaps within the timetable can be utilized for private study exercises.
9. Students should not enroll for multiple slots of the same faculty. If this happens, the Department will take a final call on which slot to retain.
10. If any student does not fill up the My Timetable, the Department will allocate the slots as per availability at our discretion, and no further requests shall be entertained.
11. Students are advised to initially fill up the My Timetable page with pencil, as in the process of creating schedule, there may be multiple modifications.
12. Each student will get his My Timetable page signed by SE student mentor and academic coordinator.

Schedule for MY TIMETABLE 2023-24

	INFT A	**INFT B**	**INFT C**	**CMPN A**	**CMPN B**	**CMPN C**	**EXCS A**	**EXCS B**	**EXTC A**	**EXTC B**	**BIOM**
Classrooms	D202	D201	E303	D105	D301	M608	D204	M202	D302	D304	M607
Faculty advisors	Dr. Vidya Chitre	Prof. Ajitkumar Khachane	Prof. Neha Kudu	Dr. Sachin Bojewar	Prof. Pankaj Vanwari	Dr. Mandar Sohani	Dr. Arun Chavan	Dr. Sangeeta Joshi	Prof. Pravin Patil	Dr. Dhananjay Patel	Prof. Geeta Narayanan
Academic Coordinators/ Mentors	USK	RMP	NAA	GM	MSM	ICU	AVD	PGH	MBB	NSM	ANY
Number of Student mentors (SE)	8	8	8	8	8	8	8	8	8	8	8

Sonaali Borkar
In-Charge, First Year Engineering

VIT Vidyalankar Institute of Technology

(Accredited A+ by NAAC)

(Autonomous Institute Affiliated to University of Mumbai)

EVOLVE THROUGH EDUCATION

Choice Based Credit System
Semester 1 (2023-24)

VISION

- To be a globally recognized institute where learners are nurtured in a scholarly environment to evolve into competent professionals and researchers to benefit society.

MISSION

- Evolve a curriculum which emphasizes on strong fundamentals with the flexibility to choose advanced courses of interest and gain exposure to tools and techniques in contemporary subjects.
- Encourage a teaching-learning process in which highly competent faculty share a symbiotic association with institutes of repute.
- Facilitate creation and dissemination of knowledge through a digitally-enabled learning environment.
- Develop academic and infrastructural facilities with modern equipment and other learning resources and encourage reciprocal sharing with other institutes through networking.
- Establish a Center of Excellence to enhance academia-industry partnership and work on collaborative projects.

PROGRAM SPECIFIC OUTCOMES

INFT	CMPN	EXCS	EXTC	BIOM
				

SUMMARY OF CREDIT DISTRIBUTION

Basket	Verticals	INFT	CMPN	EXCS	EXTC	BIOM
Basic Science Courses (BSC)	(BSC/ ESC)	15	15	15	15	15
Engineering Science Courses (ESC)		12	12	12	12	12
Programme Core Courses (PCC)	Program Courses (PC)	45	44	45	48	46
Programme Elective Courses (PEC)		18	18	18	18	18
Multidisciplinary Minor (MDM)	Multidisciplinary Courses (MDC)	14	14	14	14	14
Open Elective (OE)		8	8	8	8	8
Vocational and Skill Enhancement Courses (VSEC)	Skill Courses (SC)	8	8	9	8	9
Ability Enhancement Courses (AEC)	Humanities Social Science and Management Courses (HSSM)	7	6	5	4	9
Entrepreneurship/ Economics/ Management Courses (EEMC)		3	3	3	5	5
Indian Knowledge System Courses (IKS)		2	2	2	2	3
Value Education Courses (VEC)		3	3	3	3	2
Research Methodology (RM)	Experiential Learning Courses (ELC)	3	3	3	3	3
Community Engagement Project (CEP)/ Field Project (FP)		3	3	3	3	3
Project		6	6	5	4	6
Internship/ On-Job Training		12	12	12	12	12
Co-curricular Courses (CC)	Liberal Learning Courses (LLC)	4	4	4	4	4
Total Credits		**163**	**161**	**161**	**163**	**163**

INDEX FOR COURSES OFFERED IN SEMESTER 1

Course Code	Name of Course	Verticals	Subject Short Name	INFT	CMPN	EXCS	EXTC	BIOM	Page No.
BS01	Engineering Mathematics-I	BSC	EM-I_IC	**M**	**M**	O	O	O	1
BS02	Engineering Mathematics-I	BSC	EM-I_EEB	O	O	**M**	**M**	**M**	3
BS14	Physics	BSC	Phy	**M**	**R**	O	O	O	5
BS15	Engineering Physics	BSC	EP	O	O	**M**	**R**	O	7
BS20	Physics for Biomedical Engineering	BSC	PBE	O	O	O	O	**M**	9
BS16	Engineering Chemistry	BSC	EC	O	O	**R**	**M**	**R**	11
ES01	Engineering Graphics	ESC	EG	**R**	**M**	**R**	**R**	**R**	13
ES02	Engineering Mechanics	ESC	EM	O	O	**M**	**M**	**M**	15
ES03	Digital Electronics	ESC	DE	O	O	**M**	O	O	17
ES04	Structured Programming	SC_ VSEC	SP	**M**	**M**	**M**	**M**	**M**	19
ES06	Fundamentals of Computer Hardware & Networking	ESC	FCHN	**M**	**M**	O	O	O	22
ES07	Fundamental of Logic Circuits	ESC	FLC	**M**	**M**	O	O	O	24
ES08	Basic Electrical & Electronics Engineering	ESC	BEE	O	O	O	**M**	**M**	26
	Any one is Mandatory from below list :	MDM, IKS, VEC, CC		**M**	**M**	**M**	**M**	**M**	28
GESB02	Universal Human Values		UHV						
GEA03	Exploring Indian Art		EIA						
GESB03	Indian Traditional Knowledge System		ITKS						
GEPS01	Indian Constitution		IC						
GEA02	Various Dance Forms		VDF						
GEPEW01	Wellness – Body, Mind & Spirit		WBMS						
GEPEW03	Nutrition and Physical Wellness		NPW						
GENS01	Facets of Astronomy		FA						
	Additional One Course from above list			**R**	**R**	**R**	**R**	**R**	
	Innovation Lounge/Library Hour		FE ALL INOV/LIB	**M**	**M**	**M**	**M**	**M**	30

M : **Mandatory Course to be taken** by students of the respective branch in Semester 1

R : **Recommended Course can be taken** as per student's interest in Semester 1, if there are vacant slots after Mandatory courses, and if there is possibility to accommodate students considering upper cap of enrolment in the course. However, it will be offered in later semesters also..

O **:** **Optional Course may be taken** if there are vacant slots after taking Mandatory and Recommended Courses, as per student's interest.

Recommended Plan of Courses to be opted in Semester 1 in AY 2023-24

INFORMATION TECHNOLOGY

Sr. No.	Course Code	Course Name	Theory	Practical	Tutorial	Credits
1	BS01	Engineering Mathematics-I	3	-	1	3
2	BS14T	Physics	2	-	-	2
3	BS14P	Physics Lab	-	2	-	1
4	ES06T	Fundamentals of Computer Hardware and Networking	2	-	-	2
5	ES06P	Fundamentals of Computer Hardware and Networking Lab	-	2	-	1
6	ES07T	Fundamentals of Logic Circuits	2	-	-	2
7	ES07P	Fundamentals of Logic Circuits Lab	-	2	-	1
8	ES04T	Structured Programming	2	-	-	2
9	ES04P	Structured Programming Lab	-	2	-	1
10	GE--	Any One Course from MDM, IKS, VEC, CC	2	-	-	2
					Total Credits*	**17**

* In the Vertical of HSSM (Humanities & Social Sciences and Management), within the basket of AEC (Ability Enhancement Course), the course (HS01) Effective Communication for 3 credits will be conducted in winter inter-semester break (approx. January 01-January 15, 2024). Please note it will be a Mandatory Course and these 3 credits will be considered for completion of the Semester 1 requirement of 20 credits.

COMPUTER ENGINEERING

Sr. No.	Course Code	Course Name	Theory	Practical	Tutorial	Credits
1	BS01	Engineering Mathematics-I	3	-	1	3
2	ES06T	Fundamentals of Computer Hardware and Networking	2	-	-	2
3	ES06P	Fundamentals of Computer Hardware and Networking Lab	-	2	-	1
4	ES07T	Fundamentals of Logic Circuits	2	-	-	2
5	ES07P	Fundamentals of Logic Circuits Lab	-	2	-	1
6	ES01T	Engineering Graphics	2	-	-	2
7	ES01P	Engineering Graphics Lab	-	2	-	1
8	ES04T	Structured Programming	2	-	-	2
9	ES04P	Structured Programming Lab	-	2	-	1
10	GE--	Any One Course from MDM, IKS, VEC, CC	2	-	-	2
					Total Credits*	**17**

* In the Vertical of HSSM (Humanities & Social Sciences and Management), within the basket of AEC (Ability Enhancement Course), the course (HS01) Effective Communication for 3 credits will be conducted in winter inter-semester break (approx. January 01-January 15, 2024). Please note it will be a Mandatory Course and these 3 credits will be considered for completion of the Semester 1 requirement of 20 credits.

ELECTRONICS & COMPUTER SCIENCE

Sr. No.	Course Code	Course Name	Theory	Practical	Tutorial	Credits
1	BS02	Engineering Mathematics - I	3	-	1	3
2	BS15T	Engineering Physics	2	-	-	2
3	BS15P	Engineering Physics Lab	-	2	-	1
4	ES02T	Engineering Mechanics	2	-	-	2
5	ES02P	Engineering Mechanics Lab	-	2	-	1
6	ES03T	Digital Electronics	2	-	-	2
7	ES03P	Digital Electronics Lab	-	2	-	1
8	ES04T	Structured Programming	2	-	-	2
9	ES04P	Structured Programming Lab	-	2	-	1
10	GE--	Any One Course from MDM, IKS, VEC, CC	2	-	-	2
					Total Credits*	**17**

* In the Vertical of HSSM (Humanities & Social Sciences and Management), within the basket of AEC (Ability Enhancement Course), the course (HS01) Effective Communication for 3 credits will be conducted in winter inter-semester break (approx. January 01-January 15, 2024). Please note it will be a Mandatory Course and these 3 credits will be considered for completion of the Semester 1 requirement of 20 credits.

ELECTRONICS & TELECOMMUNICATION ENGINEERING

Sr. No.	Course Code	Course Name	Theory	Practical	Tutorial	Credits
1	BS02	Engineering Mathematics-I	3	-	1	3
2	ES02T	Engineering Mechanics	2	-	-	2
3	ES02P	Engineering Mechanics Lab	-	2	-	1
4	BS16T	Engineering Chemistry	2	-	-	2
5	BS16P	Engineering Chemistry Lab	-	2	-	1
6	ES08T	Basic Electrical & Electronics Engineering	2	-	-	2
7	ES08P	Basic Electrical & Electronics Engineering Lab	-	2	-	1
8	ES04T	Structured Programming	2	-	-	2
9	ES04P	Structured Programming Lab	-	2	-	1
10	GE--	Any One Course from MDM, IKS, VEC, CC	2	-	-	2
					Total Credits*	**17**

* In the Vertical of HSSM (Humanities & Social Sciences and Management), within the basket of AEC (Ability Enhancement Course), the course (HS01) Effective Communication for 3 credits will be conducted in winter inter-semester break (approx. January 01-January 15, 2024). Please note it will be a Mandatory Course and these 3 credits will be considered for completion of the Semester 1 requirement of 20 credits.

BIOMEDICAL ENGINEERING

Sr. No.	Course Code	Course Name	Theory	Practical	Tutorial	Credits
1	BS02	Engineering Mathematics-I	3	-	1	3
2	BS20T	Physics for Biomedical Engg.	2	-	-	2
3	BS20P	Physics for Biomedical Engg. Lab	-	2	-	1
4	ES02T	Engineering Mechanics	2	-	-	2
5	ES02P	Engineering Mechanics Lab	-	2	-	1
6	ES08T	Basic Electrical & Electronics Engineering	2	-	-	2
7	ES08P	Basic Electrical & Electronics Engineering Lab	-	2	-	1
8	ES04T	Structured Programming	2	-	-	2
9	ES04P	Structured Programming Lab	-	2	-	1
10	GE--	Any One Course from MDM, IKS, VEC, CC	2	-	-	2
					Total Credits*	**17**

* In the Vertical of HSSM (Humanities & Social Sciences and Management), within the basket of AEC (Ability Enhancement Course), the course (HS01) Effective Communication for 3 credits will be conducted in winter inter-semester break (approx. January 01-January 15, 2024). Please note it will be a Mandatory Course and these 3 credits will be considered for completion of the Semester 1 requirement of 20 credits.

BS01	**Engineering Mathematics - I** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	Optional	Optional	Optional

Course Category	**Basic Science (BS)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	3	-	-	-
Hours/week	3	-	1	3

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can :**
Compute the roots of complex numbers and expand powers of sine and cosine in terms of sin or cosine of multiples of theta and vice versa.	1.1 Understand De Moivre's Theorem 1.2 Expand powers of Sine and cosine function in terms of sine and cosine of multiples of angles. 1.3 Expand cosine and sines of multiples of angles in powers of sine and cosine. 1.4 Find roots of complex numbers 1.5 Find roots of real and complex polynomial
Compute log of a complex numbers and separation of real and imaginary parts of complex functions using hyperbolic functions.	2.1 Understand difference between circular and Hyperbolic functions. 2.2 Find inverse circular and inverse hyperbolic functions and solve some identities. 2.3 Separation of complex functions in real and imaginary parts. 2.4 Finding logarithms of complex numbers.
Understand the concepts of Beta, Gamma function and DUIS.	3.1 Understand special functions, Beta and Gamma functions, DUIS and their properties. 3.2 Solve tedious integrals using Beta and Gamma functions/ DUIS. 3.3 Using graphing calculator like Desmos plot beta and gamma functions for definite integrals.
Compute Partial derivatives and maxima minima of functions of two variables.	4.1 Understand meaning of partial derivatives. 4.2 Compute partial derivatives of functions of multiple variables. 4.3 Compute partial derivatives of composite functions. 4.4 Compute Maxima and Minima of function of two variables. 4.5 Apply your skill to write a program to compute extreme values of function of two variables using software of your choice.

Illustrate the concept of Double Integral in Cartesian and Polar form, change the order of Integration, Evaluate Double Integral over a given region.	5.1 Understand methods of evaluating definite double integral, double integral over the region in cartesian form and convert it to polar form. 5.2 Solve definite double integral, double integral over the region in cartesian form and convert it to polar form. 5.3 Apply Scilab/ MATLAB programming to solve definite double integral with constant limits.
Illustrate the concept of changing to polar coordinates in double integral. Application of Double integrals to compute Area, Evaluation of Triple Integration.	6.1 Understand methods of evaluating triple integral, triple integral over the surface in Cartesian form and convert it to polar form. 6.2 Solve definite triple integral, triple integral over the surface in Cartesian form and using polar form. 6.3 Apply Scilab/ MATLAB programming to solve definite triple integration with constant limits.

Evaluation Scheme

Faculty		Short Name	Theory	Tutorial
Prof. Nasir Ansari		NAA	ISA (30%) + MSE (30%) + ESE (40%)	Numerical Problems based on Topics
Dr. Uday Kashid		USK	ISA (30%) + MSE (30%) + ESE (40%)	Numerical Problems based on Topics
Prof. Vishwas Patil		VMP	ISA (30%) + MSE (30%) + ESE (40%)	Numerical Problems based on Topics

Slot Options for BS01 [Theory (Lecture) and Tutorial]

- For Theory (Lecture) please select any one offering from L1 to L6
- Please Update your "My Time Table for Winter 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Lecture (Theory)	NAA	S02 & S003 S14 & S115	9 am – 11 am	11.15 am – 13.15 pm				
		S22 & S23 S34 & S35			9 am – 11 am	11.15 am – 13.15 pm		
		S24 & S25 S32 & S33			11.15 am – 3.15 pm	9 am – 11 am		
		S12 & S13 S44 & S45		9 am – 11 am			11.15 am – 13.15 pm	
	USK	S26 & S27 S46 & S47			13.45 pm – 15.45 pm		13.45 pm – 15.45 pm	
	VMP	S04 & S05 S44 & S45	11.15 am – 13.15 pm				11.15 am – 13.15 pm	

Self-Study Activity

Engineering Mathematics is an important field of study that applies mathematical principles to solve real world engineering problems. Solving problems using software like MATLAB is recommended. MATLAB Fundamentals and MATLAB Onramp are recommended to complete for self-study

BS02	**Engineering Mathematics - I** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Optional	Optional	**M**andatory	**M**andatory	**M**andatory

Course Category	**Basic Science (BS)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	3	-	-	-
Hours/week	3	-	1	3

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can :**
Compute the roots of complex numbers and expand powers of sine and cosine in terms of sin or cosine of multiples of theta and vice versa.	1.1 Understand De Moivre's Theorem 1.2 Expand powers of Sine and cosine function in terms of sine and cosine of multiples of angles. 1.3 Expand cosine and sines of multiples of angles in powers of sine and cosine. 1.4 Find roots of complex numbers. 1.5 Find roots of real and complex polynomial
Compute log of a complex numbers and separation of real and imaginary parts of complex functions using hyperbolic functions.	2.1 Understand difference between circular and Hyperbolic functions. 2.2 Find inverse circular and inverse hyperbolic functions and solve some identities. 2.3 Separation of complex functions in real and imaginary parts. 2.4 Finding logarithms of complex numbers.
Compute Partial derivatives and maxima minima of functions of two variables.	3.1 Understand meaning of partial derivatives. 3.2 Compute partial derivatives of functions of multiple variables. 3.3 Compute partial derivatives of composite functions. 3.4 Compute Maxima and Minima of function of two variables. 3.5 Apply your skill to write a program to compute extreme values of function of two variables using software of your choice..
Compute Successive derivatives and expand the function using Taylor and Maclaurin's series.	4.1 Understand meaning of partial derivatives. 4.2 Compute partial derivatives of functions of multiple variables. 4.3 Compute partial derivatives of composite functions. 4.4 Compute Maxima and Minima of function of two variables. 4.5 Apply your skill to write a program to compute extreme values of function of two variables using software of your choice.
Compute the rank of matrix using Echelon and PAQ Normal form methods.	5.1 Find Rank of matrix using echelon form. 5.2 Find Rank of matrix using Normal form. 5.3 Find Rank of matrix using PAQ Normal form. 5.4 Find rank using definition. 5.5 Differentiate between various methods of finding rank of a matrix.

Apply Numerical methods to find solution of transcendental equations and system of linear equations.	6.1 Understand difference between algebraic and transcendental equations. 6.2 Understand approximate method over exact methods. 6.3 Compute approximate root of function using Newton Raphson Method. 6.4 Compute approximate root of function using False Position Method. 6.5 Solve system of linear equation using Gauss Jacobi Method. 6.6 Solve system of linear equation using Gauss Seidel Method. 6.7 Understand the difference between Gauss Jacobi and Gauss Seidel Method. 6.8 Apply your skill to code these methods in software of your choice

Evaluation Scheme

Faculty		Short Name	Theory	Tutorial
Prof. Ambadas Deshmukh		AVD	ISA (30%) + MSE (30%) + ESE (40%)	Numerical Problems based on Topics
Prof. Sampat Mali		SBP	ISA (30%) + MSE (30%) + ESE (40%)	Numerical Problems based on Topics

Slot Options for BS02 [Theory (Lecture) and Tutorial]

- For Theory (Lecture) please select any one offering from L1 to L5
- Please Update your "My Time Table for Winter 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	AVD	S02 & S03 S44 & S45	9 am – 11 am				11.15 am – 13.15 pm	
		S24 & S25 S42 & S43			11.15 am – 13.15 pm		9 am – 11 am	
		S12 & S13 S32 & S33		9 am – 11 am		9 am – 11 am		
		S22 & S23 S34 & S35			9 am – 11 am	11.15 am – 13.15 pm		
	SBP	S04 & S04 S14 & S15	11.15 am – 13.15 pm	11.15 am – 13.15 pm				

Self-Study Activity

Engineering Mathematics is an important field of study that applies mathematical principles to solve real world engineering problems. Solving problems using software like MATLAB is recommended. MATLAB Fundamentals and MATLAB Onramp are recommended to complete for self-study.

BS14	**Physics** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	Optional	Optional	Optional

Course Category	**Basic Science (BS)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	2
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Course Outcome

Learner will be able to :

CO1 : Attain the knowledge of Fermi level in semiconductors and applications of semiconductors in electronic devices.
CO2 : Understand the concept of thin film technology using interference and diffraction.
CO3 : Illustrate the working principle of various lasers and their applications.
CO4 : Understand the concepts of optical fiber and its applications in communication systems.
CO5 : Illustrate the fundamentals of quantum mechanics and its application.
CO6 : Attain the knowledge of different sensors and their applications.

Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can:**
Semiconductor Physics Attain the knowledge of Fermi level in semiconductors and applications of semiconductors in electronic devices.	• Make small circuits and electronic devices, including diodes, transistors, and integrated circuits. • Make solar cells circuits
Interference and Diffraction Understand the concept of thin film technology using interference and diffraction.	• Explore possibilities of use of interference to enhance quality of optical instruments • Make use of diffraction for imaging purpose
Laser Illustrate the working principle of various lasers and their applications.	• Find the groove depth of CDs. • Find the unknown wavelength of light. • Find the divergence of the beam. • Make working models like light detectors. • Develop their own model to test how light will be transmitted through various mediums.
Fiber Optics Understand the concepts of optical fibre and its applications in communication system	• To understand various types of fibers, their NA and applications

Quantum Physics Understand behavior of matter and light on the atomic and subatomic scales. On a fundamental level, both radiation and matter have particle and wave properties.	• Analyze how quantum physics makes it possible to design the silicon-based materials in the integrated circuits, quantum computers.
Engineering Materials and Applications Understand the basic principle of liquid crystals, alignment of molecules in nematic, cholesteric and smectic.	• Can compare LCD with LED.

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Renu Mann		RM	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)
Prof. Ameya Nyayadhish		ANY	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)
Prof. Pravin Gharge		PGH	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)

Slot Options for BS14 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) and for Practical (Lab.), please select any one option from L1 to L3 and one option from P1 to P9
- Please update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	RM	S04 & S05	11.15 am – 1.15 pm					
		S14 & S15		11.15 am – 1.15 pm				
	ANY	S44 & S45					11.15 am – 1.15 pm	
Practical (Lab.)	RM	S16 & S17		1.45 am – 3.45 am				
	RM	S36 & S37				1.45 am – 3.45 am		
	RM	S46 & S47					1.45 am – 3.45 am	
	RM	S18 & S19		4 pm – 6 pm				
	RM	S44 & S45					11.15 am – 1.15 pm	
	RM	S28 & S29			4 pm – 6 pm			
	PGH	S04 & S05	11.15 am – 1.15 pm					
	PGH	S42 & S43					9 am – 11 am	
	ANY	S24 & S25			11.15 am – 1.15 pm			

Self-Study Activity

Physics applies the fundamental principles of Physics to the design and systems. It also involves the application of mathematical models and computational techniques to analyze and solve engineering.

BS15	**Engineering Physics** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Optional	Optional	**M**andatory	**M**andatory	Optional

Course Category	**Basic Science (BS)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	-
Hours/week	2	2	-	4

Course Outcome and Assessment Criteria

Course Outcome

Learner will be able to :

CO1 : Identify various crystallographic planes and understand crystal defects.
CO2 : Understand the band theory of solids and the carrier concentration in solids.
CO3 : Analyze the charge distribution and charge transport processes in semiconductors.
CO4 : Apply the knowledge of Fermi level in semiconductors and applications of semiconductors in electronic devices.
CO5 : Compare the properties of engineering materials for their current and futuristic frontier Applications.
CO6 : Illustrate the working principle of various lasers and quantum processes.

Assessment Criteria

Learning Outcomes The Learner will :	**Assessment Criteria The Learner can :**
Crystallography Identify various crystallographic planes and understand crystal defects	• Make small models to demonstrates internal structures of various elements like NaCl, Diamond etc. • Student can make the comparative study of important crystals like diamond, NaCl crystal, Quartz crystal and HCP Crystal.
Semiconductor Physics Be able to understand the fundamentals of semiconductor devices	• Make small circuits and electronic devices, including diodes, transistors, and integrated circuits. • Make solar cells
Semiconductor Conductivity Analyze the charge distribution and charge transport processes in semiconductors.	• Explore possibilities of conduction in semiconductor devices. • Study transport equations like diode equation for devices.
Semiconductor Devices Apply the knowledge of Fermi level in semiconductors and applications of semiconductors in electronic devices.	• Find I-V characteristics for LED • Calculate band width of semiconductor. • Design basic two terminal devices. • Find C-V characteristics for diodes. • Examine effect of dielectric constant on size of devices.

Engineering Materials and Applications Understand the basic principle of liquid crystals, alignment of molecules in nematic, cholesteric and smectic.	• Can compare LCD with LED. • Use of materials in sensors
Laser Understand how light is transmitted through various mediums. Study and research laser types and their uses	• Find the groove depth of CDs. • Find the unknown wavelength of light. • Find the divergence of the beam. • Make working models like light detectors. • Develop their own model to test how light will be transmitted through various mediums.
Quantum Physics Understand behavior of matter and light on the atomic and subatomic scales. On a fundamental level, both radiation and matter have particle and wave properties.	• Analyze how quantum physics makes it possible to design the silicon-based materials in the integrated circuits, quantum computers.

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Ameya Nyayadhish		ANY	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)
Prof. Pravin Gharge		PGH	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)

Slot Options for BS15 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) and for Practical (Lab.) , please select any one option from L1 to L2 and one option from P1 to P6.
- Please Update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	ANY	S36 & S37				1.45 pm – 3.45 pm		
		S04 & S05	11.15 am – 1.15 pm					
Practical (Lab.)	PGH	S02 & S03	9 am – 11 am					
	PGH	S14 & S15		11.15 am – 1.15 pm				
	PGH	S22 & S23			9 am – 11 am			
	ANY	S08 & S09	4 pm – 6 pm					
	ANY	S38 & S39				4 pm – 6 pm		
	ANY	S32 & S33				9 am – 11 am		

Self-Study Activity

Engineering Physics applies the fundamental principles of physics to the design and systems. It also involves the application of mathematical models and computational techniques to analyze and solve engineering.

BS20	**Physics for Biomedical Engineering** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Optional	Optional	Optional	Optional	**M**andatory

Course Category	**Basic Science (BS)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	2
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Course Outcome

Learner will be able to :

CO1 : Understand the concept of thin film technology using interference and diffraction.
CO2 : Understand the band theory of solids and the carrier concentration in solids.
CO3 : Analyze the charge distribution and charge transport processes in semiconductors.
CO4 : Apply the knowledge of Fermi level in semiconductors and applications of semiconductors in electronic devices.
CO5 : Understand different methods to generate ultrasonic waves.
CO6 : Illustrate the working principle of various lasers and quantum processes.

Assessment Criteria

Learning Outcomes The Learner will :	**Assessment Criteria The Learner can:**
Fundamentals of Optics Understand the concept of thin film technology using interference and diffraction.	• Explore possibilities of use of interference to enhance quality of optical instruments Make use of diffraction for imaging purpose.
Semiconductor Physics Understand the band theory of solids and the carrier concentration in solids.	• Make small circuits and electronic devices, including diodes, transistors, and integrated circuits. • Make solar cells circuits
Semiconductor Conductivity Analyze the charge distribution and charge transport processes in semiconductors.	• Explore possibilities of conduction in semiconductor devices • Study transport equations like diode equation for devices
Semiconductor Devices Apply the knowledge of Fermi level in semiconductors and applications of semiconductors in electronic devices.	• Find I-V characteristics for LED • Calculate band width of semiconductor • Design basic two terminal devices • Find C-V characteristics for diodes • Examine effect of dielectric constant on size of devices
Physics of Sound Understand different methods to generate ultrasonic waves.	• To understand various methods of producing ultrasonic waves

Lasers Illustrate the working principle of various lasers and quantum processes.	• Find the groove depth of CDs. • Find the unknown wavelength of light. • Find the divergence of the beam. • Make working models like light detectors. • Develop their own model to test how light will be transmitted through various mediums.
Quantum Physics Understand behavior of matter and light on the atomic and subatomic scales. On a fundamental level, both radiation and matter have particle and wave properties.	• Analyze how quantum physics makes it possible to design the silicon-based materials in the integrated circuits, quantum computers.

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Pravin Gharge		PGH	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)

Slot Options for BS20 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) and for Practical (Lab.) , please select any one option from L1 and one option from P1 to P3
- Please Update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	PGH	S46 & S47					1.45 pm – 3.45 pm	
Practical (Lab.)	PGH	S26 & S27			1.45 pm – 3.45 pm			
	PGH	S02 & S03	9 am – 11 am					
	PGH	S34 & S35				11.15 am – 1.15 pm		

Self-Study Activity

Physics applies the fundamental principles of Physics to the design and systems. It also involves the application of mathematical models and computational techniques to analyze and solve engineering.

BS16	**Engineering Chemistry** (Recommended in Sem. 1) (Typically offered in Fall and Spring)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Optional	Optional	**M**andatory	**M**andatory	**M**andatory

Course Category	**Basic Science (BS)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	-
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can:**
Interpret properties, synthesis, and uses of important materials in various engineering applications.	1.1 Summarize the properties of the various engineering materials like polymers, Nanomaterials, Semiconductor materials, shape memory alloys etc. 1.2 Understand the synthesis of engineering materials. 1.3 Corelate the properties of materials with the applications of materials 1.4 Describe the applications of engineering materials in real life and industry. 1.5 Summarize the advantages and disadvantages engineering materials
Apply the fundamentals of electrochemistry in prevention & control measures related to corrosion of structures and devices.	2.1 Summarize the concept of electrochemistry and various types of electrochemical cells. 2.2 Explain Nernst equation and solve numerical problems. 2.3 Explain the construction of various electrodes. 2.4 Discuss applications of electrodes. 2.5 Understand the mechanism of corrosion. 2.6 Describe various types of corrosion. 2.7 Think and apply Prevention and control Measures to various instruments.
Rationalise different types of batteries and their real-life engineering applications.	3.1 Describe primary and secondary cells. 3.2 Describe various types of batteries. 3.3 Explain the construction of Li-ion batteries. 3.4 Explain components and working of fuel cell. 3.5 Summarize the applications of various batteries. 3.6 State advantages and disadvantages of various batteries in use.

Analyse different spectroscopic techniques and study fundamentals of electromagnetic spectrum.	4.1 Understand Electromagnetic spectrum. 4.2 Identify various spectroscopic techniques. 4.3 Understand Beer Lambert's law. 4.4 Apply spectroscopic techniques to field of medicines and electronic industry
Associate Green Chemistry principles in product development knowledge.	5.1 Understand 12 principles of Green Chemistry 5.2 Empathize with the goal and objectives of Green Chemistry. 5.3 Apply the green chemistry principles in computing, electronics, and medicinal industry

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Sonaali Borkar		SYB	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)
Prof. Nilima Main		NSM	ISA(33.33%) + MSE(26.67%) + ESE(40%)	ISA(50%) + ESE(50%)

Slot Options for BS16 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select any one offering from L1 to L2
- For Practical (Lab.), please select any one offering from P1 to P6
- Please Update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	SYB	S14 & S15		11:15 am – 1:15 pm				
	NSM	S24 & S25			11:15 am – 1:15 pm			
Practical (Lab)	SYB	S26 & S27			1:45 pm – 3:45 pm			
		S34 & S35				11:15 am – 1:15 pm		
		S46 & S47					1:45 pm – 3:45 pm	
	NSM	S26 & S27		1:45 pm – 3:45 pm				
		S36 & S37				1:45 pm – 3:45 pm		
		S44 & S45					11:15 am – 1:15 pm	

Self-Study Activity

Engineering Chemistry is the science of engineering Materials and Applications. Students will be given case studies, students' presentation subtopics and MOOCs on various topics for which 2 hours weekly self-study is recommended.

ES01	**Engineering Graphics** (Recommended in Sem. 1) (Typically offered in Fall and Spring)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	**M**andatory	**M**andatory	**M**andatory

Course Category	**Engineering Science (ES)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	-
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can:**
1. Understand conventional method and usage of CAD software.	1.1 Draw given drawing using AutoCAD software 1.2 Recognize advantages of AutoCAD over manual drawing
2. Apply the basic principles of projections and visualization to communicate ideas graphically.	2.1 Express idea into detailed pictorial view
3. Construct the drawing of curves, points, straight lines, and planes using concept of projections.	3.1 Draw various Engineering Curves as per the conditions given 3.2 Draw normal and tangent to curve at any given point 3.3 Draw projection of lines 3.4 Draw projection of planes
4. Interpret the three-dimensional pictorial objects and represent in two-dimensional views.	4.1 Draw orthographic Projection using given 3D diagram 4.2 Visualize 3D into 2D
5. Construct three dimensional shapes from two dimensional views using the concept of projections.	5.1 Draw isometric projection from given 2D diagram 5.2 Visualize 2D into 3D

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Govind Mali		GM	ISA(20%) + MSE(30%) + ESE(50%)	ISA(50%)+ESE(50%)
Prof. Rupesh Parthe		RMP	ISA(20%) + MSE(30%) + ESE(50%)	ISA(50%)+ESE(50%)

Slot Options for ES01 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select any one offering from L1 to L3
- For Practical (Lab.), please select any one offering from P1 to P9
- Please update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	GM	S02 & S03	9 am – 11 am					
		S24 & S25			11.15 am – 1.15 pm			
	RMP	S44 & S45					11.15 am – 1.15 pm	
Practical (Lab.)	GM	S18 & S19		4 pm – 6 pm				
		S26 & S27			1.45 pm – 3.45 pm			
		S34 & S35				11.15 am – 1.15 pm		
		S38 & S39				4 pm – 6 pm		
		S42 & S43					9 am – 11 am	
		S46 & S47					1.45 pm – 3.45 pm	
	RMP	S12 & S13		9 am – 11 am				
		S14 & S15		11.15 am – 1.15 pm				
		S46 & S47					1.45 pm – 3.45 pm	

Self-Study Activity

Engineering Graphics subject deals with visualization of any object either in 2D or 3D form. So by using advanced tools of AutoCAD software students will be making 3D printer ready models in AutoCAD software.

ES02	**Engineering Mechanics** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	--	--	**M**andatory	**M**andatory	**M**andatory

Course Category	**Engineering Science (ES)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	-
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can:**
1. Ability to understand and analyze forces, force systems and equilibrium.	1.1 Draw FBD from the given system. 1.2 Recognize the type of forces acting and the type of force system. 1.3 Able to find the Resultant of the force system.
2. Understand and verify law of Moments.	2.1 Able to recognize the sense of moment.
3. Determine the centroid of plane lamina.	3.1 Able to locate centroid of plane composite lamina. 3.2 Able to apply the centroid concept in real-life applications.
4. Evaluate co-efficient of friction between the different surfaces in contact.	4.1 Able to recognize the direction of Frictional force. 4.2 Able to apply the positive side of friction in real-life applications. 4.3 Appreciate efforts taken by design engineer for using friction as a friend.
5. Understand and apply basic concepts of Kinematics of particles and kinematics of rigid bodies.	5.1 Able to apply the kinematics equation of motion to real-life applications. 5.2 Using kinematic equations for designing ADAS system.

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Rupesh Parthe		RMP	ISA(20%) + MSE(30%) + ESE(50%)	ISA(50%)+ESE(50%)
Prof. Manish Mishra		MSM	ISA(20%) + MSE(30%) + ESE(50%)	ISA(50%)+ESE(50%)
Prof. Ishan Upadhyay		ICU	ISA(20%) + MSE(30%) + ESE(50%)	ISA(50%)+ESE(50%)

Slot Options for ES02 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select any one offering from L1 to L5
- For Practical (Lab.), please select any one offering from P1 to P15
- Please update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	MSM	S12 & S13		9 am – 11 am				
		S34 & S35				11.15 am – 1.15 pm		
	ICU	S42 & S43					9 am – 11 am	
		S02 & S03	9 am – 11 am					
	RMP	S32 & S33				9 am – 11 am		
Practical (Lab.)	MSM	S08 & S09	4 pm – 6 pm					
		S18 & S19		4 pm – 6 pm				
		S22 & S23			9 am – 11 am			
		S26 & S27			1.45 pm – 3.45 pm			
		S38 & S39				4 pm – 6 pm		
		S46 & S47					1.45 pm – 3.45 pm	
	ICU	S18 & S19		4 pm – 6 pm				
		S26 & S27			1.45 pm – 3.45 pm			
		S28 & S29			4 pm – 6 pm			
		S38 & S39				4 pm – 6 pm		
		S46 & S47					1.45 pm – 3.45 pm	
		S08 & S09	4 pm – 6 pm					
	RMP	S26 & S27			1.45 pm – 3.45 pm			
		S28 & S29			4 pm – 6 pm			
		S34 & S35				11.15 am – 1.15 pm		

Self-Study Activity

Engineering Mechanics is the subject which deals with resultant effect of forces acting on body when body is in rest or motion. Students can develop working models on "General Plane Motion"

ES03	**Digital Electronics** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	NIL

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Optional	Optional	**M**andatory	Optional	Optional

Course Category	**Engineering Sciences (ES)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	-
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can :**
1. Understand various number systems and able to apply Boolean algebra for the implementation and minimization of logic functions.	1.1 Understand the use of number systems and codes in digital circuits. 1.2 Compute inter-conversion in the number systems 1.3 Apply the Boolean algebra to simplify the digital circuits. 1.4 Realize digital circuits using GATES by optimizing with K-map.
2. Analyse, design, and implement Combinational logic circuits using MSI chips.	2.1 Design arithmetic circuits using GATES. 2.2 Realize various algebraic functions using multiplexers, demultiplexers, decoders circuits. 2.3 Design of comparator circuits. 2.4 Implement in hardware various algebraic functions using multiplexers, demultiplexers, decoders MSI ICS
3. Analyse, design, and implement Sequential logic circuits.	3.1 Concept of Latches and Flip-Flops. 3.2 Design of asynchronous and synchronous counters. 3.3 Concept of shift registers.
4. Design and implement various counters and shift registers depending on application using MSI chips.	4.1 Comparison between Mealy and Moore Machines. 4.2 Analysis of clocked synchronous state machine. 4.3 Design of sequence detector. 4.4 Implementation of counters using MSI chips.
5. Simulate and implement basic combinational and sequential circuits using VHDL.	5.1 Features of VHDL. 5.2 Simulation of combinational and sequential circuits using VHDL code.
6. Understand TTL, CMOS logic families, PLDs, CPLD and FPGA.	6.1 Understand the usage of PLDs and PLAs in digital circuit applications. 6.2 Concept of Interfacing. 6.3 Difference in architecture of CPLD and FPGA.

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Amaya Pethe		AP	ISA(20%) + MSE(26.67%) + ESE(53.33%)	ISA(50%) + ESE(50%)

Slot Options for ES03 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select any one offering from L1 to L2
- For Practical (Lab.), please select any one offering from P1 to P6
- Please Update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	AP	S22 & S23			9 am – 11 am			
		S44 & S45					11.15 am – 1.15 pm	
Practical (Lab)	AP	S04 & S05	11.15 am – 1.15 pm					
		S16 & S17		1.45 pm – 3.45 pm				
		S12 & S13		9 am – 11 am				
		S32 & S33				9 am – 11 am		
		S36 & S37				1.45 pm – 3.45 pm		
		S14 & S15		11.15 am – 1.15 pm				

Self-Study Activity

Digital Electronics is Engineering Science subject. Students will be given practice assignments, Mini Projects, POP Quizzes, presentations on various topics for which 2 hours weekly self-study is recommended.

ES04	**Structured Programming** (Recommended in Sem. 1) (Typically offered in Odd Semester)	

Prerequisite	NIL

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	**M**andatory	**M**andatory	**M**andatory

Course Category	**Vocational and Skill Enhancement Course (VSEC)**
Competency	Skill

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	2
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can:**
1. Apply the basic building blocks of C Programming language	1.1 Understand the usage of identifiers and keywords in C programming 1.2 Identify the complete character set 1.3 Understand the different data types supported in C programming 1.4 Use expressions and operators in calculations 1.5 Understand the use of library functions and preprocessor directives 1.6 Understand and use the input/output functions offered in C programming language.
2. Apply Control Structures to provide Programming Solution to the Problem at Hand	2.1 Utilize the conditional branching operations using if-else and switch statements 2.2 Understand and utilize the loops – do while, while and for, perform nesting of loops 2.3 Understand and utilize unconditional branching using break and continue statements in programming
3. Decompose a problem using Modular Programming	3.1 Understand the usage and applicability of functions in modular programming 3.2 Declare and define function 3.3 Understand the calling methods to the functions 3.4 Utilize methods to pass the parameters to the functions 3.5 Understand the concept of local and global variables 3.6 Use storage class in programming: static, auto, extern, register 3.7 Perform recursive calling and implement recursive functions in programs

4. Demonstrate use of derived and user defined data types as per the need	4.1 Understand the concept of 1D and 2D array 4.2 Declare and use string variables in data manipulation 4.3 Use concept of structures in programming – initialization, declaration and nesting of structures 4.4 Perform operations over structures, making arrays of structure
5. Understand the concept of pointers and dynamic memory allocation/de-allocation	5.1 Understand the concept of pointers 5.2 Perform call by reference operation using pointers 5.3 Access arrays with pointer addressing and passing arrays to functions 5.4 Use array of pointers and utilize dynamic allocation of memory

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Sachin Deshpande		SDE	ISA(33.33%) + MSE(26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)
Dr. Mandar Sohani		MS	ISA(33.33%) + MS (26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)
Prof. Atul Oak		AO	ISA(33.33%) + MSE(26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)
Prof. Vaibhav Kshirsagar		VK	ISA(33.33%) + MSE(26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)
Prof. Bhanu Tekwani		BGT	ISA(33.33%) + MSE(26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)
Prof. Divya Surve		DN		ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)
Prof. Amit Aylani		ATA		ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)
Prof. Vibha Wali		VSW		ISA (50%) + ESE (50%) ISA Practical (25M) ESE Practical (25M)

Slot Options for ES04 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select any one offering from L1 to L11
- For Practical (Lab.), please select any one offering from P1 to P33
- Please Update your "My Time Table for ODD Sem. 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Lecture (Theory)	MS	S42 & S43					9 am – 11 am	
		S32 & S33				9 am – 11 am		
		S34 & S35				11.15 am – 1.15 pm		
	SDE	S04 & S05	11.15 am – 1.15 pm					
		S22 & S23			9 am – 11 am			
		S16 & S17		1.45 pm – 3.45 pm				
	AO	S24 & S25			11.15 am – 1.15 pm			
		S44 & S45					11.15 am – 1.15 pm	
	BGT	S02 & S03	9 am – 11 am					
		S12 & S13		9 am – 11 am				
	VK	S14 & S15		11.15 am - 1.15 pm				
Practical (Lab)	MS	S16 & S17		1.45 pm – 3.45 pm				
	MS	S22 & S23			9 am – 11 am			
	MS	S46 & S47					1.45 pm – 3.45 pm	
	SDE	S02 & S03	9 am – 11 am					
	SDE	S36 & S37				1.45 pm – 3.45 pm		
	SDE	S42 & S43					9 am – 11 am	
	AO	S16 & S17		1.45 pm – 3.45 pm				
	AO	S22 & S23			9 am – 11 am			
	AO	S34 & S35				11.15 am – 1.15 pm		
	VK	S04 & S05	11.15 am – 1.15 pm					
	VK	S16 & S17		1.45 pm – 3.45 pm				
	VK	S42 & S43					9 am – 11 am	
	VK	S44 & S45					11.15 am – 1.15 pm	
	BGT	S16 & S17		1.45 pm – 3.45 pm				
	BGT	S18 & S19		4 pm – 6 pm				
	BGT	S26 & S27			1.45 pm – 3.45 pm			
	BGT	S36 & S37				1.45 pm – 3.45 pm		
	BGT	S44 & S45					11.15 am – 1.15 pm	
	BGT	S46 & S47					1.45 pm – 3.45 pm	
	DN	S04 & S05	11.15 am – 1.15 pm					
	DN	S34 & S35				11.15 am – 1.15 pm		
	DN	S14 & S15		11.15 am – 1.15 pm				
	DN	S16 & S17		1.45 pm – 3.45 pm				
	DN	S44 & S45					11.15 am – 1.15 pm	
	VSW	S02 & S03	9 am – 11 am					
	VSW	S24 & S25			11.15 am – 1.15 pm			
	ATA	S16 & S17		1.45 pm – 3.45 pm				
	ATA	S08 & S09	4 pm – 6 pm					
	ATA	S12 & S13		9 am – 11 am				
	ATA	S14 & S15		11.15 am – 1.15 pm				
	ATA	S24 & S25			11.15 am – 1.15 pm			
	ATA	S32 & S33				9 am – 11 am		
	ATA	S36 & S37				1.45 pm – 3.45 pm		

Self-Study Activity

Learner will write two new programs in C Language every day, compile them and make them error-free. Following this, they should execute them to check the result for test input set.

ES06	**Fundamentals of Computer Hardware and Networking** (Recommended in Sem. 1) (Typically offered in Fall)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	Optional	Optional	Optional

Course Category	**Engineering Sciences (ES)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	-
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes The Learner will :	**Assessment Criteria The Learner can :**
Understand the organization and architecture of computer systems	Assemble and disassemble computer.
Understand memory management of computer system	Demonstrate memory designing of computer system.
Understand input-output organization.	Visualize how standard peripherals communicate with computers.
To introduce concepts and fundamentals of data communication and computer networks	Demonstrate different computer networking topologies.
Understand the concept of different communication medium	Get knowledge of wired and wireless communication mediums.
Understand networking concepts with reference to different types of models and topologies, study of different networking device.	Demonstrate layered structure of computer networking like OSI model and TCP/IP model

Evaluation Scheme

Faculty		**Short Name**	**Theory**	**Practical**
Prof. Ajitkumar Khachane		ARK	ISA(25) + MSE(20) + ESE(30)	ISA(25)+ESE(25)
Prof. Kanchan Dhuri		KGD	--	ISA(25)+ESE(25)

Slot Options for ES06 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select any one offering from L1 to L3
- For Practical (Lab.), please select any one offering from P1 to P9
- Please update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	ARK	S04 & S05	11.15 am – 1.15 pm					
		S24 & S25			11.15 am – 1.15 pm			
		S34 & S35				11.15 am – 1.15 pm	.	
	TBD	S02 & S03	9 am – 11 am					
		S12 & S13		9 am – 11 am				
		S06 & S07	1.45 pm – 3.45 pm					
Practical (Lab.)	ARK	S08 & S09	4 pm – 6 pm					
		S16 & S17		1.45 pm – 3.45 pm				
		S18 & S19		4 pm – 6 pm				
		S26 & S27			1.45 pm – 3.45 pm			
		S28 & S29			4 pm – 6 pm			
		S36 & S37				1.45 pm – 3.45 pm		
		S46 & S47					1.45 pm – 3.45 pm	
	KGD	S02 & S03	9 am – 11 am					
		S34 & S35				11.15am - 1.15 pm		
	TBD	S04 & S05	11.15am - 1.15 pm					
		S12 & S13		9 am – 11 am				
		S14 & S15		11.15am - 1.15 pm				
		S24 & S25			11.15am - 1.15 pm			
		S32 & S33				9 am – 11 am		
		S38 & S39				4 pm – 6 pm		
		S42 & S43					9 am – 11 am	
		S44 & S45					11.15am - 1.15 pm	
		S48 & S49					4 pm – 6 pm	

Self-Study Activity

Fundamentals of computer Hardware and Networking subject deals with details of computer hardware and network design. By using advanced simulation tools and software like CISCO packet tracer, students can study different networking topologies and can design networking models for home, organization and university.

ES07	**Fundamentals of Logic Circuits** (Recommended in Sem. 1) (Typically offered in Fall and Spring)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	Optional	Optional	Optional

Course Category	**Engineering Sciences (ES)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	-
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can:**
Understand the various Number System.	1.1 Explain the different number systems. 1.2 Perform interconversion of different number systems.
Apply the knowledge of Number System to perform Arithmetic operations.	2.1 Explain different codes. 2.2 Perform binary arithmetic operations using 1's & 2's Complement method. 2.3 Perform BCD Addition.
Understand the basic electronics circuits & their applications.	3.1 Explain the working of Diode and Bipolar junction transistor. 3.2 Draw & explain C-E configuration of BJT & Input output characteristics. 3.3 Discuss applications of BJT.
Illustrate the working principle of logic gates.	4.1 Explain working of Logic gates using truth table. 4.2 Design & implement logic gates using universal gates.
Apply the knowledge of Boolean algebra for reduction of Boolean function.	5.1 Explain theorems & properties of Boolean Algebra. 5.2 Write Boolean function in standard SOP & POS formats. 5.3 Perform reduction of complex Boolean functions using Boolean theorems & properties.
Design and implement various combinational & sequential logic circuits.	6.1 Compare combinational circuits & Sequential circuits. 6.2 Explain working of half & full Adder & Subtractor, MUX, DEMUX, Encoder, Decoder. 6.3 Explain working of SR, JK, D & T flipflops using truth table. 6.4 Discuss various applications of flip flops.

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Kanchan Dhuri		KGD	ISA(20%) + MSE(26.67%) + ESE(53.33%)	ISA(50%) + ESE(50%)
Dr. Girish Gidaye		GGI	ISA(20%) + MSE(26.67%) + ESE(53.33%)	ISA(50%) + ESE(50%)
Prof. Anuradha Joshi		ANJ	ISA(20%) + MSE(26.67%) + ESE(53.33%)	ISA(50%) + ESE(50%)
Prof. Rajashree Soman		RAS	ISA(20%) + MSE(26.67%) + ESE(53.33%)	ISA(50%) + ESE(50%)
Prof. Komal Lawand-Shinde		KSS	ISA(20%) + MSE(26.67%) + ESE(53.33%)	ISA(50%) + ESE(50%)
Dr. Sangeeta Joshi		SJO	--	ISA(50%) + ESE(50%)
Prof. Amey Revandkar		ASR	--	ISA(50%) + ESE(50%)

Slot Options for ES07 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select anyone offering from L1 to L6
- For Practical (Lab.), please select anyone offering from P1 to P18
- Please Update your "My Time Table for Fall 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	KGD	S12 & S13		9 am – 11 am				
		S42 & S43					9 am – 11 am	
	KSS	S22 & S23			9 am – 11 am			
	TBD	S14 & S15		11:15 am – 1:15 pm				
	RAS	S34 & S35				11:15 am – 1:15 pm		
	GGI	S04 & S05	11:15 am – 1:15 pm					
Practical (Lab)	SJO	S06 & S07	1:45 pm – 3:45 pm					
		S16 & S17		1:45 pm – 3:45 pm				
		S26 & S27			1:45 pm – 3:45 pm			
	KGD	S04 & S05	11:15 am – 1:15 pm					
		S14 & S15		11:15 am – 1:15 pm				
		S24 & S25			11:15 am – 1:15 pm			
		S28 & S29			4 pm – 6 pm			
		S12 & S13				9 am – 11 am		
		S44 & S45					11:15 am – 1:15 pm	
	ANJ	S02 & S03	9 am – 11 am					
		S42 & S43					9 am – 11 am	
	RAS	S32 & S33				9 am – 11 am		
	ASR	S34 & S35				11:15 am – 1:15 pm		
		S32 & S33				9 am – 11 am		
		S36 & S37				1:45 pm – 3:45 pm		
	KSS	S12 & S13		9 am – 11 am				
		S34 & S35				01:45-03:45		
		S46 & S47					01:45-03:45	

Self-Study Activity

Fundamentals of Logic Circuits is Engineering Science subject. Students will be given practice assignments, Mini Projects, POP Quizzes, presentations on various topics for which 2 hours weekly self-study is recommended.

ES08	**Basic Electrical Engineering** (Recommended in Sem. 1) (Typically offered in Odd Semester)	

Prerequisite	NIL

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Optional	Optional	Optional	**M**andatory	**M**andatory

Course Category	**Engineering Sciences (ES)**
Competency	Knowledge

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	1	-	2
Hours/week	2	2	-	2

Course Outcome and Assessment Criteria

Learning Outcomes **The Learner will :**	**Assessment Criteria** **The Learner can :**
1. Evaluate DC Circuits using different Network Theorems.	1.1 Explain Kirchoff's Laws. 1.2 Understand the different types of circuit analysis methods, Mesh and 1.3 Nodal analysis. 1.4 Understand different network theorems and compute inter-conversion.
2. Evaluate Single Phase AC Circuits.	2.1 Distinguish the key differences between DC Circuits and AC circuits. 2.2 Understand the behavior of AC circuit components and evaluate circuits and phasor diagrams. 2.3 Understand the fundamentals of resonance with reference to electrical circuits.
3. Evaluate Three Phase AC Circuits.	3.1 Explain the relation between the single phase and three phase circuits. 3.2 Explain different line and phase parameters, inter relationships. 3.3 Understand power measurement techniques in three phase circuits.
4. Illustrate the constructional features and operation of Single-Phase Transformer.	4.1 Understand the working of single-phase transformer. 4.2 Explain the difference between ideal and practical transformer with respect to equivalent circuit and phasor diagrams. 4.3 Evaluate different types of losses and efficiency of single-phase transformer.
5. Understand different types of Electrical Machines.	5.1 Understand the concept of rotating magnetic field. 5.2 Explain different types of motors.

Evaluation Scheme

Faculty		Short Name	Theory	Practical
Prof. Javed Patel		JRP	ISA(33.33%) + MSE(26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA(50%) + ESE(50%) ISA Practical (25M) ESE Practical (25M)
Prof. Hemant Jadhav		HJA	ISA(33.33%) + MSE(26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA(50%) + ESE(50%) ISA Practical (25M) ESE Practical (25M)
Prof. Amit Maurya		AM	ISA(33.33%) + MSE(26.67%) + ESE(40%) ISA Theory (25M) MSE Theory (20M) ESE Theory (30M)	ISA(50%) + ESE(50%) ISA Practical (25M) ESE Practical (25M)

Slot Options for ES08 [Theory (Lecture) and Practical (Lab)]

- For Theory (Lecture) please select any one offering from L1 to L3
- For Practical (Lab.), please select any one offering from P1 to P9
- Please Update your "My Time Table for ODD Sem. 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Lecture (Theory)	JRP	S12 & S13		9 am – 11 am				
	HJA	S42 & S43					9 am – 11 am	
	AM	S02 & S03	9 am – 11 am					
Practical (Lab)	JRP	S24 & S25			11:15 am – 1:15 pm			
	JRP	S34 & S35				11:15 am – 1:15 pm		
	JRP	S44 & S45					11:15 am – 1:15 pm	
	HJA	S44 & S45	11:15 am – 1:15 pm					
	HJA	S16 & S17		1.45 pm – 3.45 pm				
	HJA	S12 & S13		9 am – 11 am				
	AM	S16 & S17		1.45 pm – 3.45 pm				
	AM	S22 & S23			9 am – 11 am			
	AM	S34 & S35				11:15 am – 1:15 pm		

Self-Study Activity

Learners will solve the questions (based on the topic covered in the class) given in the lecturer guide.

	Multidisciplinary Minor, Indian Knowledge System, Value Education Courses, Co-curricular Courses (Recommended in Sem. 1)	
	(Typically offered in Fall and Spring)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	**M**andatory	**M**andatory	**M**andatory

Course Category	MDM / IKS / VEC / CC
Competency	Attitude

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	2	-	-	-
Hours/week	2	-	-	-

Course Outcome and Assessment Criteria

- Work towards developing holistic personality through critical and creative thinking.
- Complement technical knowledge by developing diversified perspectives on various aspects of learning.
- Assessment criteria will be takeaway presentation/performance/report/essay/group work/art form etc.

Evaluation Scheme

Teacher	Theory
Guest Speaker	ISA (33%) + ESE (67%)

Program Structure

	Course Code	Course Name	MDM	IKS	VEC	CC
1	GESB02	Universal Human Values	Y		Y	
2	GEA03	Exploring Indian Art	Y	Y		
3	GESB03	Indian Traditional Knowledge System	Y	Y		
4	GEPS01	Indian Constitution	Y	Y		
5	GEA02	Various Dance Forms	Y			Y
6	GEPEW01	Wellness – Body, Mind & Spirit	Y			Y
7	GEPEW03	Nutrition and Physical Wellness	Y			Y
8	GENS01	Facets of Astronomy	Y			Y

MDM : Multidisciplinary Minor
IKS : Indian Knowledge System
VEC : Value Education Courses
CC : Co-curricular Courses

Slot Options for Theory (Lecture)

- For Theory (Lecture) please select anyone Slot
- Please update your "My Timetable for Fall 2023" sheet.

Head of Learning	Branch	Course Code	Course Name	Option	Mon	Tue	Wed	Thu	Fri	Sat
Theory (Lecture)	ALL	GEA03	Exploring Indian Arts	S08 & S09	4 pm – 6 pm					
	ALL	GEPEW01	Wellness: Body, Mind and Spirit	S08 & S09	4 pm – 6 pm					
				S18 & S19		4 pm – 6 pm				
	ALL	GESB02	Universal Human Values	S18 & S19		4 pm – 6 pm				
				S28 & S29			4 pm – 6 pm			
	ALL	GESB03	Indian Traditional Knowledge System	S18 & S19		4 pm – 6 pm				
	ALL	GEPEW03	Nutrition and Physical Wellness	S28 & S29			4 pm – 6 pm			
				S38 & S39				4 pm – 6 pm		
	ALL	GENS01	Facets of Astronomy	S28 & S29			4 pm – 6 pm			
	ALL	GEPS01	Indian Constitution	S38 & S39				4 pm – 6 pm		
	ALL	GEA02	Various Dance Forms	S38 & S39				4 pm – 6 pm		

	Innovation Lounge /Library Hour (Mandatory in Sem. 1)	
	(Typically offered in Fall and Spring)	

Prerequisite	--

Course Nature (i.e. Program Requirement)	INFT	CMPN	EXCS	EXTC	BIOM
	Mandatory	**M**andatory	**M**andatory	**M**andatory	**M**andatory

Course Category	-
Competency	Skills

Scheme				
Head of Learning	Theory (Lecture)	Practical (Lab.)	Tutorial	Self-Study
Credits	-	-	-	-
Hours/week	2	-	-	2

About

This course will be a mandatory Value Added Certificate Course (audit). Every week 2 hours will be spent by every student alternating between Innovation Lounge and Library (If in a week, 2-hour slot is spent in Innovation Lounge, next week 2-hour slot will be spent in Creative Thinking/Discussion.

Student teams will work on creative thinking, idea generation, discussion, and mini project work. By the end of the semester, the teams would present their mini project work. On successful culmination of the activity, certificate of completion would be awarded for this Value Added Certificate Course.

Course Outcome and Assessment Criteria

Learning Outcomes The Learner will :	**Assessment Criteria The Learner can :**
1. Discuss on ideas and innovations, watch inspiring and informative videos, search for opportunities through Make in India.	1. Generate ideas, finalize in consultation with projects and prepare a plan of action for executing the same.
2. Be involved in hands-on learning through Mini Projects, explore and review gadgets, work on DIY projects	2. Work on Mini Projects in Innovation Lounge and prepare progress report validated by guide from time to time.
3. Participate in discussions with professors, alumni and seniors and gain industry exposure through talks, online interactions, field visits	3. Utilize Innovation Lounge /Library Hour to network and take inputs on project and make a note of the same. Participate in seminars, guest lectures.
4. Work towards culmination of project.	4. Display project work, take feedback, and earn a certificate.

Evaluation Scheme

Faculty	Evaluation
Innovation Lounge Faculty and Senior Faculty from respective Departments	Plan of Action Progress Report Display of project work Value Added Course Certification

Slot Options for BS02 [Theory (Lecture) and Tutorial]

- For Theory (Lecture) please select any one offering from L1 to L5
- Please Update your "My Time Table for Winter 2023" sheet.

Head of Learning	Faculty (Short Name)	Option	Mon	Tue	Wed	Thu	Fri	Sat
Practical		S42 & S43					9 am – 11 am	
		S36 & S37				1.45 pm – 3.45 pm		
		S34 & S35				11.15 am – 13.15 pm		
		S32 & S33				9 am – 11 am		
		S24 & S25			11.15 am – 13.15 pm			
		S22 & S23			9 am – 11 am			
		S04 & S05	11.15 am – 13.15 pm					
		S02 & S03	9 am – 11 am					
		S16 & S17		1.45 pm – 3.45 pm				
		S44 & S45					11.15 am – 13.15 pm	
		S26 & S27			1.45 pm – 3.45 pm			

My Timetable for Fall 2023

Name : _____ Class & Division : _____ Roll Number : _____

Please enter the Courses selected in the Table below.

This Sem.	Course 1	Course 2	Course 3	Course 4	Course 5	Course 6	Course 7	Course 8

		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
9 am to 11 am	Course						
	Faculty						
	Room No.						
11.15 am to 1.15 pm	Course						
	Faculty						
	Room No.						
1.45 pm to 3.45 pm	Course						
	Faculty						
	Room No.						
4 pm to 6 pm	Course						
	Faculty						
	Room No.						

Vidyalankar Institute of Technology
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