Vidyalankar Institute of Technology

An Autonomous Institute affiliated to University of Mumbai

Bachelor of Technology

in

Electronics and Computer Science

Programme Structure (R-2025)

(As per NEP 2020, with effect from the Academic Year 2025-26)

Preamble

The National Education Policy (NEP) framework aims to break the mould from teacher centric to student centric educational practices. It empowers the students with flexibility in terms of choosing courses across different faculties and mode of learning.

This multidisciplinary approach will encourage learners to follow their passion and inherent interests. The learner is free to learn at a pace that he is comfortable with, and this enables lifelong learning. It also enhances the scope for holistic personality development.

This premise is truly reflected in preamble of the NEP document, "The future of nation is decided in the classrooms of the schools and colleges today".

Details of implementation:

NEP curriculum framework enables us to accelerate change, redesign systems with equity in mind, respond to feedback, encourage collaboration, catch and pollinate ideas and create a culture of research and development. It will allow us to offer the required academic flexibility which will focus on improving competency level of students with diverse strengths.

The curriculum planned by VIT has vertical Program Courses consisting of Programme core courses (PCC) of branch of engineering positioned and sequenced to achieve sequential and integral learning of the entire breadth of the specific branch. This vertical also includes Programme elective courses (PEC) which offer flexibility and diversity to learners to choose specialization from a basket of recent developments in their field of technology. The selection of unique Programme elective courses based on industrial requirements and organizing them into tracks is a special feature of this curricula ensuring employability.

The vertical Multidisciplinary Courses consists of Open Elective (OE) courses and multidisciplinary minor (MD M) courses. Special vocational and skill development courses are included as a part of Skill courses vertical that make student capable to work in industrial environment.

The student is expected to demonstrate their ability through course in Experiential Learning Courses vertical like internships/On Job Training, Community Engagement Project, Real Industry Project/ research problem. Our curriculum also introduces Social Service Internship and Internship with institutes abroad along with courses like Design Thinking. This will lead to creation of products and/ or patents through this program.

For holistic development of students, apart from technical courses, Ability Enhancement Courses, Entrepreneurship/Economics/Management Courses, Indian Knowledge System and Value Education courses from vertical Humanities and Social Science and Management develop the required soft-skills and attitude amongst learners.

In Liberal Learning vertical. courses like Various Dance Forms, Global citizenship Education, Facets of Astronomy etc. aims to create balance in brain hemispheres and hence improve learners' clarity in thoughts and responses.

In addition, our framework offers Honors/ Honours by Research/ Double Minor (Multidisciplinary Minor and Specialization Minor) degree in each UG programme of engineering. It includes specialized courses along with field/ domain study that make student capable of working on industry relevant problems.

Chairperson, Board of Studies
Department of Electronics and Computer Science
Vidyalankar Institute of Technology

Chairperson, Academic Council
Vidyalankar Institute of Technology

About Electronics and Computer Science Department

Established in year 1999 as Electronics Engineering and subsequently has been titled as Electronics and Computer Science (EXCS) to reflect the evolving interdisciplinary focus and integration of computing technologies. Electronics and Computer Science Department currently offers an undergraduate (B.Tech.) programme with intake of 120 students

The Department of Electronics and Computer Science is committed to pioneering innovation and technical excellence, preparing students for dynamic careers in the rapidly evolving technology sector. Through a blend of rigorous academic coursework, cutting-edge research, and hands-on experience, we cultivate skilled engineers equipped to address complex real-world challenges. Our curriculum emphasizes critical thinking, problem-solving, and collaboration, fostering adaptability and creativity. We strive to create a vibrant learning environment that inspires students to push boundaries and contribute meaningfully to technological advancements.

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Vision

To be recognized as a Centre of Excellence in the field of Electronics and Computer Science where learners are nurtured in scholarly environment to evolve into competent Electronics and Computer Science. Professionals to be benefit society.

Mission

Evolve a curriculum which emphasizes on strong engineering fundamentals with the flexibility to choose advanced courses of interest and gain exposure to tools and techniques in Electronics and Computer Science.

Encourage a teaching-learning process in which highly competent faculty share a symbiotic association with the 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 centre of excellence to enhance academia – industry partnership and work on collaborative projects.

Programme Educational Objectives

To enable the pursuit of knowledge in the field of Electronics and Computer Science and contribute to the profession and employability of the students.

To engage in research, generate the employment through entrepreneurship and work effectively in multidisciplinary environment.

To understand the human, social, ethical and environmental context of their profession and contribute positively to the needs of individuals and society at large.

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Programme Outcomes

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

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

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

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

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

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

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

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

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

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

PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments

PO12: Life-long Learning: Recognize the need for, and have the preparation and ability to engage in the independent and life-long learning in the broadest context of technological change

Programme Specific Outcomes

PSO1 (Professional Skills): Apply technical knowledge and modern engineering tools to develop efficient and reliable solutions in Electronics and Computer Science, while demonstrating professional skills such as teamwork, communication, critical thinking, and ethical responsibility in multidisciplinary environments.

PSO2 (Problem-Solving Skills): Develop the ability to analyse complex problems in Electronics and Computer Science, design innovative solutions using appropriate methodologies, and implement them effectively to address real-world challenges.

PSO3 (Successful Career and Entrepreneurship): Equip graduates with the knowledge and skills to pursue successful careers in industry, research, and academia, as well as to innovate and undertake entrepreneurial ventures in Electronics and Computer Science fields.

Laboratory Infrastructure

The Department of Electronics and Computer Science at Vidyalankar Institute of Technology, Mumbai, features a robust and advanced laboratory infrastructure that promotes hands-on learning, innovation, and research. These labs are designed to support diverse technical domains, equipping students with essential skills and practical expertise for academic and professional success.

Equipped with cutting-edge hardware, software, and tools, each facility provides an ideal setting for tackling complex challenges and exploring modern technologies. Aligned with industry standards, these laboratories bridge theoretical knowledge with practical applications

Highlights of the Laboratories

1. **Lab 05 - Algorithmix Lab**
   The Algorithmix Lab focuses on advancing algorithmic and computational skills through hands-on research in data structures, AI, and data analytics. Equipped with high-performance workstations and tools like Python, MATLAB, and Arduino, it bridges academic learning with real-world applications. Key projects include sentiment analysis and medical predictive modelling.
2. **Lab 12 - Cyber-Physical Systems Lab**
   This lab integrates computational algorithms with physical systems for domains like smart grids and autonomous vehicles. It emphasizes adaptive control, interdisciplinary collaboration, and sustainability. Facilities include sensor networks and embedded systems tools, supported by faculty expertise in CPS challenges.
3. **Lab 14 - Prototyping Lab**
   A practical lab for electronic circuit design, embedded systems, and IoT prototyping. It offers tools like Proteus, Raspberry Pi, and oscilloscopes to foster innovation. Students engage in ideation-to-prototype projects, supported by courses in circuit analysis and data structures.
4. **M201 - VLSI Design Lab**
   A hub for VLSI research, focusing on energy-efficient circuits and semiconductor design using Cadence, Xilinx, and MATLAB. Design ports and FPGA programming, analog/digital circuit design, and collaborates with foundries like SCL Chandigarh. Recent projects include RISC processors and Vedic multipliers.

5. **Creative and Collaborative Innovation Spaces**
   The Ideation & Innovation Hub fosters brainstorming and prototyping in a collaborative environment. The Common Browsing Facility provides shared access to advanced technology, sparking cross-disciplinary creativity.
6. **Professional and Communication Development**
   The Professional Communication Laboratory enhances communication skills through training and simulations, enabling confident and effective workplace interactions.

Our laboratories are dynamic centres for innovation and research, fostering interdisciplinary collaboration, project development, and industry partnerships. These state-of-the-art facilities enable students and faculty to drive transformative projects, pushing the boundaries of Electronics and Computer Science and contributing significantly to technological advancements.

Industry Collaboration

In alignment with our vision to bridge the gap between academic learning and industry practices, our institution has established strategic collaborations with leading organizations such as **Excelr, Sewa Sahayog, TNC, Centre for Social and Behavior Change Communication, Semiconductor Laboratory (Chandigarh), Cambridge University (UK), Vihangam, and Go Green Technologies**. These partnerships reflect our commitment to fostering a dynamic and immersive learning environment that prepares students for real-world challenges and emerging opportunities.

Through these collaborations, students gain unparalleled access to **internship programs, specialized training modules, value-added courses, and project-based learning experiences**. These initiatives are designed to provide hands-on exposure to industry trends, cutting-edge research, and sustainable practices, equipping graduates with the skills and competencies needed to excel in a competitive global economy.

By working closely with these industry and academic partners, we ensure our curriculum remains **relevant, innovative, and future-ready**, enabling students to engage with advanced technologies and methodologies. This approach not only enhances their professional readiness but also instils a mindset of **lifelong learning, adaptability, and social responsibility**—key attributes for success in an evolving workplace.

These collaborations span diverse domains, including **AI/data science (Excelr), social impact (Sewa Sahayog), semiconductor research (SCL Chandigarh), sustainability (Go Green Technologies), and global academic excellence (Cambridge University UK)**, ensuring holistic development for our students.

Department Collaborations and MoUs

Placements

At Vidyalankar Institute of Technology, Mumbai, the Electronics and Computer Science Department is dedicated to ensuring that our graduates transition seamlessly from academic excellence to professional success. Our robust placement program is a testament to this commitment, consistently connecting our talented students with leading industry giants and innovative startups alike.

We prioritize creating a nurturing environment where students can develop not only their technical prowess but also the soft skills essential for thriving in today's competitive job market. Through comprehensive career guidance, rigorous training sessions, and extensive internship opportunities, we equip our students with the tools they need to excel. Our dedicated placement cell works tirelessly to organize campus recruitment drives, workshops, and networking events, fostering strong relationships with top-tier employers across various sectors such as software development, data science, cybersecurity, and more.

Top Companies Recruiting

Our graduates have been placed in some of the most sought-after companies, including but not limited to:

- Tech Giants: Google, Microsoft, Amazon, Apple, Meta
- Consulting Firms: Accenture, Deloitte, Capgemini
- Sienna Telecom (Embedded systems & IoT)
- Neelam Electronics (PCB manufacturing & testing)
- IT Services and Solutions: TCS, Infosys, Wipro, HCL Technologies
- Specialized Companies: Palo Alto Networks, NVIDIA, Snowflake, Darktrace, ZScaler
- Startups and Unicorns: Swiggy, Zomato, Razorpay

These firms actively recruit for specialized roles and provide exciting career paths in emerging technologies and domains.

Specialization Tracks in Autonomy Curriculum

The Electronics and Computer Science Department at Vidyalankar Institute of Technology offers specialized tracks such as **Artificial Intelligence & Machine Learning (AIML)**, **Data Analytics (DA)**, **Cybersecurity** and **VLSI** along with the option to pursue **Advanced Honors** in these domains. These tracks align with cutting-edge industry trends, enabling students to build domain expertise and gain a competitive edge in the job market.

Possible Job Opportunities

1. **Artificial Intelligence & Machine Learning (AIML)**
    - **Designations:** Machine Learning Engineer, AI Research Scientist, Computer Vision Engineer, NLP Specialist
    - **Career Paths:** AI solution development, Research and development in AI, Autonomous systems design
    - **Estimated Salaries:** ₹6 LPA – ₹25 LPA, with senior roles exceeding ₹35 LPA in top firms
2. **Data Analytics (DA)**
    - **Designations:** Data Scientist, Data Analyst, Business Intelligence Analyst, Big Data Engineer
    - **Career Paths:** Business analytics, Predictive modeling, Data-driven strategy consulting
    - **Estimated Salaries:** ₹5 LPA – ₹18 LPA, depending on expertise and roles
3. **Cybersecurity**
    - **Designations:** Cybersecurity Analyst, Ethical Hacker, Penetration Tester, Information Security Manager
    - **Career Paths:** Cyber threat analysis, Incident response management, Security infrastructure development
    - **Estimated Salaries:** ₹6 LPA – ₹22 LPA, with critical positions in high-demand sectors
4. **Internet of Things (IoT)**
    - **Designations:** IoT Solutions Architect, Embedded Systems Engineer, IoT Network Specialist, Smart Devices Developer, Industrial Automation Engineer
    - **Career Paths:** Smart city infrastructure development,Industrial IoT (IIoT) system design, Wearable technology innovation,Home automation solutions, Agricultural tech modernization
    - **Estimated Salaries:** ₹5 LPA - ₹20 LPA, with senior roles reaching ₹30+ LPA in product companies
5. **VLSI**
    - **Designations:** VLSI Design Engineer, ASIC Verification Engineer, Physical Design Engineer, FPGA Development Specialist, Semiconductor Process Engineer
    - **Career Paths**: Chip design for consumer electronics, Automotive semiconductor development, Aerospace and defence IC design, Memory and storage technology
    - **Estimated Salaries:** ₹6 LPA - ₹24 LPA, with global roles offering ₹40+ LPA

Comprehensive Placement Training

To support students in achieving these milestones, the department offers:

- Rigorous placement training sessions on aptitude, coding, and soft skills
- Industry expert-led workshops and boot camps
- Opportunities for internships and real-world project collaborations

The Electronics and Computer Science Department of Vidyalankar Institute of Technology takes pride in nurturing well-rounded professionals, ensuring graduates are well-equipped to embark on a successful career trajectory.

Internships

At Vidyalankar Institute of Technology, Mumbai, we recognize the immense value of practical experience in shaping the career paths of our students. Our internship program plays a pivotal role in bridging the gap between academic learning and real-world application. By offering students the opportunity to work with industry professionals and engage in hands-on projects, we ensure they gain invaluable insights into the latest technological advancements and industry practices.

Through internships, students not only apply their theoretical knowledge but also develop critical soft skills such as teamwork, communication, and problem-solving, which are essential for professional success. Our robust industry ties and strong placement network enable students to secure internships with leading organizations across various sectors, ranging from software development and data science to cybersecurity and digital marketing.

The internship experience empowers students to explore their interests, build their professional portfolios, and enhance their employability. By providing real-world exposure, our internship program equips students with the confidence and expertise needed to excel in the ever-evolving job market.

Higher Studies

At Vidyalankar Institute of Technology, Mumbai, we believe in empowering our students with opportunities to pursue further education in their chosen fields of interest. The rapidly evolving landscape of technology offers numerous avenues for higher studies, enabling students to deepen their knowledge and enhance their expertise. Our Electronics and Computer Science Department provides comprehensive guidance and resources to help students navigate the various options available for advanced studies. Whether it's specialized technical courses, research-oriented programs, or interdisciplinary fields like business management, we ensure our students are well-prepared for the next phase of their academic journey.

Top Universities where our students are admitted:

1. Higher Studies in Universities (India)

- **Popular Courses:** M.Tech, M.S. (Research), Postgraduate Diplomas in Data Science, Cybersecurity, Software Engineering, MBA (Master of Business Administration)
- **Top Universities:** IIT Kanpur, IIT Delhi, IIIT Hyderabad, BITS Pilani, NIT Trichy, IIM (Mumbai, Bangalore, Mysore etc.)

2. Higher Studies in Universities (Abroad)

- **Top Universities:** University of Colorado Boulder (USA), University of Rochester (USA), Institute Polytechnique de Paris (France), Northeastern University, Arizona State University (ASU), Stony Brook University (SUNY), IOWA State University (USA), Stevens Institute of Technology (USA), California State University (CSU), Illinois State University (USA), Lakehead University.
- **Popular Courses:** Master of Finance, M.Sc in Financial Analytics, Master of Information Technology, MBA (Master of Business Administration

Possible Pathways for Higher Studies:

- **M.Tech**
    - **Specializations:** Signal Processing communication and networks, Wireless information Network, Electrical Engineering, *AI & Machine Learning, Data Science, Cybersecurity, Embedded Systems, Cloud Computing, Software Engineering*
- **M.S.**
    - **Specializations:** Wireless information Network, Electrical Engineering, Computer Science, , Information Technology
- **MBA (Master of Business Administration)/ PGDM (Postgraduate Diploma in Management)**
    - Specializations: Information Technology Management, Finance Analytics, Product Management
    - Leading Business Schools: IIMs (Indian Institutes of Management), ISB (Indian School of Business), XLRI, Harvard Business School, Stanford Graduate School of Business

Entrance Exams for Higher Studies:

- GATE (for M.Tech./ MS in India)
- GRE (for MS abroad)
- TOEFL/IELTS (for specific foreign countries)
- CAT (for MBA in India)
- CET (for MBA/MMS)
- GMAT (for MBA abroad)

Guidance and Support for Higher Studies

The Department of Electronics and Computer Science provides dedicated Higher Studies Committee, helping students make informed decisions about their higher education options. We offer:

- **Expert Sessions** from alumni and industry professionals who have pursued higher studies
- **Application Assistance** for entrance exams, university applications, and scholarships
- **Preparation for Standardized Exams** (GATE, GRE, TOEFL, IELTS, etc.)
- **Research Opportunities** to help students develop a strong academic profile for higher studies

With the right guidance and support, our students are well-equipped to excel in the global academic landscape, whether they choose to continue their technical education, venture into interdisciplinary fields, or pursue leadership roles in business.

Professional Bodies and Student Chapters

The department of Electronics and Computer Science has two technical student chapter committees for organizing technical activities, seminars and workshops to hone the skillset of students trying to excel in their specific domain of interest. Students have the liberty to take part as well as hold the office for these committees in college.

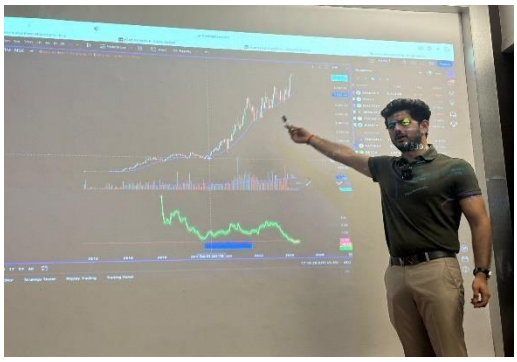
1. Institute of Electrical and Electronics Engineers (IEEE)
2. Electronics and Computer of Students Assosiation (ECSA)

Students of Electronics and Computer Science Department are also members and hold positions in other professional bodies that are managed by other departments which includes

1. Institution of Electronics and Telecommunication Engineers (IETE)
2. Fintech Committee

Various technical activities at Department of Electronics and Computer Science, VIT include Events, Workshops, Seminars, Guest Lectures, Internship Opportunities, Industry Exposure and Industrial visits for the students as well as faculty members. Such holistic approach along with academics help students nourish their soft skills and have a demand over their oratory, management and technical skills.

Event Glimpses:






Research

The Department of Electronics and Computer Science.at Vidyalankar Institute of Technology, Mumbai, actively drives impactful research through publications in reputed journals and conferences, fostering innovation and technological advancements. With a focus on Intellectual Property Rights (IPR), the department has achieved several Indian patents and copyrights while collaborating on consultancy projects with industries and institutes.

Revenue generation through testing, consultancy, training programs, and workshops contributes significantly to the department's growth. Participation in STTPs, FDPs, and professional workshops ensures continuous development of faculty and students. These initiatives underscore the department's commitment to excellence in research, innovation, and industry collaboration.

To promote the research environment, we have IEEE library subscription, and Turnitin for plagiarism checks. Many of our department faculties have presented in renowned National and International Conference and published papers in Scopus/SCI/UGC care indexed journals. Many of our faculties also serve as reviewer in Scopus indexed journals. The combination of Faculty Experience and the student's synergy has set the momentum and will enable us to cross the milestones.

Vidyalankar Institute of Technology, Mumbai, is marked by significant achievements and impactful contributions:

1. **Research Funding:**
    - **Funding Agencies:** ISRO, TIH IIT Bombay, TIFR, and the University of Mumbai.
    - **Total research grants:** ₹1.4 crores.

2. **Publications and Intellectual Property:**
    - **Patents (Granted/Published/Filed):** More than 30 patents, including international patents granted in **Australia, Germany, and the UK**.
    - **Publications:** Over 1000 research papers in reputed journals and conferences.
3. **Research Collaborations:**
   The department has established partnerships with renowned institutions, including:
    - University of Cambridge, UK
    - Monash University, Australia
    - Toledo University, USA
    - Macquarie University, Australia
    - IIT Bombay
4. **Industry Engagement:**
    - **Memoranda of Understanding (MoUs):** Over 30 collaborations with leading industries to foster innovation, internships, and skill development.

Through its robust research ecosystem, the department continues to make meaningful advancements, contributing to academia, industry, and society while preparing students and faculty for global leadership in technology.

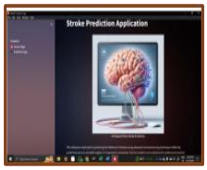
Student Projects

The Department of Electronics and Computer Science at Vidyalankar Institute of Technology, Mumbai, places a strong emphasis on project-based learning, enabling students to transform theoretical knowledge into practical solutions. Our student projects reflect creativity, innovation, and technical expertise, and are often developed in collaboration with industry experts who provide valuable feedback and guidance. This interaction ensures that the projects meet real-world industry standards and address current technological challenges.

Students actively participate in various national and international competitions, where they showcase their skills and earn recognition for their problem-solving abilities. Additionally, many of our students engage in research projects, contributing to academic advancements with research papers presented at reputed conferences and published in journals. Several projects have also led to patents and copyrights, demonstrating our students' ability to innovate and create valuable intellectual property.

The success of these projects is rooted in the rigorous teamwork and collaborative approach fostered within the department. Working together, students develop not only technical skills but also essential soft skills like communication, leadership, and project management, preparing them for successful careers in the tech industry. Through their projects, our students continue to set new benchmarks of excellence and contribute significantly to the field of Electronics and Computer Science. Few highlights are seen below:

Team C0decr4ft from BE ETRX emerged as winners in the Smart India Hackathon (SIH) for solving the problem statement provided by the Ministry of Jal Shakti. Under the theme 'Smart Education' and the Software category (PS Number: SIH1698), they developed a web based educational game focused on groundwater conservation and management.
Team members: - Harshal Chavan, Ajinnkya Birari, Abhay Pandey, Atharva Aurangabadkar, Saily Dhaigude, Shital Shingade
Team Mentor: Prof. Nisy Elsa Mathew



Two innovative healthcare solutions: **Stroke Predictor** and **Voice Disorder Detection Tool** were developed by BE Student Nitin Pal under the expert guidance of Dr. Girish Gidaye. These tools aim to contribute to early diagnosis and preventive healthcare through the integration of technology and medical expertise.

Third Year (TE) students were shortlisted for the National-level Smart India Hackathon (SIH) 2024, held in Hyderabad, marking a significant achievement in innovation and problem-solving at a prestigious national platform.
Team members: Sameer Shelar, Garv Hingad, Mannan Naidu, Aryan Manbe
Team Mentor: Prof. Uma Jaishankar

Student Achievements

The Department of Electronics and Computer Science.at Vidyalankar Institute of Technology, Mumbai, is dedicated to the holistic development of its students. Our students excel academically, securing top ranks in university exams and contributing to research and innovation through technical projects and papers presented at conferences.

In addition to academics, our students actively participate in co-curricular activities, such as workshops, hackathons, coding competitions, and seminars, where they apply their knowledge and stay updated on emerging technologies. They also engage in a wide range of extra-curricular activities, winning accolades in sports, cultural events, and leadership roles.

Moreover, many of our students gain admission to prestigious universities worldwide, including the University of Stuttgart and IITs, for higher studies. The consistent achievements of our students reflect the department's commitment to nurturing well-rounded individuals who are poised to make significant contributions to the tech industry and beyond. Few of them are mentioned below:

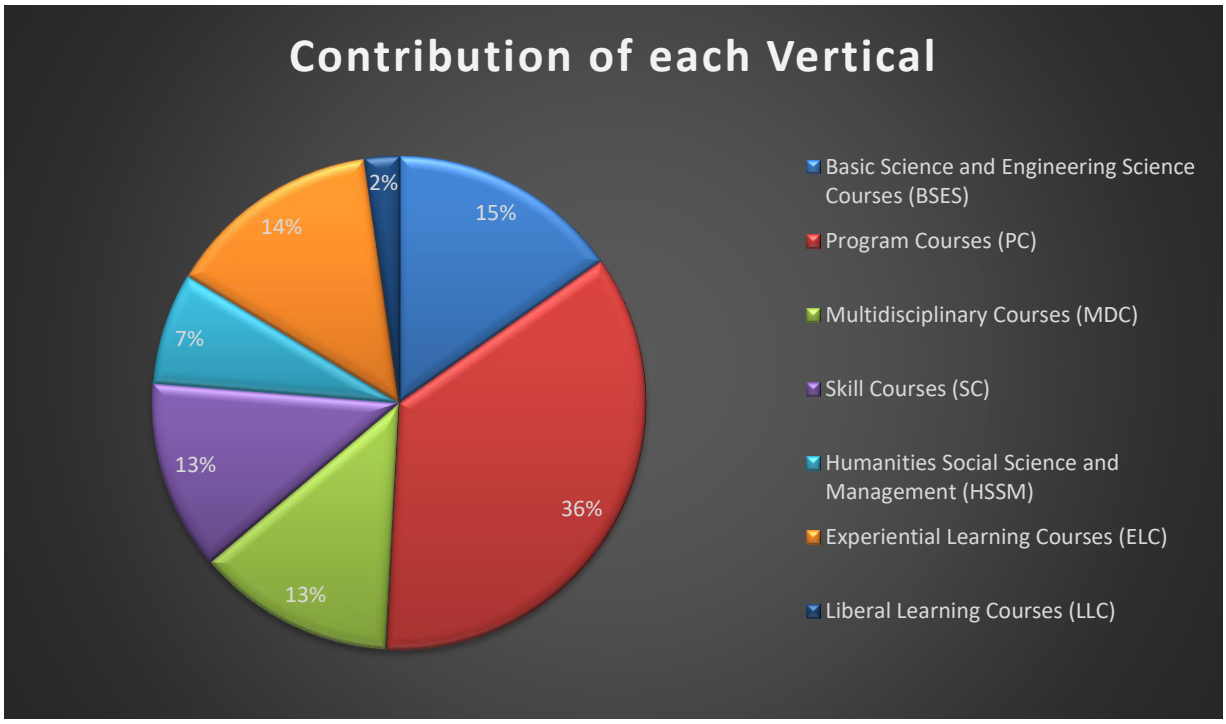
Ms. Maitri Dalvi secured First Place at the Pulse Generative AI Hackathon, organized by the Aditya Birla Group and the Office of Ananya Birla (OAB), held during Techfest 2024 at the Indian Institute of Technology, Bombay. Her achievement highlights exceptional innovation and expertise in the field of Generative AI.

Third-Year students Shivam Padwal, Harshad Bokphode, Anushree Bhagwatkar, and Gaurav Kale secured First Place in Ideathon 2025, a competitive innovation event held at Fr. C. Rodrigues College of Engineering (FrCRCE), Vashi. Their achievement showcases creativity, teamwork, and problem-solving excellence.

Mr. Nikhil Malankar, a Third-Year student, won the Gold Medal in the U-54 kg weight category at the 3rd Open National Taekwondo Championship 2025. His achievement reflects commendable dedication and excellence in sports at the national level.

CREDIT ALLOTMENT

Sr. No.	Verticals		Sub-Verticals	Minimum Credits Required	Offered Credits
1	Basic Science and Engineering Science Courses (BSES)	1.a	Basic Science Courses (BSES_BSC)	15	15
		1.b	Engineering Science Courses (BSES_ESC)	12	12
2	Program Courses (PC)	2.a	Programme Core Course (PC_PCC)	45	45
		2.b	Programme Elective Course (PC_PEC)	18	66
3	Multidisciplinary Courses (MDC)	3.a	Multidisciplinary Minor (MDC_MDM)	14	17
		3.b	Open Elective (MDC_OE)	09	22
4	Skill Courses (SC)		Vocational and Skill Enhancement Course (SC_VSEC)	09	08
5	Humanities Social Science and Management (HSSM)	5.a	Ability Enhancement Course (HSSM_AEC)	05	14
		5.b	Entrepreneurship/ Economics/ Management Course (HSSM_EEMC)	03	11
		5.c	Indian Knowledge System (HSSM_IKS)	02	06
		5.d	Value Education Course (HSSM_VEC)	03	13
6	Experiential Learning Courses (ELC)	6.a	Research Methodology (ELC_RM)	03	03
		6.b	Comm. Engagement Project / Field Project (ELC_CEPFP)	02	03
		6.c	Project (ELC_PRJ)	08	06
		6.d	Internship/ OJT (ELC_IOJT)	12	12
7	Liberal Learning Courses (LLC)		Co-Curricular Courses (LLC_CC)	04	12
Total				**164**	**264**



Award of Degree

Learner is expected to successfully complete requirement of 161 credits (with minimum credits under each vertical and/or sub-vertical as mentioned above) for award of degree "B.Tech. in Computer Engineering".

Definition of Credit

Duration	Credit
1 Hr. Lecture (L) per week or 15 hours in a semester	1
1 Hr. Tutorial (T) per week or 15 hours in a semester	1
1 Hr. Practical (P) per week or 15 hours in a semester	0.5
30 hours of Internship/ OJT/ CEP/ FP in a semester	1

Learners can choose to avail

i) B.Tech. in Electronics and Computer Science - Honors and Multidisciplinary Minor" degree or
ii) B.Tech. in Electronics and Computer Science - Honours with Research and Multidisciplinary Minor" degree or
iii) B.Tech. in Electronics and Computer Science - with Double Minors (Multidisciplinary and Specialization Minor)" degree

by completing requirements of additional 18 credits, which will be over and above the 164 credits required for "B.Tech. with Multidisciplinary Minor" degree. Details of additional 18 credits are stated in Honours/ Minor Document.

Courses Under Various Verticals/ Sub-Verticals

I. Basic and Engineering Science Courses (BSES)

a. Basic and Engineering Science Courses>Basic Science Courses (BSES_BSC)
Minimum Credits Required = 15

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	iSummer	Winter					Theory	Practical	Tutorial		
1	BSC02*	Engineering Mathematics-I	√	-	-	-	NIL	BSC04	5	K	3	-	-	3	1
2	BSC04*	Engineering Mathematics-II	-	√	-	-	BSC02	BSC06	5	K	3	-	-	3	2
3	BSC06*	Engineering Mathematics-III	√	-	-	-	BSC02, BSC04	OEC10	6	K	3	-	-	3	3
4	BSC10T*	Engineering Physics	√	-	-	-	NIL	NIL	5	K	2	-	-	2	1
5	BSC10P*	Engineering Physics Lab	√	-	-	-	NIL	NIL	5	S	-	2	-	1	1
6	BSC11T*	Engineering Chemistry	-	√	-	-	NIL	NIL	5	K	2	-	-	2	2
7	BSC11P*	Engineering Chemistry Lab	-	√	-	-	NIL	NIL	5	S	-	2	-	1	2
Total Offered Credits														**15**	

***Courses exempted for Direct Second Year (DSY) students who will secure admission through lateral entry from the A.Y. 2026-27 onwards.**

b. Basic and Engineering Science Courses>Engineering Science Courses (BESC_ESC)
Minimum Credits Required = 12

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	ESC01T*	Engineering Graphics	√	-	-	-	NIL	NIL	5	K	2	-	-	2	1
2	ESC01P*	Engineering Graphics Lab	√	-	-	-	NIL	NIL	5	S	-	2	-	1	1
3	ESC02T*	Engineering Mechanics	√	-	-	-	NIL	NIL	5	K	2	-	-	2	1
4	ESC02P*	Engineering Mechanics Lab	√	-	-	-	NIL	NIL	5	S	-	2	-	1	1
5	ESC03T*	Digital Logic Circuit	√	-	-	-	NIL	ESC09T	5	K	2	-	-	2	1

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
6	ESC03P*	Digital Logic Circuit Lab	√	-	-	-	NIL	ESC09P	5	S	-	2	-	1	1
7	ESC09T	Computer Organization and Architecture	-	√	-	-	ESC03	ESC11	5	K	2	-	-	2	4
8	ESC09P	Computer Organization and Architecture Lab	-	√	-	-	ESC03	ESC11	5	S	-	2	-	1	4
Total Offered Credits														**12**	

***Courses exempted for Direct Second Year (DSY) students who will secure admission through lateral entry from the A.Y. 2026-27 onwards.**

II. Programme Courses (PC)

a. Programme Courses>Programme Core Courses (PC_PCC)
Minimum Credits Required = 45

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	PCEC01T	Electronic Devices and Circuits	√	-	-	-	BSC10T	PCEC08T	6	K	2	-	-	2	3
2	PCEC01P	Electronic Devices and Circuits Lab	√	-	-	-	BSC10P	PCEC08P	6	S	-	2	-	1	3
3	PCEC02T	Electrical Circuit Analysis	√	-	-	-	BSC10T	PCEC04T	6	K	2	-	-	2	3
4	PCEC02P	Electrical Circuit Analysis Lab	√	-	-	-	BSC10P	PCEC04T	6	S	-	2	-	1	3
5	PCEC03T	Data Structures	√	-	-	-	VSEC01T	PCEC10T	6	K	2	-	-	2	3
6	PCEC03P	Data Structures Lab	√	-	-	-	VSEC01P	PCEC10P	6	S	-	2	-	1	3
7	PCEC04T	Control Systems Engineering	-	√	-	-	BSC04	PEEC11T	6	K	2	-	-	2	4
8	PCEC04P	Control Systems Engineering Lab	-	√	-	-	BSC04	PEEC11P	6	S	-	2	-	1	4

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
9	PCEC05T	Signals and Systems	-	√	-	-	BSC06	PCEC15T	6	K	2	-	-	2	4
10	PCEC05P	Signals and Systems Lab	-	√	-	-	BSC06	PCEC15P	6	S	-	2	-	1	4
11	PCEC06T	Web Technology	-	√	-	-	VSEC04T	PEEC22T	6	K	2	-	-	2	4
12	PCEC06P	Web Technology Lab	-	√	-	-	VSEC04P	PEEC22P	6	S	-	2	-	1	4
13	PCEC07T	Database Management System	-	√	-	-	PCEC06T	PEEC02T	6	K	2	-	-	2	4
14	PCEC07P	Database Management System Lab	-	√	-	-	PCEC06P	PEEC02P	6	S	-	2	-	1	4
15	PCEC08T	Basic VLSI Design	√	-	-	-	PCEC01T	PEEC08T	7	K	2	-	-	2	5
16	PCEC08P	Basic VLSI Design Lab	√	-	-	-	PCEC01P	PEEC08P	7	S	-	2	-	1	5
17	PCEC09T	Microcontroller and Applications	√	-	-	-	ESC09T	PEEC11T	7	K	2	-	-	2	5
18	PCEC09P	Microcontroller and Applications Lab	√	-	-	-	ESC09P	PEEC11P	7	S	-	2	-	1	5
19	PCEC10T	Operating System	√	-	-	-	PCEC03T	PEEC14T	7	K	2	-	-	2	5
20	PCEC10P	Operating System Lab	√	-	-	-	PCEC03P	PEEC14P	7	S	-	2	-	1	5
21	PCEC11T	Analysis of Algorithms	√	-	-	-	PCEC03T	PCEC12T	7	K	2	-	-	2	5
22	PCEC11P	Analysis of Algorithms Lab	√	-	-	-	PCEC03P	PCEC12P	7	S	-	2	-	1	5
23	PCEC12T	Theory of Computer Science	-	√	-	-	PCEC11T	PEEC17T	7	K	2	-	1	3	6
24	PCEC13T	Computer Networks	-	√	-	-	ESC09T	PEEC23T	7	K	2	-	-	2	6
25	PCEC13P	Computer Networks Lab	-	√	-	-	ESC09P	PEEC23P	7	S	-	2	-	1	6
26	PCEC14T	Analog & Digital Communications	-	√	-	-	PCEC05T	PEEC15T	7	K	2	-	-	2	6

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
27	PCEC14P	Analog & Digital Communications Lab	-	√	-	-	PCEC05P	PEEC15P	7	S	-	2	-	1	6
28	PCEC15T	Digital Image Processing	-	√	-	-	PCEC05T	MDMRB02	7	K	2	-	-	2	6
29	PCEC15P	Digital Image Processing Lab	-	√	-	-	PCEC05P	MDMRB02	7	S	-	2	-	1	6
Total Offered Credits														**45**	

b. Programme Courses>Programme Elective Courses (PC_PEC)
Minimum Credits Required = 18

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	PEEC01T	Artificial Intelligence	√	-	-	-	VSEC04T	PEEC09T	7	K	2	-	-	2	5
2	PEEC01P	Artificial Intelligence lab	√	-	-	-	VSEC04P	PEEC09P	7	S	-	2	-	1	5
3	PEEC02T	Advanced Database Management	√	-	-	-	PCEC07T	PEEC14T	7	K	2	-	-	2	5
4	PEEC02P	Advanced Database Management Lab	√	-	-	-	PCEC07P	PEEC14P	7	S	-	2	-	1	5
5	PEEC03T	Modern Sensors for IOT	√	-	-	-	PCEC09T	PEEC23T	7	K	2	-	-	2	5
6	PEEC03P	Modern Sensors for IOT Lab	√	-	-	-	PCEC09P	PEEC23P	7	S	-	2	-	1	5
7	PEEC04T	Digital System Design	√	-	-	-	ESCO3T	PEEC15T	7	K	2	-	-	2	5
8	PEEC04P	Digital System Design Lab	√	-	-	-	ESC03P	PEEC15P	7	S	-	2	-	1	5
9	PEEC05T	Soft Computing	-	√	-	-	BSC06	PEEC17T	7	K	2	-	-	2	6

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
10	PEEC05P	Soft Computing Lab	-	√	-	-	BSC06	PEEC17P	7	S	-	2	-	1	6
11	PEEC06T	Data Warehousing and Mining	-	√	-	-	PEEC02T	PEEC14T	7	K	2	-	-	2	6
12	PEEC06P	Data Warehousing and Mining Lab	-	√	-	-	PEEC02P	PEEC14P	7	S	-	2	-	1	6
13	PEEC07T	Principles of IOT	-	√	-	-	PEEC03T	PEEC15T	7	K	2	-	-	2	6
14	PEEC07P	Principles of IOT Lab	-	√	-	-	PEEC03P	PEEC15P	7	S	-	2	-	1	6
15	PEEC08T	Advanced VLSI Design and Technology	-	√	-	-	PEEC04T	PEEC24T	7	K	2	-	-	2	6
16	PEEC08P	Advanced VLSI Design and Technology Lab	-	√	-	-	PEEC04P	PEEC24P	7	S	-	2	-	1	6
17	PEEC09T	Machine Learning	-	√	-	-	PEEC01T	PEEC10T	7	K	2	-	-	2	6
18	PEEC09P	Machine Learning Lab	-	√	-	-	PEEC01P	PEEC10P	7	S	-	2	-	1	6
19	PEEC10T	Probabilistic Graphical Models	-	√	-	-	PEEC09T	PEEC21T	7	K	2	-	-	2	6
20	PEEC10P	Probabilistic Graphical Models Lab	-	√	-	-	PEEC09P	PEEC21P	7	S	-	2	-	1	6
21	PEEC11T	Embedded System Design with tiny OS	-	√	-	-	PCEC09T	PEEC15T	7	K	2	-	-	2	6
22	PEEC11P	Embedded System Design with tiny OS Lab	-	√	-	-	PCEC09P	PEEC15P	7	S	-	2	-	1	6
23	PEEC12T	Analog IC Design	-	√	-	-	PEEC08T	PEEC16T	7	K	2	-	-	2	6
24	PEEC12P	Analog IC Design Lab	-	√	-	-	PEEC08P	PEEC16P	7	S	-	2	-	1	6
25	PEEC13T	Data Analytics & Visualization	√	-	-	-	PCE07T	PEEC22T	8	K	2	-	-	2	7
26	PEEC13P	Data Analytics & Visualization Lab	√	-	-	-	PCEC07P	PEEC22P	8	S	-	2	-	1	7

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
27	PEEC14T	Big Data Analytics	√	-	-	-	PEEC02T	PRJEC03	8	K	2	-	-	2	7
28	PEEC14P	Big Data Analytics Lab	√	-	-	-	PEEC02P	PRJEC03	8	S	-	2	-	1	7
29	PEEC15T	IoT and Edge Computing	√	-	-	-	PEEC11T	PEEC23T	8	K	2	-	-	2	7
30	PEEC15P	IoT and Edge Computing	√	-	-	-	PEEC11P	PEEC23P	8	S	-	2	-	1	7
31	PEEC16T	ASIC and Verification	√	-	-	-	PEEC12T	PEEC20T	8	K	2	-	-	2	7
32	PEEC16P	ASIC and Verification Lab	√	-	-	-	PEEC12P	PEEC20P	8	S	-	2	-	1	7
33	PEEC17T	Deep Learning	√	-	-	-	PEEC05T	PEEC21T	8	K	2	-	-	2	7
34	PEEC17P	Deep Learning Lab	√	-	-	-	PEEC05P	PEEC21P	8	S	-	2	-	1	7
35	PEEC18T	Recommend ation Systems	√	-	-	-	PEEC01T	PRJEC03	8	K	2	-	-	2	7
36	PEEC18P	Recommend ation Systems Lab	√	-	-	-	PEEC01P	PRJEC03	8	S	-	2	-	1	7
37	PEEC19T	IoT Security and Trust	√	-	-	-	PEEC07T	PEEC23T	8	K	2	-	-	2	7
38	PEEC19P	IoT Security and Trust Lab	√	-	-	-	PEEC07P	PEEC23P	8	S	-	2	-	1	7
39	PEEC20T	System on Chip	√	-	-	-	PEEC08T	PRJEC03	8	K	2	-	-	2	7
40	PEEC20P	System on Chip Lab	√	-	-	-	PEEC08T	PRJEC03	8	S	-	2	-	1	7
41	PEEC21T	Natural language processing	√	-	-	-	PEEC10T	PRJEC03	8	K	2	-	-	2	7
42	PEEC21P	Natural language processing Lab	√	-	-	-	PEEC10P	PRJEC03	8	S	-	2	-	1	7
43	PEEC22T	Text, Web & Social Media Analytics	√	-	-	-	PEEC13T	PRJEC03	8	K	2	-	-	2	7
44	PEEC22P	Text, Web & social media Analytics Lab	√	-	-	-	PEEC13P	PRJEC03	8	S	-	2	-	1	7
45	PEEC23T	Industrial IOT	√	-	-	-	PEEC03T	PRJEC03	8	K	2	-	-	2	7
46	PEEC23P	Industrial IOT Lab	√	-	-	-	PEEC03P	PRJEC03	8	S	-	2	-	1	7

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
47	PEEC24T	Mixed Signal VLSI	√	-	-	-	PEEC08T	PRJEC03	8	K	2	-	-	2	7
48	PEEC24P	Mixed Signal VLSI Lab	√	-	-	-	PEEC08P	PRJEC03	8	S	-	2	-	1	7
Total Offered Credits														**72**	

III. Multidisciplinary Courses (MDC)

a. Open Elective Courses (MDC_OE)

Minimum Credits Required = 09

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	OEC01	Collaborative Inter-Institute Studies	√	√	-	-	CEP01 AEC03	OJT01	-	S	4	-	-	4	4/5
2	OEC02	Cyber Law	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
3	OEC03	Project Management	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
4	OEC04	Product Lifecycle Management	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
5	OEC05	Sustainability Management	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
6	OEC06	Renewable Energy Management	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
7	OEC07	Biology	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
8	OEC08	Chemistry	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
9	OEC09	Psychology	√	√	-	-	NIL	NIL	2	K	2	-	-	2	7/8
10	OEC10	Engineering Mathematics-IV	-	√	-	-	BSC06	PEEC05	2	K	3	-	-	3	4
11	OEC11	Psychology	√	-	-	-	NIL	NIL	2	K	3	-	-	3	7/8
12	OEC12	Skill Based Lab-I	√	-	-	-	NIL	NIL	2	S	-	2	-	1	4
13	OEC13	Skill Based Lab-II	-	√	-	-	NIL	NIL	2	S	-	2	-	1	5
Total Offered Credits														**28**	

Multidisciplinary Minor (MDC_MDM)

Minimum Credits Required = 14

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	MDM01	Professional Competence	-	√	-	-	NIL	NIL	7	S	2	-	-	2	6
2	MDMBI01	Introduction to Bioinformatics	√	-	-	-	NIL	MDMBI02	6	K	3	-	1	4	3
3	MDMBI02	Algorithms and Data Structures in Bioinformatics	-	√	-	-	MDMBI01	MDMBI03	6	S	3	-	1	4	4
4	MDMBI03	Machine Learning Applications in Bioinformatics	√	-	-	-	MDMBI02	NIL	6	K	3	-	1	4	5
5	MDMIE01	Foundations of Innovation and Entrepreneurship	√	-	-	-	NIL	MDMIE02	5	S	3	-	1	4	3
6	MDMIE02	Startup Planning and Development	-	√	-	-	MDMIE01	MDMIE03	5	S	3	-	1	4	4
7	MDMIE03	Innovation Management and Scaling Startups	√	-	-	-	MDMIE02	NIL	6	S	3	-	1	4	5
8	MDMBD01	Introduction to Business Development and Marketing Principles	√	-	-	-	NIL	MDMBD02	5	K	3	-	1	4	3
9	MDMBD02	Financial Basics for Engineers and Technopreneurs	-	√	-	-	MDMBD01	MDMBD03	5	S	3	-	1	4	4
10	MDMBD03	Strategic Marketing and Business Planning	√	-	-	-	MDMBD02	NIL	6	K	3	-	1	4	5
11	MDMRB01	Fundamentals of Robotics and Control	√	-	-	-	NIL	MDMRB02	5	K	3	2	-	4	3
12	MDMRB02	Machine Vision and Robotic Perception	-	√	-	-	MDMRB01	MDMRB03	6	K	3	2	-	4	4
13	MDMRB03	Intelligent Mobile Robotics	√	-	-	-	MDMRB02	NIL	6	K	3	2	-	4	5
Total Offered Credits														**50**	

IV. Skill Courses (SC)

Vocational and Skill Enhancement Courses (SC_VSEC)
Minimum Credits Required =09

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	VSEC01T*	Structured Programming	√	-	-	-	NIL	VSEC02T	5	S	2	-	-	2	1
2	VSEC01P*	Structured Programming Lab	√	-	-	-	NIL	VSEC02P	5	S	-	2	-	1	1
3	VSEC02T*	Object Oriented Programming	√	-	-	-	VSEC01T	VSEC04T	5	S	2	-	-	2	1
4	VSEC02P*	Object Oriented Programming Lab	√	-	-	-	VSEC01P	VSEC01P	5	S	-	2	-	1	1
5	VSEC04T	Python Programming	√	-	-	-	VSEC02T	PEECXX	6	S	2	-	-	2	3
6	VSEC04P	Python Programming Lab	√	-	-	-	VSEC02P	PEECXX	6	S	-	2	-	1	3
Total Offered Credits														**09**	

***Courses exempted for Direct Second Year (DSY) students who will secure admission through lateral entry from the A.Y. 2026-27 onwards.**

V. Humanities, Social Sciences and Management Courses (HSSM)

a. Ability Enhancement Courses (HSSM_AEC)
Minimum Credits Required =05

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	AEC01T*	Effective Communication	√	√	-	-	NIL	VEC01T	5	A	2	-	-	2	Any Semester
2	AEC01P*	Effective Communication Lab	√	√	-	-	NIL	VEC01P	5	A	-	2	-	1	Any Semester
3	AEC02	Technical and Business Writing Lab	√	√	-	-	VEC01T	AEC03	6	A	1	2	-	2	Any Semester

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
4	AEC03	Presentation Skills	√	√	-	-	AEC02	OJT01 PRJEC03	6	A	-	2	-	1	Any Semester
Total Offered Credits														**06**	

***Courses exempted for Direct Second Year (DSY) students who will secure admission through lateral entry from the A.Y. 2026-27 onwards.**

b. Entrepreneurship/Economics/Management Courses (EEMC)
Minimum Credits Required =03

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	EEMC01	Design Thinking	√	√	-	-	NIL	NIL	6	K	2	2	-	3	Any Semester
2	EEMC02	Principles of Economics and Management	√	√	-	-	NIL	NIL	6	K	2	-	1	3	Any Semester
Total Offered Credits														**06**	

c. Indian Knowledge System (HSSM_IKS)
Minimum Credits Required =02

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	IKS01	Indian Traditional Knowledge System	-	√	-	-	NIL	NIL	5	A	2	-	-	2	4
2	IKS02	Indian Constitution	-	√	-	-	NIL	NIL	5	A	2	-	-	2	4
3	IKS03	Exploring Indian Art	-	√	-	-	NIL	NIL	5	A	2	-	-	2	4
Total Offered Credits														**06**	

d. Value Education Courses (HSSM_VEC)
Minimum Credits Required =03

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	VEC01T	Professional Skills	√	√	-	-	AEC01T	AEC02	5	A	2	-	-	2	Any Semester
2	VEC01P	Professional Skills Lab	√	√	-	-	AEC01P	AEC02	5	A	-	2	-	1	Any Semester
3	VEC02	E-waste and Environmental Management	√	√	-	-	NIL	NIL	5	A	2	-	-	2	Any Semester
4	VEC03	Universal Human Values	√	√	-	-	NIL	NIL	5	A	2	-	-	2	Any Semester
5	VEC04	Responsibility towards sustainable environment	√	√	-	-	NIL	NIL	5	A	2	-	-	2	Any Semester
6	VEC05	Four Pillars of Democratic Nation	√	√	-	-	NIL	NIL	5	A	2	-	-	2	Any Semester
Total Offered Credits														**11**	

VI. Experiential Learning Courses (ELC)

a. Research Methodology (ELC_RM)
Minimum Credits Required =03

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	RM01	Research Methodology	√	√	-	-	NIL	NIL	8	K	3	-	-	3	7/8
Total Offered Credits														**03**	

b. Community Engagement Project/Field Project (ELC_CEP/FP)
Minimum Credits Required =02

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	CEP01	Social Service Internship/ Project	√	-	-	-	CCXX	OJT01 PRJEC 03	6	A	-	4	-	2	3
Total Offered Credits														**02**	

c. Project (ELC_PRJ)
Minimum Credits Required =08

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	PRJEC01	Mini Project-1	√	-	-	-	CEP01 AEC03	PRJE C02	7	S	-	4	-	2	5
2	PRJEC02	Projec-1 (Synopsis)	√	√	-	-	PRJEC0 1	PRJE C03	7	S	-	4	-	2	6/7
3	PRJEC03	Project-2 (Final)	√	√	-	-	PRJEC0 2	OBJ0 2	8	S	-	8	-	4	7/8
Total Offered Credits														**08**	

d. Internship/On Job Training (ELC_I/OJT)
Minimum Credits Required =12

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	OJT01	Industry Internship 1	-	-	-	√	CEP0 1 AEC0 3	OJT02	7	S	-	150 Hrs (Total)	-	5	Semester Break of 6 & 7
2	OJT02	Industry Internship 2	-	√	-	-	OJT0 1	NIL	8	S	-	210 Hrs (Total)	-	7	8
Total Offered Credits														**12**	

VII. Liberal Learning Courses (LLC)

Co-curricular Courses (LLC-CC)
Minimum Credits Required =04

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	CC01	Various Dance Forms	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
2	CC02	Corporate and Social Etiquettes	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
3	CC03	Global Citizenship Education	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
4	CC04	Wellness – Body, Mind & Spirit	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
5	CC05	IQ vs EQ	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
6	CC06	Nutrition and Physical Wellness	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
7	CC07	Facets of Astronomy	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
8	CC08	Railways - Wonders of Infrastructure	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
9	CC09	Financial Literacy for Engineers	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
10	CC10	Mastering Advanced Excel	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
11	CC11	Personal Grooming Essentials	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
12	CC12	Various Music Forms	√	√	-	-	NIL	CEP01	5	A	2	-	-	2	1/2
Total Offered Credits														**24**	

Knowledge Map of VIT_EXCS_R-2025 Curriculum

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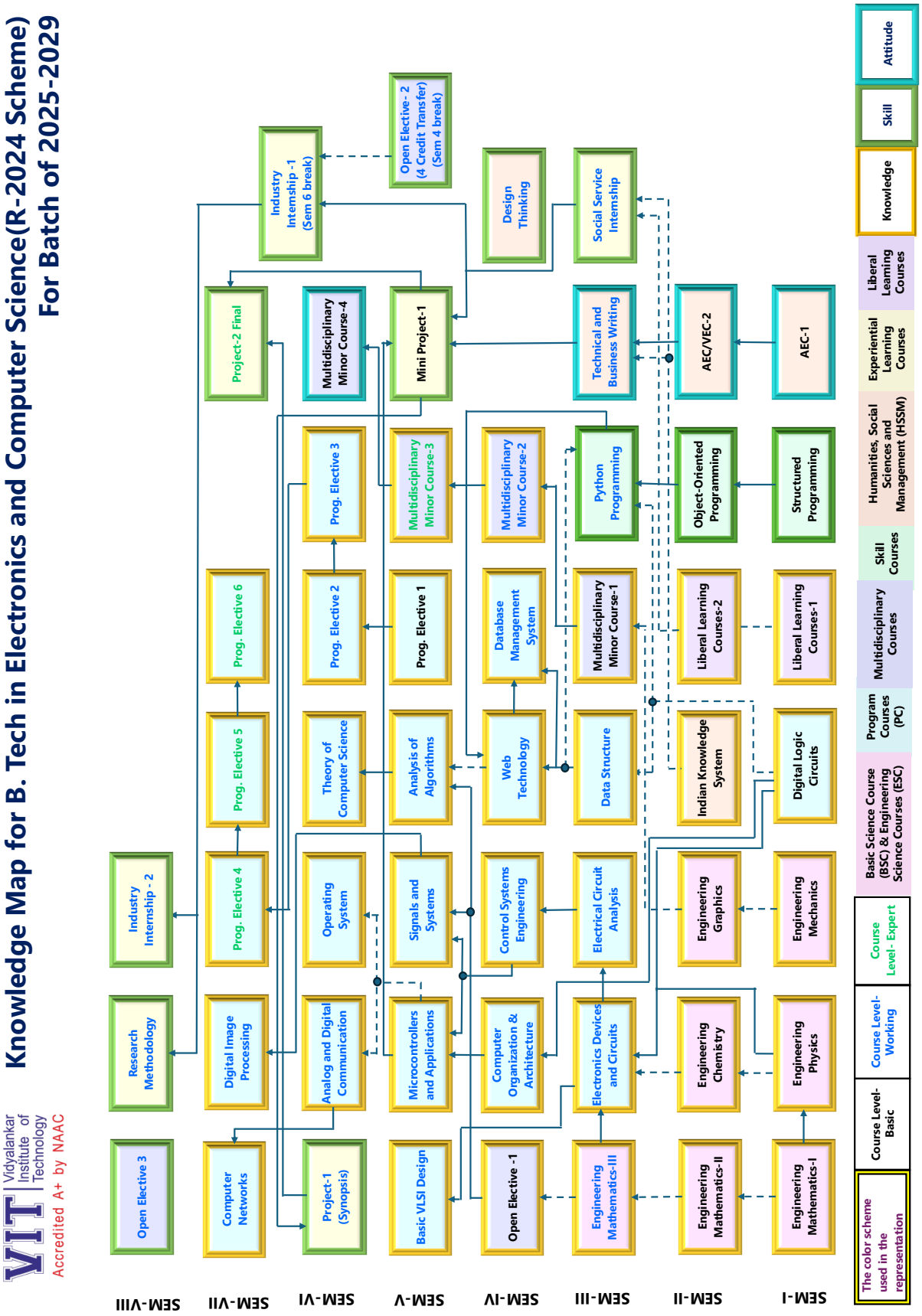
Knowledge Map for B. Tech in Electronics and Computer Science(R-2024 Scheme)
For Batch of 2025-2029
Vidyalankar Institute of Technology
Accredited A+ by NAAC
SEM-I
SEM-II
SEM-III
SEM-IV
SEM-V
SEM-VI
SEM-VII
SEM-VIII
Engineering Mathematics-I
Engineering Mathematics-II
Engineering Mathematics-III
Open Elective -1
Basic VLSI Design
Project-1 (Synopsis)
Computer Networks
Open Elective 3
Engineering Physics
Engineering Chemistry
Electronics Devices and Circuits
Computer Organization & Architecture
Microcontrollers and Applications
Analog and Digital Communication
Digital Image Processing
Research Methodology
Engineering Mechanics
Engineering Graphics
Electrical Circuit Analysis
Control Systems Engineering
Signals and Systems
Operating System
Prog. Elective 4
Industry Internship - 2
Digital Logic Circuits
Indian Knowledge System
Data Structure
Web Technology
Analysis of Algorithms
Theory of Computer Science
Prog. Elective 5
Liberal Learning Courses-1
Liberal Learning Courses-2
Multidisciplinary Minor Course-1
Database Management System
Prog. Elective 1
Prog. Elective 2
Prog. Elective 6
Structured Programming
Object-Oriented Programming
Python Programming
Multidisciplinary Minor Course-2
Multidisciplinary Minor Course-3
Prog. Elective 3
AEC-1
AEC/VEC-2
Technical and Business Writing
Mini Project-1
Multidisciplinary Minor Course-4
Project-2 Final
Social Service Internship
Design Thinking
Open Elective- 2 (4 Credit Transfer) (Sem 4 break)
Industry Internship -1 (Sem 6 break)
The color scheme used in the representation
Course Level- Basic
Course Level- Working
Course Level- Expert
Basic Science Course (BSC) & Engineering Science Courses (ESC)
Program Courses (PC)
Multidisciplinary Courses
Skill Courses
Humanities, Social Sciences and Management (HSSM)
Experiential Learning Courses
Liberal Learning Courses
Knowledge
Skill
Attitude

Illustrative Semester wise

Credit Distribution Structure and Assessment Guidelines

(Based on NEP 2020 Guidelines)

for

Bachelor of Technology

in

Electronics and Computer Science with Multidisciplinary Minor (One Major, One Minor)

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Sr. No.	Verticals	Sub Verticals	Sem I		SemII		SemIII		SemIV		SemV		SemVI		SemVII		SemVIII		TOTAL
			Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	
I	Basic Science and Engineering Science Courses	Basic Science Course(BSC)	6		6		3												15
		Engineering Science Courses(ESC)	6		3				3										12
II	Program Courses (PC)	Program Core Courses (PCC)					9		9		12		9		6				45
		Program Elective Courses (PEC)									3	1	6	2	9	3			18
III	Multidisciplinary Courses (MDC)	Multidisciplinary Minor (MDM)					4		4		4		2						14
		Open Elective (OE) Other than a particular Program							3		#4						2		9
IV	Skill Courses (SC)	Vocational and Skill Enhancement course (VSEC)	3	1	3	1	3	1											9
V	Humanities, Social Sciences and Management (HSSM)	Ability Enhancement Course (AEC -01, AEC-02)	3				2												5
		Entrepreneurship/Economics/Management Courses (EEMC)							3										3
		Indian Knowledge System (IKS)			2														2
		Value Education Course (VEC)			3														3
VI	Experiential Learning Courses (ELC)	Research Methodology (RM)															3		3
		Comm. Engagement. Project (CEP)/Field Project (FP)					2												2
		Project									2		2		4				8
		Internship/ OJT													#5		7		12
VII	Liberal Learning Courses (LLC)	Co-curricular Courses (CC)	2		2														4
	Total		20	1	19	1	23	1	22		25	1	19	2	24	3	12		164

First Year B. Tech. Electronics and Computer Science **Preferred Semester: I**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
BSES_BSC	BSC02	Engineering Mathematics-I	NIL	BSC04	K	3	-	-	3	20	30	50	100	
BSES_BSC	BSC10T	Engineering Physics	NIL	NIL	K	2	-	-	2	15	20	40	075	
BSES_ BSC	BSC10P	Engineering Physics Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
BSES_ESC	ESC03T	Digital Logic Circuit	NIL	ESC09T	K	2	-	-	2	15	20	40	075	
BSES_ESC	ESC03P	Digital Logic Circuit Lab	NIL	ESC09P	S	-	2	-	1	25	-	25	050	
BSES_ESC	ESC02T	Engineering Mechanics	NIL	NIL	K	2	-	-	2	15	20	40	075	
BSES_ESC	ESC02P	Engineering Mechanics Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
SC_VSEC	VSEC01T	Structured Programming	NIL	VSEC02T	S	2	-	-	2	15	20	40	075	Y
SC_VSEC	VSEC01P	Structured Programming Lab	NIL	VSEC02P	S	-	2	-	1	25	-	25	050	
HSSM_AEC	AEC01T	Effective Communication	NIL	VEC01T	A	2	-	-	2	15	20	40	075	
HSSM_AEC	AEC01P	Effective Communication Lab	NIL	VEC01P	A	-	2	-	1	25	-	25	050	
LLC_CC	CCXXX	Any one CC course offered in the semester	NIL	NIL	A	2	-	-	2	25	-	50	075	
Total									**20**					

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc… activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

First Year B. Tech. Electronics and Computer Science **Preferred Semester: II**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
BSES_BSC	BSC04	Engineering Mathematics-II	BSC02	BSC06	K	3	-	-	3	20	30	50	100	
BSES_BSC	BSC11T	Engineering Chemistry	NIL	NIL	K	2	-	-	2	15	20	40	075	
BSES_ BSC	BSC11P	Engineering Chemistry Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
BSES_ESC	ESC01T	Engineering Graphics	NIL	NIL	K	2	-	-	2	15	20	40	075	
BSES_ESC	ESC01P	Engineering Graphics Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
SC_VSEC	VSEC02T	Object Oriented Programming	NIL	VSEC04T	S	2	-	-	2	15	20	40	075	Y
SC_VSEC	VSEC02P	Object Oriented Programming Lab	NIL	VSEC04P	S	-	2	-	1	25	-	25	050	
HSSM_VEC	VEC01T	Professional Skills	AEC01T	AEC02	A	2	-	-	2	15	20	40	075	
HSSM_VEC	VEC01P	Professional Skills Lab	AEC01P	AEC02	A	-	2	-	1	25	-	25	050	
HSSM_IKS	IKSXX	Any one IKS offered in the semester	NIL	NIL	A	2	-	-	2	25	-	50	075	
LLC_CC	CCXX*	Any LLC_CC course from the list	NIL	CEP01	A	2	-	-	2	25	-	50	075	
Total									**19**					

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc… activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

List of Indian Knowledge System Courses

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
HSSM_IKS	IKS01	Indian Traditional Knowledge System	NIL	NIL	A	2	-	-	2	25	-	50	075	
HSSM_IKS	IKS02	Indian Constitution	NIL	NIL	A	2	-	-	2	25	-	50	075	
HSSM_IKS	IKS03	Exploring Indian Art	NIL	NIL	A	2	-	-	2	25	-	50	075	

List of Liberal Learning Cocurricular Courses

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
LLC_CC	CC01	Various Dance Forms	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC02	Corporate and Social Etiquettes	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC03	Global Citizenship Education	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC04	Wellness – Body, Mind & Spirit	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC05	IQ vs EQ	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC06	Nutrition and Physical Wellness	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC07	Facets of Astronomy	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC08	Railways - Wonders of Infrastructure	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC09	Financial Literacy for Engineers	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC10	Mastering Advanced Excel	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC11	Personal Grooming Essentials	NIL	CEP01	A	2	-	-	2	25	-	50	075	
LLC_CC	CC12	Various Music Forms	NIL	CEP01	A	2	-	-	2	25	-	50	075	

Second Year B. Tech. Electronics and Computer Science **Preferred Semester: III**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
HSSM_AEC	AEC02	Technical and Business Writing Lab	VEC01	AEC03	A	1	2	-	2	75	-	-	075	
BSES_BSC	BSC06	Engineering Mathematics-III	BSC02, BSC04	OEC10	K	3	-	-	3	20	30	50	100	
PC_PCC	PCEC01T	Electronic Devices and Circuits	BSC10T	PCEC08T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC01P	Electronic Devices and Circuits Lab	BSC10P	PCEC08P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC02T	Electrical Circuit Analysis	BSC10T	PCEC04T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC02P	Electrical Circuit Analysis Lab	BSC10P	PCEC04P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC03T	Data Structures	VSEC01T	PCEC10T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC03P	Data Structures Lab	VSEC01P	PCEC10P	S	-	2	-	1	25	-	25	050	
SC_VSEC	VSEC04T	Python Programming	VSEC02T	PEECXX	S	2	-	-	2	15	20	40	075	Y
SC_VSEC	VSEC04P	Python Programming Lab	VSEC02P	PEECXX	S	-	2	-	1	25	-	25	050	
CEP/FP	CEP01	Social Service Internship	CCXX	OJT01, PRJEC03	A	-	4	-	2	25	-	50	075	
MC_MDM	MDMxxxx	Any one MDM course offered in the semester	NIL	NIL	S	3	-	1	4	45	30	50	125	
Total									**23**					

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc… activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

Guidelines for Multidisciplinary Elective Courses and Minor Degree – Refer Appendix-B

Learners are required to go through the Appendix-B carefully before selecting the Multidisciplinary Elective courses. Detailed guidelines regarding Multidisciplinary Elective courses, Minor Degree Titles and courses relevant to each MDM Title are given in Appendix-B.

Multidisciplinary Elective Course 1 (MDMXX)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
MC_MDM	MDMBI01	Introduction to Bioinformatics	NIL	MDMBI02	K	3	-	1	4	45	30	50	125	
MC_MDM	MDMIE01	Foundations of Innovation and Entrepreneurship	NIL	MDMIE02	S	3	-	1	4	45	30	50	125	
MC_MDM	MDMBD01	Introduction to Business Development and Marketing Principles	NIL	MDMBD02	K	3	-	1	4	45	30	50	125	
MC_MDM	MDMRB01	Fundamentals of Robotics and Control	NIL	MDMRB02	K	3	2	-	4	45	30	50	125	

Second Year B. Tech. Electronics and Computer Science **Preferred Semester: IV**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
HSSM_EEMC	EEMC01	Design Thinking	NIL	NIL	K	2	2	-	3	50	-	50	100	
MC_OE	OEC10	Engineering Mathematics-IV	NIL	NIL	K	2	-	-	3	20	30	50	100	
MC_OE	OEC12	Skill Based Lab-I	NIL	NIL	S	-	2	-	1	50	-	-	050	
BSES_ ESC	ESC09T	Computer Organization & Architecture	ESC03	ESC11	K	2	-	-	2	15	20	40	075	
BSES_ESC	ESC09P	Computer Organization & Architecture Lab	ESC03	ESC11	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC04T	Control Systems Engineering	BSC04	PEEC11T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC04P	Control Systems Engineering Lab	BSC04	PEEC11P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC06T	Web Technology	VSEC04T	PEEC22T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC06P	Web Technology Lab	VSEC04P	PEEC22T	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC07T	Database Management System	PCEC06T	PEEC02T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC07P	Database Management System Lab	PCEC06P	PEEC02P	S	-	2	-	1	25	-	25	050	
MC_MDM	MDMxxxx	Any one MDM course offered in the semester	NIL	NIL	S	3	-	1	4	45	30	50	125	
Total									**23**					

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc... activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

Multidisciplinary Elective Course 2 (MDMXX)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
MC_MDM	MDMBI02	Algorithms and Data Structures in Bioinformatics	MDMBI01	MDMBI03	S	3	-	1	4	45	30	50	125	
MC_MDM	MDMIE02	Startup Planning and Development	MDMIE01	MDMIE03	S	3	-	1	4	45	30	50	125	
MC_MDM	MDMBD02	Financial Basics for Engineers and Technopreneurs	MDMBD01	MDMBD03	S	3	-	1	4	45	30	50	125	
MC_MDM	MDMRB02	Machine Vision and Robotic Perception	MDMRB01	MDMRB03	K	3	2	-	4	45	30	50	125	

Second Year B.Tech. Electronics and Computer Science Engineering – Summer Break

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
MC_OE	OEC01*	Collaborative Inter-Institute Studies	CEP01 AEC03	OJT01	S	-	8	-	4	125	-	-	125	

*__For OEC01- Collaborative Inter-Institute Studies:__ Internship with other reputed institutes equivalent to 4 credits is recommended to be done by learner during second year inter semester break (i.e. summer break between semester 4 and semester 5).

NOTE: As per Institute guidelines, the results of courses completed in inter-semester break will appear in the marksheet of the next semester.

Third Year B. Tech. Electronics and Computer Science **Preferred Semester: V**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
MC-MDM	MDMxxxx	Any one MDM course offered in the semester	NIL	NIL	K	2	-	-	4	45	30	50	125	
MC_OE	OEC13	Skill Based Lab-II	NIL	NIL	S	-	2	-	1	50	-	-	050	
PC_PCC	PCEC08T	Basic VLSI Design	PCEC01T	PEEC08T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC08P	Basic VLSI Design Lab	PCEC01P	PEEC08P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC05T	Signals and Systems	BSC06	PCEC15T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC05P	Signals and Systems Lab	BSC06	PCEC15P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC09T	Microcontroller and Applications	ESC09T	PEEC11T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC09P	Microcontroller and Applications Lab	ESC09P	PEEC11P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC11T	Analysis of Algorithms	PCEC03T	PCEC12T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC11P	Analysis of Algorithms Lab	PCEC03P	PCEC12P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEECxxT	Programme Elective-1	NIL	NIL	K	2	-	-	2	15	20	40	075	Y
PC_PEC	PEECxxP	Programme Elective-1 Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
ELC-PRJ	PRJEC01	Mini Project	CEP01 AEC03	PRJEC02	S	-	4	-	2	25	-	50	075	
Total									**22**					
Course credits completed during the previous inter semester break will appear in this semester's marksheet														
MC_OE	OEC01	Collaborative Inter-Institute Studies	CEP01 AEC03	OJT01	S	-	8	-	4	125	-	-	125	

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc... activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

Guidelines for Programme Elective Courses and Specialization Certificate – Refer Appendix-A

Learners are required to go through the Appendix-A carefully before selecting the Programme Elective courses. Detailed guidelines regarding Programme Elective courses, specialization tracks and courses relevant to each track are given in Appendix-A.

Programme Elective-1 Courses (PEECXXT and PEECXXP)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PEC	PEEC01T	Artificial Intelligence	VSEC04T	PEEC09T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC01P	Artificial Intelligence lab	VSEC04P	PEEC09P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC02T	Advanced Database Management	PCEC07T	PEEC14T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC02P	Advanced Database Management Lab	PCEC07P	PEEC14P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC03T	Modern Sensors for IOT	PCEC09T	PEEC23T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC03P	Modern Sensors for IOT Lab	PCEC09P	PEEC23P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC04T	Digital System Design	ESCO3T	PEEC15T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC04P	Digital System Design Lab	ESC03P	PEEC15P	S	-	2	-	1	25	-	25	050	

#For details of Specialization Certificate, refer Appendix-A

List of Value Education Courses (VECXX)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preferred Semester
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
HSSM_VEC	VEC01T	Professional Skills	AEC01T	AEC02	A	2	-	-	2	15	20	40	075	Any Semester
HSSM_VEC	VEC01P	Professional Skills Lab	AEC01P	AEC02	A	-	2	-	1	25	-	25	050	Any Semester
HSSM_VEC	VEC02	E-waste and Environmental Management	NIL	NIL	A	2	-	-	2	15	20	40	075	Any Semester

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preferred Semester
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
HSSM_ VEC	VEC03	Universal Human Values	NIL	NIL	A	2	-	-	2	25	-	50	075	Any Semester
HSSM_ VEC	VEC04	Responsibility towards sustainable environment	NIL	NIL	A	2	-	-	2	25	-	50	075	Any Semester
HSSM_ VEC	VEC05	Four Pillars of Democratic Nation	NIL	NIL	A	2	-	-	2	25	-	50	075	Any Semester

Multidisciplinary Elective Course 3 (MDMXX)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
MC_MDM	MDMBI03	Machine Learning Applications in Bioinformatics	MDMBI02	NIL	K	3	-	1	4	45	30	50	125	
MC_MDM	MDMIE03	Innovation Management and Scaling Startups	MDMIE02	NIL	S	3	-	1	4	45	30	50	125	
MC_MDM	MDMBD03	Strategic Marketing and Business Planning	MDMBD02	NIL	K	3	-	1	4	45	30	50	125	
MC_MDM	MDMRB03	Intelligent Mobile Robotics	MDMRB02	NIL	K	3	2	-	4	45	30	50	125	

Guidelines for Award of Honours/ Honours by Research / Double Minor (Multidisciplinary and Specialization) Degree

Before the end of Semester 5, learners are required to go through the Honours/ Honours by Research/ Specialization Minor Degree Programme document carefully to opt for Honours/ Honours by Research/ Double Minor Degree. Learners willing to opt for Honours/ Honours by Research/ Specialization Minor degree programme are required to satisfy the eligibility criteria stated in the document.

Third Year B. Tech. Electronics and Computer Science **Preferred Semester: VI**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
MD_MDM	MDM01	Professional Competence	NIL	NIL	S	2	-	-	2	75	-	-	075	
PC_PCC	PCEC10T	Operating System	PCEC03T	PEEC14T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC10P	Operating System Lab	PCEC03P	PEEC14P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC12T	Theory of Computer Science	PCEC11T	PEEC17T	K	2	-	1	3	40	20	40	100	
PC_PCC	PCEC14T	Analog and Digital Communication	PCEC05T	PEEC15T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC14P	Analog and Digital Communication Lab	PCEC05P	PEEC15P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEECXXT	Programme Elective-2	NIL	NIL	K	2	-	-	2	15	20	40	075	Y
PC_PEC	PEECXXP	Programme Elective-2 Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
PC_PEC	PEECXXT	Programme Elective-3	NIL	NIL	K	2	-	-	2	15	20	40	075	Y
PC_PEC	PEECXXP	Programme Elective-3 Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
ELC_PRJ	PRJEC02	Project-1 (Synopsis)	PRJEC01	PRJEC03	S	-	4	-	2	50	-	25	075	
Total									**19**					

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc… activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

Programme Elective 2 Courses (PEECXXT and PEECXXP)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PEC	PEEC05T	Soft Computing	BSC06	PEEC17T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC05P	Soft Computing Lab	BSC06	PEEC17P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC06T	Data Warehousing and Mining	PEEC02T	PEEC14T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC06P	Data Warehousing and Mining Lab	PEEC02P	PEEC14P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC07T	Principles of IOT	PEEC03T	PEEC15T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC07P	Principles of IOT Lab	PEEC03P	PEEC15P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC08T	Advanced VLSI Design and Technology	PEEC04T	PEEC24T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC08P	Advanced VLSI Design and Technology Lab	PEEC04P	PEEC24P	S	-	2	-	1	25	-	25	050	

Programme Elective 3 Courses (PEECXXT and PEECXXP)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PEC	PEEC09T	Machine Learning	PEEC01T	PEEC10T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC09P	Machine Learning Lab	PEEC01P	PEEC10P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC10T	Probabilistic Graphical Model	PEEC09T	PEEC21T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC10P	Probabilistic Graphical Model Lab	PEEC09P	PEEC21P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC11T	Embedded System Design with tiny OS	PCEC09T	PEEC15T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC11P	Embedded System Design with tiny OS Lab	PCEC09P	PEEC15P	S	-	2	-	1	25	-	25	050	

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PEC	PEEC12T	Analog IC Design	PEEC08T	PEEC16T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC12P	Analog IC Design Lab	PEEC08P	PEEC16P	S	-	2	-	1	25	-	25	050	

Third Year B.Tech. Electronics and Computer Science Engineering – Summer Break

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
ELC_OJT	OJT01	Industry Internship 1	EEMC01, VSEC03	OJT02	K, S & A	150 hours			5	75	-	75	150	
Total Credits									05					

*150+ hours of industry internship to be done during inter semester break between semester 6 and semester 7.

NOTE: As per Institute guidelines, the results of courses completed in inter-semester break will appear in the marksheet of the next semester.

Final Year B. Tech. Electronics and Computer Science **Preferred Semester: VII**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PCC	PCEC13T	Computer Networks	ESC09T	PEEC23T	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC13P	Computer Networks Lab	ESC09P	PEEC23P	S	-	2	-	1	25	-	25	050	
PC_PCC	PCEC15T	Digital Image Processing	PCEC05T	MDMRB02	K	2	-	-	2	15	20	40	075	
PC_PCC	PCEC15P	Digital Image Processing Lab	PCEC05P	MDMRB02	S	-	2	-	1	25	-	25	050	
PC_PEC	PEECXXT	Programme Elective-4	NIL	NIL	K	2	-	-	2	15	20	40	075	Y
PC_PEC	PEECXXP	Programme Elective-4 Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
PC_PEC	PEECXXT	Programme Elective-5	NIL	NIL	K	2	-	-	2	15	20	40	075	Y
PC_PEC	PEECXXP	Programme Elective-5 Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
PC_PEC	PEECXXT	Programme Elective-6	NIL	NIL	K	2	-	-	2	15	20	40	075	Y
PC_PEC	PEECXXP	Programme Elective-6 Lab	NIL	NIL	S	-	2	-	1	25	-	25	050	
ELC_PRJ	PRJEC03	Project 2 – (Final)	PRJEC02	OBJ02	S	-	8	-	4	75	-	50	125	
Total									**19**					
ELC_OJT	OJT01	Industry Internship-1	CEP01 AEC03	OJT02	S	-	150 Hrs (Total)	-	5	75	-	75	150	

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc… activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

Programme Elective 4 Courses (PEECXXT and PEECXXP)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PEC	PEEC13T	Data Science & Visualization	PCE07T	PEEC22T	S	2	-	-	2	15	20	40	075	
PC_PEC	PEEC13P	Data Analytics & Visualization Lab	PCEC07P	PEEC22P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC14T	Big Data Analytics	PEEC02T	PRJEC03	S	2	-	-	2	15	20	40	075	
PC_PEC	PEEC14P	Big Data Analytics Lab	PEEC02P	PRJEC03	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC15T	IoT and Edge Computing	PEEC11T	PEEC23T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC15P	IoT and Edge Computing	PEEC11P	PEEC23P	K	-	2	-	1	25	-	25	050	
PC_PEC	PEEC16T	ASIC and Verification	PEEC12T	PEEC20T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC16P	ASIC and Verification Lab	PEEC12P	PEEC20P	K	-	2	-	1	25	-	25	050	

Programme Elective 5 Courses (PEECXXT and PEECXXP)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PEC	PEEC17T	Deep Learning	PEEC05T	PEEC21T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC17P	Deep Learning Lab	PEEC05P	PEEC21P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC18T	Recommendation Systems	PEEC01T	PRJEC03	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC18P	Recommendation Systems Lab	PEEC01P	PRJEC03	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC19T	IoT Security and Trust	PEEC07T	PEEC23T	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC19P	IoT Security and Trust Lab	PEEC07P	PEEC23P	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC20T	System on Chip	PEEC08T	PRJEC03	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC20P	System on Chip Lab	PEEC08T	PRJEC03	S	-	2	-	1	25	-	25	050	

Programme Elective 6 Courses (PEECXXT and PEECXXP)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
PC_PEC	PEEC21T	Natural language processing	PEEC10T	PRJEC03	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC21P	Natural language processing Lab	PEEC10P	PRJEC03	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC22T	Text, Web & Social Media Analytics	PEEC13T	PRJEC03	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC22P	Text, Web & Social Media Analytics Lab	PEEC13P	PRJEC03	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC23T	Industrial IOT	PEEC03T	PRJEC03	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC23P	Industrial IOT Lab	PEEC03P	PRJEC03	S	-	2	-	1	25	-	25	050	
PC_PEC	PEEC24T	Mixed Signal VLSI	PEEC08T	PRJEC03	K	2	-	-	2	15	20	40	075	
PC_PEC	PEEC24P	Mixed Signal VLSI Lab	PEEC08P	PRJEC03	S	-	2	-	1	25	-	25	050	

Final Year B. Tech. Electronics and Computer Science **Preferred Semester: VIII**

Course Structure and Assessment Guidelines

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
ELC_RM	RM01	Research Methodology	NIL	NIL	K	3	-	-	3	20	30	50	100	
ELC_OJT	OJT02	Industry Internship-2	OJT01	NIL	S	-	210 Hrs (Total)	-	7	100	-	100	200	
Total									**10**					

ISA=In Semester Assessment: This will involve evaluation based on thought provoking assignments/ experiments/ class tests/ take home tests/ open book tests/ quizzes/ certification course etc... activities which will be assigned on weekly basis during the semester.

MSE= Mid Semester Examination: This will be a proctored examination conducted in the semester. Syllabus will be based on the percentage of syllabus completed till the exam.

ESE= End Semester Examination: This examination will be conducted after the end of academic session covering 100% syllabus of the course.

The assessment guidelines for the courses of different credits are mentioned above. Notwithstanding the above, each course faculty shall have the choice to propose her/his assessment methodology based on the nature of the course. However, the proposed assessment methodology shall be approved by a panel constituted at Institute level and published to the learners before the commencement of the semester.

List of Open Elective Courses (OECXX)

Vertical_Sub-Vertical	Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Hours Per Week			Credits	Assessment Guidelines (Marks)				Preparedness for Industry Level Certification
						Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
MC_OE	OEC01	Collaborative Inter-Institute Studies	CEP01 AEC03	OJT01	S	4	-	-	4	15	20	40	075	
MC_OE	OEC02	Cyber Law	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC03	Project Management	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC04	Product Lifecycle Management	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC05	Sustainability Management	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC06	Renewable Energy Management	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC07	Biology	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC08	Chemistry	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC09	Psychology	NIL	NIL	K	2	-	-	2	15	20	40	075	
MC_OE	OEC10	Engineering Mathematics-IV	BSC06	PEEC05	K	3	-	-	3	15	20	40	075	
MC_OE	OEC11	Psychology	NIL	NIL	K	3	-	-	3	15	20	40	075	
MC_OE	OEC12	Skill Based Lab-I	NIL	NIL	S	-	2	-	1	50	-	-	050	
MC_OE	OEC13	Skill Based Lab-II	NIL	NIL	S	-	2	-	1	50	-	-	050	

Appendix-A

Guidelines for Programme Elective Courses and Specialization Certificate

Programme Elective courses are designed to meet industrial requirements. All learners must opt for 6 Programme elective courses (both Theory and Practical component) as a part of requirement for B.Tech. degree.

Specialization Certificate is introduced in order to build competency of learners in the chosen domain. Department of Electronics and Computer Science offers the following specialization tracks:

1. Artificial Intelligence and Machine Learning (AIML)
2. Data Science (DS)
3. Internet of Things (IoT)
4. Very Large-Scale Integration (VLSI)

Learners can take courses from any track. **However, if learners complete all Programme Elective Courses from the same chosen track, they will be eligible to receive a Specialization Certificate from the Institute.**

Learners who choose Programme elective courses from different specialisation tracks will not be eligible for a Specialization Certificate.

It should be noted that there are no additional credit requirements for these specialisations.

AIML track: Courses to be chosen for specialization in Artificial Intelligence and Machine Learning

Semester	Course Code	Course Name
V	PEEC01T	Artificial Intelligence
V	PEEC01P	Artificial Intelligence Lab
VI	PEEC05T	Soft Computing
VI	PEEC05P	Soft Computing Lab
VI	PEEC09T	Machine Learning
VI	PEEC09P	Machine Learning Lab
VII	PEEC13T	Data Analytics & Visualization
VII	PEEC13P	Data Analytics & Visualization Lab
VII	PEEC17T	Deep Learning
VII	PEEC17P	Deep Learning Lab
VII	PEEC21T	Natural language processing
VII	PEEC21P	Natural language processing Lab

DS track: Courses to be chosen for specialization in Data Science

Semester	Course Code	Course Name
V	PEEC02T	Advance Database Management
V	PEEC02P	Advance Database Management Lab
VI	PEEC06T	Data Warehousing and Mining
VI	PEEC06P	Data Warehousing and Mining Lab
VI	PEEC10T	Probabilistic Graphical Models
VI	PEEC10P	Probabilistic Graphical Models Lab
VII	PEEC14T	Big Data Analytics
VII	PEEC14P	Big Data Analytics Lab
VII	PEEC18T	Recommendation Systems
VII	PEEC18P	Recommendation Systems Lab
VII	PEEC22T	Text, Web & Social Media Analytics
VII	PEEC22P	Text, Web & Social Media Analytics Lab

IoT track: Courses to be chosen for specialization in Internet of Things

Semester	Course Code	Course Name
V	PEEC03T	Modern Sensors for IOT
V	PEEC03P	Modern Sensors for IOT Lab
VI	PEEC07T	Principles of IOT
VI	PEEC07P	Principles of IOT Lab
VI	PEEC11T	Embedded System Design with tiny OS
VI	PEEC11P	Embedded System Design with tiny OS Lab
VII	PEEC15T	IoT and Edge Computing
VII	PEEC15P	IoT and Edge Computing Lab
VII	PEEC19T	IoT Security and Trust
VII	PEEC19P	IoT Security and Trust Lab
VII	PEEC23T	Industrial IOT
VII	PEEC23P	Industrial IOT Lab

VLSI track: Courses to be chosen for specialization in Very Large-Scale Integration

Semester	Course Code	Course Name
V	PEEC04T	Digital System Design
V	PEEC04P	Digital System Design Lab
VI	PEEC08T	Advanced VLSI Design and Technology
VI	PEEC08P	Advanced VLSI Design Technology Lab
VI	PEEC12T	Analog IC Design
VI	PEEC12P	Analog IC Design Lab
VII	PEEC16T	ASIC and Verification
VII	PEEC16P	ASIC and Verification Lab
VII	PEEC20T	System on Chip
VII	PEEC20P	System on Chip Lab
VII	PEEC24T	Mixed Signal VLSI
VII	PEEC24P	Mixed Signal VLSI

Appendix-B

Guidelines for Multidisciplinary Elective Courses and Minor Degree

In alignment with the NEP objectives and the evolving demands of the engineering profession, the introduction of a Multidisciplinary Minor Degree within the Undergraduate Engineering Programme aims to foster academic breadth, innovation, and cross-domain competency. These guidelines are formulated to support the structured integration of multidisciplinary elective courses, enabling students to pursue focused study in areas beyond their core engineering discipline.

Department of Electronics and Computer Science offers the following Multidisciplinary Minor Degree Titles for B.Tech. Electronics and Computer Science students:

1. Bioinformatics (BI)
2. Innovation, Entrepreneurial and Venture Development (IE)
3. Business Development, Marketing and Finance (BD)
4. Robotics (RB)

It should be noted that it is mandatory to choose one Multidisciplinary Minor (MD M) Degree Programme as a part of B.Tech. Electronics and Computer Science degree.

Bioinformatics (BI): Courses to be completed successfully for MD M in Bioinformatic.

Semester	Course Code	Course Name
III	MDMBI01	Introduction to Bioinformatics
IV	MDMBI02	Algorithms and Data Structures in Bioinformatics
V	MDMBI03	Machine Learning Applications in Bioinformatics

Innovation, Entrepreneurial and Venture Development (IE): Courses to be completed successfully for MD M in Innovation, Entrepreneurial and Venture Development.

Semester	Course Code	Course Name
III	MDMIE01	Foundations of Innovation and Entrepreneurship
IV	MDMIE02	Startup Planning and Development
V	MDMIE03	Innovation Management and Scaling Startups

Business Development, Marketing and Finance (BD): Courses to be completed successfully for MD M in Business Development, Marketing and Finance.

Semester	Course Code	Course Name
III	MDMBD01	Introduction to Business Development and Marketing Principles
IV	MDMBD02	Financial Basics for Engineers and Technopreneurs
V	MDMBD03	Strategic Marketing and Business Planning

Robotics (RB): Courses to be completed successfully for MD M in Robotics (RB).

Semester	Course Code	Course Name
III	MDMRB01	Fundamentals of Robotics and Control
IV	MDMRB02	Machine Vision and Robotic Perception
V	MDMRB03	Intelligent Mobile Robotics