



Vidyalkar Institute of Technology

An Autonomous Institute affiliated to University of Mumbai

Bachelor of Technology

in

Computer Engineering

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/ she 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 Programme Courses consisting of Programme Core Courses (PCC) courses 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 (PEC) courses 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 Courses (OEC) courses and Multidisciplinary Minor (MDM). 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 other institutes of repute 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/ Minor/ Honours by Research 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.

Chairman, Board of Studies
Department of Computer Engineering
Vidyalankar Institute of Technology

Chairman, Academic Council
Vidyalankar Institute of Technology

About Computer Department

Established in year 1999, Computer Engineering Department currently offers 3 programmes. Undergraduate (B.Tech.) programme with intake of 180, Postgraduate (M.Tech.) programme with intake of 12 and Doctorate (Ph.D.) programme with intake of 10.

The Department of Computer Engineering strives to be at the forefront of innovation and technical excellence, preparing students for dynamic careers in the ever-evolving field of technology. Through a blend of rigorous academic coursework, cutting-edge research, and hands-on experience, the department aims to develop proficient engineers equipped with the knowledge and skills required to solve complex real-world problems.

Vision

To be recognized as a Centre of Excellence in the field of Computer Engineering where learners are nurtured in scholarly environment to evolve into competent Computer Engineering professionals to 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 Computer Engineering.

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 Computer Engineering 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.

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 modeling 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: Computer Engineering Programme must demonstrate that graduate understands concepts of programming languages, discrete mathematics, algorithm analysis, data base systems, computer networks, microprocessors, and software engineering principles to analyse and design solutions for real world problems.

PSO2: Computer Engineering Programme must demonstrate that, graduate has the capability to comprehend technological advancement in the usage of modern tools to develop systems considering professional ethics, environmental, health, safety, cultural and societal issues.

PSO3: Computer engineering Programme must demonstrate that graduate can have adaptability to new technologies in multidisciplinary fields and communicate effectively as an individual or in a team while managing the projects.

Laboratory Infrastructure

The Department of Computer Engineering at Vidyalankar Institute of Technology, Mumbai, boasts an extensive and advanced laboratory infrastructure that fosters hands-on learning, innovation, and research. Designed to cater to diverse areas of computer engineering, these laboratories empower students with the technical skills and practical expertise necessary for academic and professional excellence.

Each lab is equipped with state-of-the-art hardware, software, and tools, offering an environment conducive to solving complex challenges and experimenting with cutting-edge technologies. These facilities are tailored to meet industry standards, bridging the gap between academic concepts and real-world applications.

Highlights of the Laboratories

1. Core Computing and Algorithmic Development

- Data Dynamics Laboratory
- CodeNest & Algorithmic Structure Laboratory
- Software Engineering & Testing Laboratory
- System Software Laboratory

2. Emerging Technologies and Advanced Applications

- Machine & Deep Learning Laboratory
- AIDS Innovations Laboratory
- Mobile Appworks Laboratory
- Cloud Scape Laboratory
- Ethical Hack Hub

3. **Data Analytics, Visualization, and Research**

- Data Discovery & Visualization Laboratory
- Dataworks Laboratory
- Visualization Studio: Exploring Computer Graphics

4. **Networking and Virtualization**

- Computer Networking Laboratory
- Network Simulation Laboratory
- OS Observatory & Virtualization Lab

5. **Creative and Collaborative Innovation Spaces**

- Ideation & Innovation Hub
- Immersive Technology & Natural Language Processing Laboratory
- Common Browsing Facility

6. **Professional and Communication Development**

- Professional Communication Laboratory

Our laboratories serve as hubs for innovation and research, supporting interdisciplinary collaboration, project development, and industry engagements. Through these facilities, students and faculty work on transformative projects, advancing the field of computer engineering and contributing to technological progress.

Industry Collaboration

In alignment with our vision to bridge the gap between academic learning and industry practices, our institution has established strategic collaborations with renowned organizations such as **GROK Learning, Cloud Counselage, Cerebranium, University 3.0, Value 3 Advisory, Kids Galaxy, DigiSec 360, and Cyberfrat**. These partnerships reflect our commitment to fostering a dynamic and immersive learning environment that prepares students for real-world challenges and emerging opportunities.

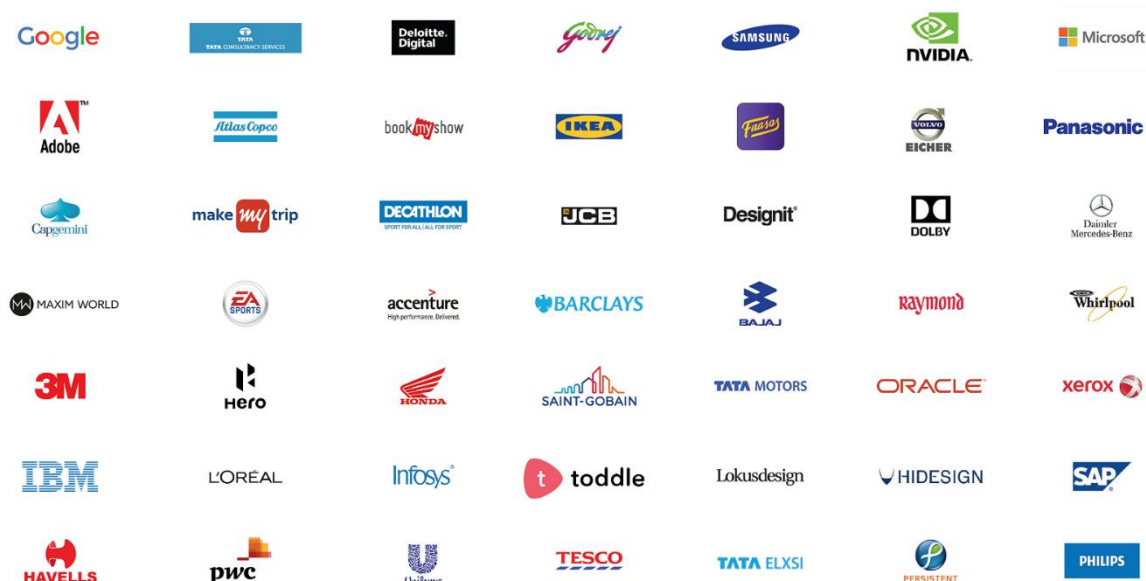
Through these collaborations, we offer students unparalleled access to **internship programs, specialized training modules, value-added courses, and project-based learning experiences**. These initiatives are designed to provide hands-on exposure to industry trends and best practices, equipping our graduates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



By working closely with our industry partners, we ensure that our curriculum remains relevant and innovative, enabling our students to engage with cutting-edge technologies and methodologies. This approach not only enhances their professional readiness but also instills a mindset of lifelong learning and adaptability, key attributes for success in the evolving workplace.

Placements

Top Companies Recruiting



At Vidyalankar Institute of Technology, Mumbai, the Computer Engineering 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.

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
- **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 Computer Engineering Department at Vidyalankar Institute of Technology offers specialized tracks such as **Artificial Intelligence & Machine Learning (AIML)**, **Data Analytics (DA)**, and **Cybersecurity**, 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 under each track

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

Comprehensive Placement Training

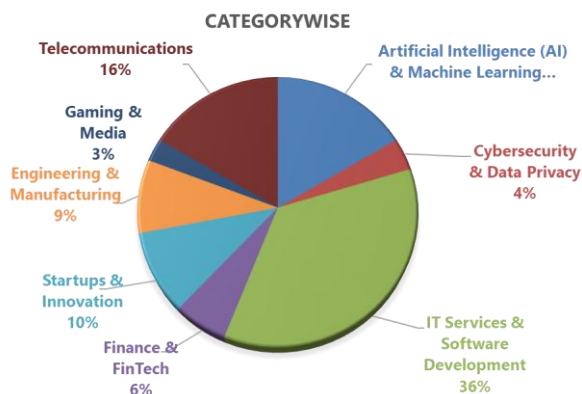
To support students in achieving these milestones, the department offers:

- 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 Computer Engineering 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

In this summer break of 2025,
687 Students selected for
Internships across **183**
companies covering wide
range of domain expertise.



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 Computer Engineering 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), PHD (Doctor of Philosophy)
- **Top Universities:** IIT Bombay, IIT Delhi, IIIT Hyderabad, BITS Pilani, NIT Trichy, IIM (Mumbai, Bangalore, Mysore etc.)

2. Higher Studies in Universities (Abroad)

- **Top Universities:** Stanford University, Massachusetts Institute of Technology (MIT), University of California - Berkeley, Carnegie Mellon University, University of Cambridge, NYU Stern, University of California Los Angeles (UCLA), MIT Sloan, etc.

- **Popular Courses:** M.S. in Computer Science, Data Science, Cybersecurity, Artificial Intelligence, MBA (Master of Business Administration), PHD (Doctor of Philosophy),

Possible Pathways for Higher Studies:

- **M.Tech in Computer Engineering**
 - **Specializations:** AI & Machine Learning, Data Science, Cybersecurity, Embedded Systems, Cloud Computing, Software Engineering
- **M.S. in Computer Science**
 - **Specializations:** Artificial Intelligence, Data Analytics, Robotics, Human-Computer Interaction
- **M.S. in Data Science / AI / Cybersecurity**
 - Focus on niche areas for cutting-edge research and deep domain expertise
- **MBA (Master of Business Administration)/ PGDM (Postgraduate Diploma in Management)**
 - Specializations: Information Technology Management, Business Analytics, Product Management, Digital Transformation
 - 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

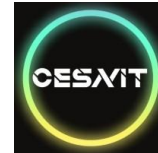
The Computer Engineering Department provides dedicated Higher Studies Committee, helping students make informed decisions about their higher education options. We offer:

- **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 Computer Department has three 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. Computer Society of India (CSI)
2. Computer Engineering Students Association (CESA)
3. Google Developer Groups (GDG)

Computer Department students are also members and hold positions in other professional bodies that are managed by other departments which includes

1. Institute of Electrical and Electronics Engineers (IEEE)
2. Institution of Electronics and Telecommunication Engineers (IETE)
3. Association for Computing Machinery (ACM)

Various technical activities at VIT Computer Engineering Department 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:

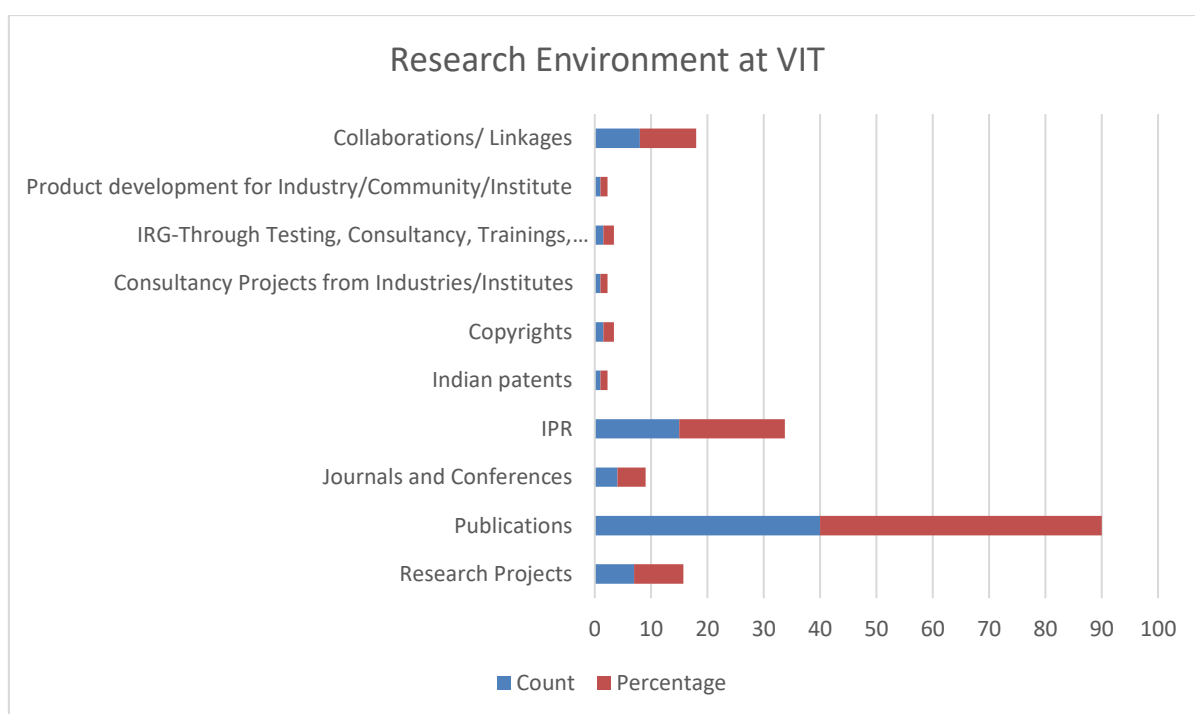


Research

The Department of Computer Engineering 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 Computer Engineering at Vidyalkar 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 computer engineering. Few highlights are seen below:



TE students Sakshi S., Anuj R., Sharayu S., Gayatri V., Ayush D. under the guidance of Prof. Amit K. Nerurkar secured 1st place in the project competition Tantravihar in April 2024 for the project Cryptic Cipher Simulator.



Team MediPal (TE CMPN B) won the consolation prize at the final round of the 18th Aavishkar: Inter-Collegiate/ Institute/ Department Research Convention, 2023 for the project titled- MediPal- A medicine reminder app.

Team members: - Namita Warang- Janhavi Karpe- Shruti Patil
Guide:- Prof. Suja Jayachandran



BE Students Suyog H., Aditi D., Pankaj B, Shivam S. under the guidance of Prof. Amit K. Nerurkar secured 2nd place in the project competition Tantravihar in April 2024 for the project Real time Advance intelligent video surveillance system for crime detection.



Research Scholar Swapnil S. Sonawane secured FIRST rank (GOLD Medal) at the 18th Aavishkar: Inter-Collegiate/ Institute/ Department Research Convention, organized by the University of Mumbai in December 2023 for his contribution in his PhD research work. He participated in and presented a Research Project titled "Modelling blockchain technology-driven practices to be integrated into FinTech enterprises" at the PPG Level.

Student Achievements

The Department of Computer Engineering 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 California 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:



Secured 2nd Place in 50m breaststroke time 38.65 in Swimming



Team Kalki, representing Vidyalankar Institute of Technology, Mumbai, has emerged victorious in the Agnethon 2024 competition held on March 2nd at the Fr. Conceicao Rodrigues Institute of Technology, Vashi. Our team consists of Pradip Garhwal (Team leader), Chinmay Mhatre, Khushil Bhimani, Shivam Mahadik. (TE CMPN students), leading to clinch the prestigious first prize, along with a winning amount of 12k!



Shivani Herlekar:

Winner of Women's Team Championship at Maharashtra State Olympic Games-Jan 2023

Bronze Medallist in the individual event at Maharashtra State Olympic Games-Jan 2023



Adarsh Nambiar



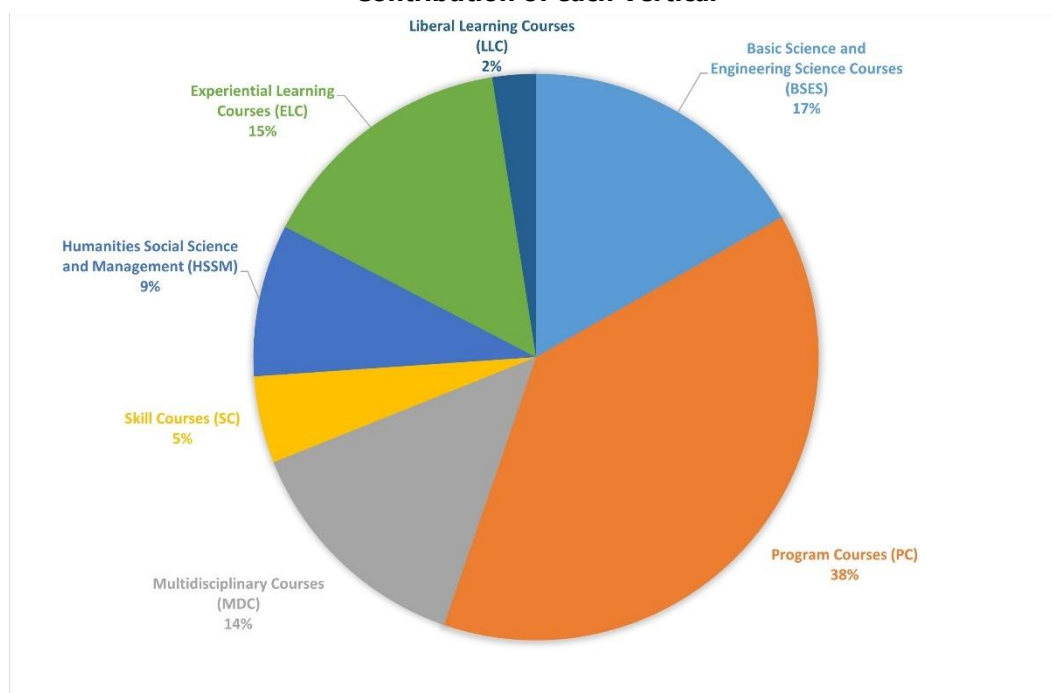
Soham Pashte

Successfully completed an In-House Internship on setting up laboratory systems, gaining hands-on experience in disassembling and reassembling PCs, crimping RJ45 cables, and configuring network setups.

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)	44	44
		2.b	Programme Elective Course (PC_PEC)	20	68
3	Multidisciplinary Courses (MDC)	3.a	Multidisciplinary Minor (MDC_MDM)	14	50
		3.b	Open Elective (MDC_OE)	08	20
4	Skill Courses (SC)		Vocational and Skill Enhancement Course (SC_VSEC)	08	08
5	Humanities Social Science and Management (HSSM)	5.a	Ability Enhancement Course (HSSM_AEC)	04	06
		5.b	Entrepreneurship/ Economics/ Management Course (HSSM_EEMC)	03	06
		5.c	Indian Knowledge System (HSSM_IKS)	02	06
		5.d	Value Education Course (HSSM_VEC)	05	11
6I	Experiential Learning Courses (ELC)	6.a	Research Methodology (ELC_RM)	03	03
		6.b	Comm. Engagement Project / Field Project (ELC_CEPFP)	02	02
		6.c	Project (ELC_PRJ)	06	06
		6.d	Internship/ OJT (ELC_IOJT)	12	12
7	Liberal Learning Courses (LLC)		Co-Curricular Courses (LLC_CC)	04	24
Total				162	293

Contribution of each Vertical



Award of Degree

Learner is expected to successfully complete requirement of 162 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	1
1 Hr. Tutorial (T) per week	1
1 Hr. Practical (P) per week	0.5

To empower students to achieve academic depth or breadth, our undergraduate program offers the opportunity to pursue Honours or Minor specializations. These additional credits are not just academic achievements—they are a commitment to curiosity, a mark of distinction, and a gateway to advanced learning and diverse career pathways.

Whether you aim to delve deeper into your core field with an Honours degree or explore a complementary area of interest through a Minor, these programs provide the flexibility, recognition, and challenge to help you stand out. We encourage you to seize this opportunity to shape a richer, more versatile academic journey—one that reflects your ambition and prepares you for a future of limitless possibilities.

Learners can choose to avail

- i) B.Tech. in Computer Engineering with Honors degree or
- ii) B.Tech. in Computer Engineering with Honours by Research degree or
- iii) B.Tech. in Computer Engineering with Minor degree

by completing requirements of additional 18 credits, which will be over and above the 162 credits required for "B.Tech. in Computer Engineering" degree. Details of additional 18 credits are stated in Honours/ Minor/ Honours by Research Degree Document applicable for R-2025 curriculum.

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	Summer	Winter					Theory	Practical	Tutorial		
1	BSC01*	Engineering Mathematics-I	√	-	-	-	NIL	BSC03,	4.5	K	3	-	-	3	1
2	BSC03*	Engineering Mathematics-II	-	√	-	-	BSC01	PCCE06	4.5	K	3	-	-	3	2
3	BSC05	Engineering Mathematics-III	√	-	-	-	BSC01	PCCE09, PCCE10	5.0	K	3	-	-	3	3
4	BSC07	Engineering Mathematics-IV	-	√	-	-	NIL	PCCE13	5.0	K	3	-	-	3	4
5	BSC09T*	Physics	-	√	-	-	NIL	NIL	4.5	K	2	-	-	2	2
6	BSC09P*	Physics Lab	-	√	-	-	NIL	NIL	4.5	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 (BSES_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	PCCE06	4	K	2	-	-	2	1
2	ESC01P*	Engineering Graphics Lab	√	-	-	-	NIL	PCCE06	4	S	-	2	-	1	1
To be continued...															

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		
3	ESC04T*	Fundamentals of Computer Hardware and Networking	√	-	-	-	NIL	PCCE11, ESC08	4.5	K	2	-	-	2	1
4	ESC04P*	Fundamentals of Computer Hardware and Networking Lab	√	-	-	-	NIL	PCCE11, ESC08	4.5	S	-	2	-	1	1
5	ESC05T*	Fundamental of Logic Circuits	√	-	-	-	NIL	ESC08	4.5	K	2	-	-	2	1
6	ESC05P*	Fundamental of Logic Circuits Lab	√	-	-	-	NIL	ESC08	4.5	S	-	2	-	1	1
7	ESC08*	Computer Organization and Architecture	-	√	-	-	ESC04, ESC05	PCCE02	4.5	K	3	-	-	3	2
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 = 44

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	PCCE01T*	Data Structure	-	√	-	-	VSEC01	PCCE04, PCCE05	4.5	K	2	-	-	2	2
2	PCCE01P*	Data Structure Lab	-	√	-	-	VSEC01	PCCE04, PCCE05	4.5	S	-	2	-	1	2
To be continued...															

Programme Structure (R-2025) for Bachelor of Technology (B.Tech.) – Computer Engineering

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		
3	PCCE02T	Microprocessor	√	-	-	-	ESC08	NIL	5.0	K	2	-	-	2	3
4	PCCE02P	Microprocessor Lab	√	-	-	-	ESC08	NIL	5.0	S	-	2	-	1	3
5	PCCE04T	Analysis of Algorithms	√	-	-	-	PCCE01	PCCE10, PCCE11, PCCE13	5.0	K	2	-	-	2	3
6	PCCE04P	Analysis of Algorithms Lab	√	-	-	-	PCCE01	PCCE10, PCCE11, PCCE13	5.0	S	-	2	-	1	3
7	PCCE05T	Database Management Systems	√	-	-	-	PCCE01	PCCE12	5.0	K	2	-	-	2	3
8	PCCE05P	Database Management Systems Lab	√	-	-	-	PCCE01	PCCE12	5.0	S	-	2	-	1	3
9	PCCE06T	Computer Graphics	-	√	-	-	BSC03, ESC01	NIL	5.0	K	2	-	-	2	4
10	PCCE06P	Computer Graphics Lab	-	√	-	-	BSC03, ESC01	NIL	5.0	S	-	2	-	1	4
11	PCCE07T	Operating Systems	-	√	-	-	PCCE01	PCCE16	5.0	K	2	-	-	2	4
12	PCCE07P	Operating Systems Lab	-	√	-	-	PCCE01	PCCE16	5.0	S	-	2	-	1	4
13	PCCE09	Theory of Computer Science	-	√	-	-	BSC05	PCCE15	5.5	K	2	-	1	3	5
14	PCCE10T	Artificial Intelligence	-	√	-	-	PCCE04, BSC05	PCCE13	5.5	K	2	-	-	2	5
15	PCCE10P	Artificial Intelligence Lab	-	√	-	-	PCCE04, BSC05	PCCE13	5.5	S	-	2	-	1	5
16	PCCE11T	Computer Networks	√	-	-	-	ESC04, PCCE04	PCCE16	5.5	K	2	-	-	2	5
17	PCCE11P	Computer Networks Lab	√	-	-	-	ESC04, PCCE04	PCCE16	5.5	S	-	2	-	1	5
18	PCCE12T	Software Engineering	√	-	-	-	VSEC02	PCCE19	5.5	K	2	-	-	2	5
19	PCCE12P	Web Design Lab	√	-	-	-	VSEC02	PCCE19	5.5	S	-	2	-	1	5
20	PCCE13T	Machine Learning	√	-	-	-	PCCE04, PCCE10,	PECE13T	5.5	K	2	-	-	2	6

To be continued...

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		
21	PCCE13P	Machine Learning Lab	√	-	-	-	PCCE04, PCCE10,	PECE13T	5.5	S	-	2	-	1	6
22	PCCE14	Cloud Computing Lab	√	-	-	-	PCCE16	PECE19T	5.5	S	-	2	-	1	6
23	PCCE15	System Programming and Compiler Design	-	√	-	-	PCCE09	-	5.5	K	3	-	-	3	6
24	PCCE16T	Distributed Systems	-	√	-	-	PCCE07, PCCE11	PCCE14	5.5	K	2	-	-	2	6
25	PCCE16P	Distributed Systems Lab	-	√	-	-	PCCE07, PCCE11	PCCE14	5.5	S	-	2	-	1	6
26	PCCE17	Programming with R	-	√	-	-	VSEC01	PCCE13	6.0	S	-	2	-	1	7
27	PCCE18	Machine Vision using Python	√	-	-	-	VSEC03	NIL	6.0	K	-	2	-	1	7
28	PCCE19	DevOps	√	-	-	-	PCCE14, PCCE12	PRJCE01, PRJCE03	6.0	S	1	2	-	2	7
Total Offered Credits														44	

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

b. Programme Courses> Programme Elective Course (PC_PEC)

Minimum Credits Required = 20

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	PECE01T	Soft Computing	-	√	-	-	BSC05, PCCE10	PCCE05, PECE13	5.5	K	2	-	-	2	6
2	PECE01P	Soft Computing Lab	-	√	-	-	BSC05, PCCE10	PCCE05, PECE13	5.5	S	-	2	-	1	6
3	PECE02T	Data Warehousing and Data Mining	√	-	-	-	PCCE05	PECE10, PECE14	5.5	K	2	-	-	2	5
To be continued...															

Programme Structure (R-2025) for Bachelor of Technology (B.Tech.) – Computer Engineering

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	PECE02P	Data Warehousing and Data Mining Lab	√	-	-	-	PCCE05	PECE10, PECE14	5.5	S	-	2	-	1	5
5	PECE03T	Modern Sensors for Internet of Things	√	-	-	-	PCCE11, PCCE02	PECE22	5.5	K	2	-	-	2	5
6	PECE03P	Modern Sensors for Internet of Things Lab	√	-	-	-	PCCE11, PCCE02	PECE22	5.5	S	-	2	-	1	5
7	PECE04T	Computer and Network Security	√	-	-	-	PCCE11	PECE08, PECE21	5.5	K	2	-	-	2	5
8	PECE04P	Computer and Network Security Lab	√	-	-	-	PCCE11	PECE08, PECE21	5.5	S	-	2	-	1	5
9	PECE05T	Natural Language Processing	√	-	-	-	PECE01, PCCE09, PCCE15, PCCE13	-	6.0	K	2	-	-	2	7
10	PECE05P	Natural Language Processing Lab	√	-	-	-	PECE01, PCCE09, PCCE15, PCCE13	--	6.0	S	-	2	-	1	7
11	PECE06T	Advanced Databases	-	√	-	-	PCCE05	PECE14	5.5	K	2	-	-	2	6
12	PECE06P	Advanced Databases Lab	-	√	-	-	PCCE05	PECE14	5.5	S	-	2	-	1	6
13	PECE07T	Text, Web & Social Media Analytics	√	-	-	-	PECE10	-	6.0	K	2	-	-	2	7
14	PECE07P	Text, Web & Social Media Analytics Lab	√	-	-	-	PECE10	-	6.0	S	-	2	-	1	7
15	PECE08T	System Security and Ethical Hacking	-	√	-	-	PECE04	PECE16, PECE12	5.5	K	2	-	-	2	6
16	PECE08P	System Security and Ethical Hacking Lab	-	√	-	-	PECE04	PECE16, PECE12	5.5	S	-	2	-	1	6
17	PECE09T	Advanced Machine Learning	√	-	-	-	PCCE13, PECE10	-	6.0	K	2	-	-	2	7
18	PECE09P	Advanced Machine Learning Lab	√	-	-	-	PCCE13, PECE10	-	6.0	S	-	2	-	1	7
To be continued...															

Programme Structure (R-2025) for Bachelor of Technology (B.Tech.) – Computer Engineering

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		
19	PECE10	Probabilistic and Graphical Model	-	√	-	-	BSC05, PECE02	PECE07, PECE09, PECE18	5.5	K	3	-	-	3	6
20	PECE11T	Embedded Systems Design and Tiny OS	-	√	-	-	PCCE07, PECE03	PECE17, PECE19	5.5	K	2	-	-	2	6
21	PECE11P	Embedded Systems Design and Tiny OS Lab	-	√	-	-	PCCE07, PECE03	PCCE17, PCCE19	5.5	S	-	2	-	1	6
22	PECE12T	Web Application Security	√	-	-	-	PECE08	-	6.0	K	2	-	-	2	7
23	PECE12P	Web Application Security Lab	√	-	-	-	PECE08	-	6.0	S	-	2	-	1	7
24	PECE13T	Deep Learning	√	-	-	-	PECE01, PCCE13	-	6.0	K	2	-	-	2	7
25	PECE13P	Deep Learning Lab	√	-	-	-	PECE01, PCCE13	-	6.0	S	-	2	-	1	7
26	PECE14T	Big Data Analytics	√	-	-	-	PECE02, PECE06	-	6.0	K	2	-	-	2	7
27	PECE14P	Big Data Analytics Lab	√	-	-	-	PECE02, PECE06	-	6.0	S	-	2	-	1	7
28	PECE15T	Malware Analysis	√	-	-	-	PECE08, PECE21	-	6.0	K	2	-	-	2	7
29	PECE15P	Malware Analysis Lab	√	-	-	-	PECE08, PECE21	-	6.0	S	-	2	-	1	7
30	PECE16T	Mobile and Wireless Security	√	-	-	-	PECE08	-	6.0	K	2	-	-	2	7
31	PECE16P	Mobile and Wireless Security Lab	√	-	-	-	PECE08	-	6.0	S	-	2	-	1	7
32	PECE17T	IoT & Edge Computing	√	-	-	-	PECE11	--	6.0	K	2	-	-	2	7
33	PECE17P	IoT & Edge Computing Lab	√	-	-	-	PECE11	--	6.0	S	-	2	-	1	7
34	PECE18T	Recommendation System	√	-	-	-	PECE10	-	6.0	K	2	-	-	2	7
35	PECE18P	Recommendation System Lab	√	-	-	-	PECE10	-	6.0	K	-	2	-	1	7
36	PECE19T	IoT Security & Trust	√	-	-	-	PECE11, PECE22	-	6.0	K	2	-	-	2	7
37	PECE19P	IoT Security & Trust Lab	√	-	-	-	PECE11, PECE22	-	6.0	S	-	2	-	1	7
To be continued...															

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		
38	PECE20T	Industrial IoT	√	-	-	-	PECE22	-	6.0		2	-	-	2	7
39	PECE20P	Industrial IoT Lab	√	-	-	-	PECE22	-	6.0		-	2	-	1	7
40	PECE21T	Digital Forensics	-	√	-	-	PECE04	PECE15	5.5		2	-	-	2	6
41	PECE21P	Digital Forensics Lab	-	√	-	-	PECE04	PECE15	5.5		-	2	-	1	6
42	PECE22T	Principles of Internet of Things	-	√	-	-	PECE03	PECE20, PECE19	5.5		2	-	-	2	6
43	PECE22P	Principles of Internet of Things Lab	-	√	-	-	PECE03	PECE20, PECE19	5.5		-	2	-	1	6
Total Offered Credits														68	

III. Multidisciplinary Courses (MDC)

a. 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	MDM03	Professional Competency Development 3	√	-	-	-	-	-	5.5	S	-	2	-	1	6
2	MDM04	Professional Competency Development 4	-	√	-	-	-	-	6	S	-	2	-	1	7
Multidisciplinary Minor in Bioinformatics															
3	MDM BI01	Introduction to Bioinformatics	√	-	-	-	-	MDM BI02	5.0	K & S	3	-	1	4	3
4	MDM BI02	Algorithms and Data Structures in Bioinformatics	-	√	-	-	MDM BI01	MDM BI03	5.0	K & S	3	-	1	4	4
To be continued...															

Programme Structure (R-2025) for Bachelor of Technology (B.Tech.) – Computer Engineering

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCeF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
5	MDM BI03	Machine Learning Applications in Bioinformatics	√	-	-	-	MDM BI02	-	5.5	K & S	3	-	1	4	5
Multidisciplinary Minor in Innovation, Entrepreneurial and Venture Development															
6	MDM IE01	Foundations of Innovation and Entrepreneurship	√	-	-	-	-	MDM IE02	5.0	K & S	3	-	1	4	3
7	MDM IE02	Startup Planning and Development	-	√	-	-	MDM IE01	MDM IE03	5.0	K & S	3	-	1	4	4
8	MDM IE03	Innovation Management and Scaling Startups	√	-	-	-	MDM IE02	-	5.5	K & S	3	-	1	4	5
Multidisciplinary Minor in Business Development, Marketing and Finance															
9	MDM BD01	Introduction to Business Development and Marketing Principles	√	-	-	-	-	MDM BD02	5.0	K & S	3	-	1	4	3
10	MDM BD02	Financial Basics for Engineers and Technopreneurs	-	√	-	-	MDM BD01	MDM BD03	5.0	K & S	3	-	1	4	4
11	MDM BD03	Strategic Marketing and Business Planning	√	-	-	-	MDM BD02	-	5.5	K & S	3	-	1	4	5
Multidisciplinary Minor in Robotics															
12	MDM RB01	Fundamentals of Robotics and Control	√	-	-	-	-	MDM RB02	5.0	K & S	3	2	-	4	3
13	MDM RB02	Machine Vision and Robotic Perception	-	√	-	-	MDM RB01	MDM RB03	5.0	K & S	3	2	-	4	4
14	MDM RB03	Intelligent Mobile Robotics	√	-	-	-	MDM RB02	-	5.5	K & S	3	2	-	4	5
Multidisciplinary Minor in Computer Science (not applicable for Computer Engineering students)															
15	MDM CS01	Computational Logic and Data Structures	√	-	-	-	-	MDM CS02	5.0	K & S	3	2	-	4	3
16	MDM CS02	Operating Systems and Computer Networks	-	√	-	-	MDM CS01	MDM CS03	5.0	K & S	3	2	-	4	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		
17	MDM CS03	Database Systems and Introduction to Data Mining	√	-	-	-	MDM CS02	-	5.5	K & S	3	2	-	4	5
Total Offered Credits														50	

b. Programme Courses> Open Elective (MDC_OE)

Minimum Credits Required = 08

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	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	-	-	√	-	-	5.0	K	As per offering institute			4	SE Summer Break
2	OEC02	Cyber Law	√	√	-	-	-	6.0	K	2	-	-	2	8
3	OEC03	Project Management	√	√	-	-	-	6.0	K	2	-	-	2	8
4	OEC04	Product Lifecycle Management	√	√	-	-	-	6.0	K	2	-	-	2	8
5	OEC05	Sustainability Management	√	√	-	-	-	6.0	K	2	-	-	2	8
6	OEC06	Renewable Energy Management	√	√	-	-	-	6.0	K	2	-	-	2	8
7	OEC07	Biology	√	-	-	-	-	5.0	K	2	-	-	2	4
8	OEC08	Chemistry	√	-	-	-	-	5.0	K	2	-	-	2	4
9	OEC09	Psychology	√	-	-	-	-	5.0	K	2	-	-	2	4
10	OEC14	Professional Competency Development 1	-	√	-	-	-	5.0	S	-	2	-	1	4
11	OEC15	Professional Competency Development 2	√	-	-	-	-	5.5	S	-	2	-	1	5
Total Offered Credits													20	

* **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.

IV. Skill Courses (SC)

Vocational and Skill Enhancement Course (SC_VSEC)

Minimum Credits Required = 08

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCeF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	VSEC01T*	Structured Programming	√	-	-	-	-	PCCE01, BSEC02	4.5	K	2	-	-	2	1
2	VSEC01P*	Structured Programming Lab	√	-	-	-	-	PCCE01, BSEC02	4.5	S	-	2	-	1	1
3	VSEC02T*	Object Oriented Programming	-	√	-	-	VSEC01	VSEC03	4.5	K	2	-	-	2	2
4	VSEC02P*	Object Oriented Programming Lab	-	√	-	-	VSEC01	VSEC03	4.5	S	-	2	-	1	2
5	VSEC03	Python Programming	-	√	-	-	VSEC02P	PCCE13, PRJCE01, PRJCE02, OJT01	5.0	S	-	4	-	2	4
Total Offered Credits														08	

*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 Science and Management (HSSM)

a. Ability Enhancement Course (HSSM_AEC)

Minimum Credits Required = 04

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCeF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	AEC01T*	Effective Communication	√	-	-	-	-	-	4.5	S&A	2	-	-	2	1
2	AEC01P*	Effective Communication Lab	√	-	-	-	-	-	4.5	S&A	-	2	-	1	1
3	AEC02	Technical and Business Writing	√	√	-	-	-	-	5.0	S&A	1	2	-	2	3
4	AEC03	Presentation Skills	√	√	-	-	-	-	5.0	S&A	-	2	-	1	3
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 Course (HSSM_EEMC)

Minimum Credits Required = 03

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCeF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	EEMC01	Design Thinking	√	√	-	-	-	PRJCE02, OJT01	5.0	S	2	2	-	3	3
2	EEMC02	Principles of Economics and Management	√	√	-	-	-	-	5.0	K	2	-	1	3	3
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 NCeF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	IKS01	Indian Traditional Knowledge System	√	√	-	-	-	-	4.5	K & A	2	-	-	2	2
2	IKS02	Indian Constitution	√	√	-	-	-	-	4.5	K & A	2	-	-	2	2
3	IKS03	Exploring Indian Art	√	√	-	-	-	-	4.5	K & A	2	-	-	2	2
Total Offered Credits														06	

d. Value Education Course (HSSM_VEC)

Minimum Credits Required = 05

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCeF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	VEC01T	Professional Skills	-	√	-	-	-	-	4.5	S & A	2	-	-	2	4
2	VEC01P	Professional Skills Lab	-	√	-	-	-	-	4.5	S & A	-	2	-	1	4
3	VEC02	E-Waste and Environmental Management	√	√	-	-	-	-	5.0	S & A	2	-	-	2	5
4	VEC03	Universal Human Values	√	√	-	-	-	-	4.5	S & A	2	-	-	2	5
5	VEC04	Responsibility Towards Sustainable Environment	√	√	-	-	-	-	4.5	S & A	2	-	-	2	5
6	VEC05	Four Pillars of Democratic Nation	√	√	-	-	-	-	4.5	S & A	2	-	-	2	5
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	-	√	-	-	-	-	6.0	K & S	3	-	-	3	8
Total Offered Credits														03	

b. Comm. Engagement Project / Field Project (ELC_CEPFP)

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	√	-	-	-	-	-	5.0	S & A	-	4	-	2	4
Total Offered Credits														02	

*For CEP01- Social Service Internship/ Project: 1 hour / week slot will be provided during the semester (in regular timetable). Additional work of 45 hours needs to be completed during the semester (besides regular timetable).

c. Project (ELC_PRJ)

Minimum Credits Required = 06

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	PRJCE01	Specialization- Based Project	-	√	-	-	PCCE04, VSEC03, BSC07	PRJCE03	5.5	S & A		4		2	6
2	PRJCE02	Project-1 (Synopsis)	-	√	-	-	EEMC01, VSEC03	PRJCE03	5.5	K, S & A	2	-	-	2	6
3	PRJCE03	Project-2 (Final)	√	-	-	-	PRJCE02	-	6.0	K, S & A	-	8	-	4	7
Total Offered Credits														06	

d. Internship/ OJT (ELC_IOJT)

Minimum Credits Required = 12

Sr. No.	Course Code	Course Name	Offered in				Required Prerequisite	Prerequisite for	Course Level (as per NCrF)	KSA	Total Hours			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	OJT01	Industry Internship 1	-	-	√	-	EEMC01, VSEC03	OJT02	6.0	K, S & A	-	150	-	5	TE Summer Break
2	OJT02	Industry Internship 2	-	√	-	-	OJT01	-	6.0	K, S & A	-	210	-	7	8
Total Offered Credits														12	

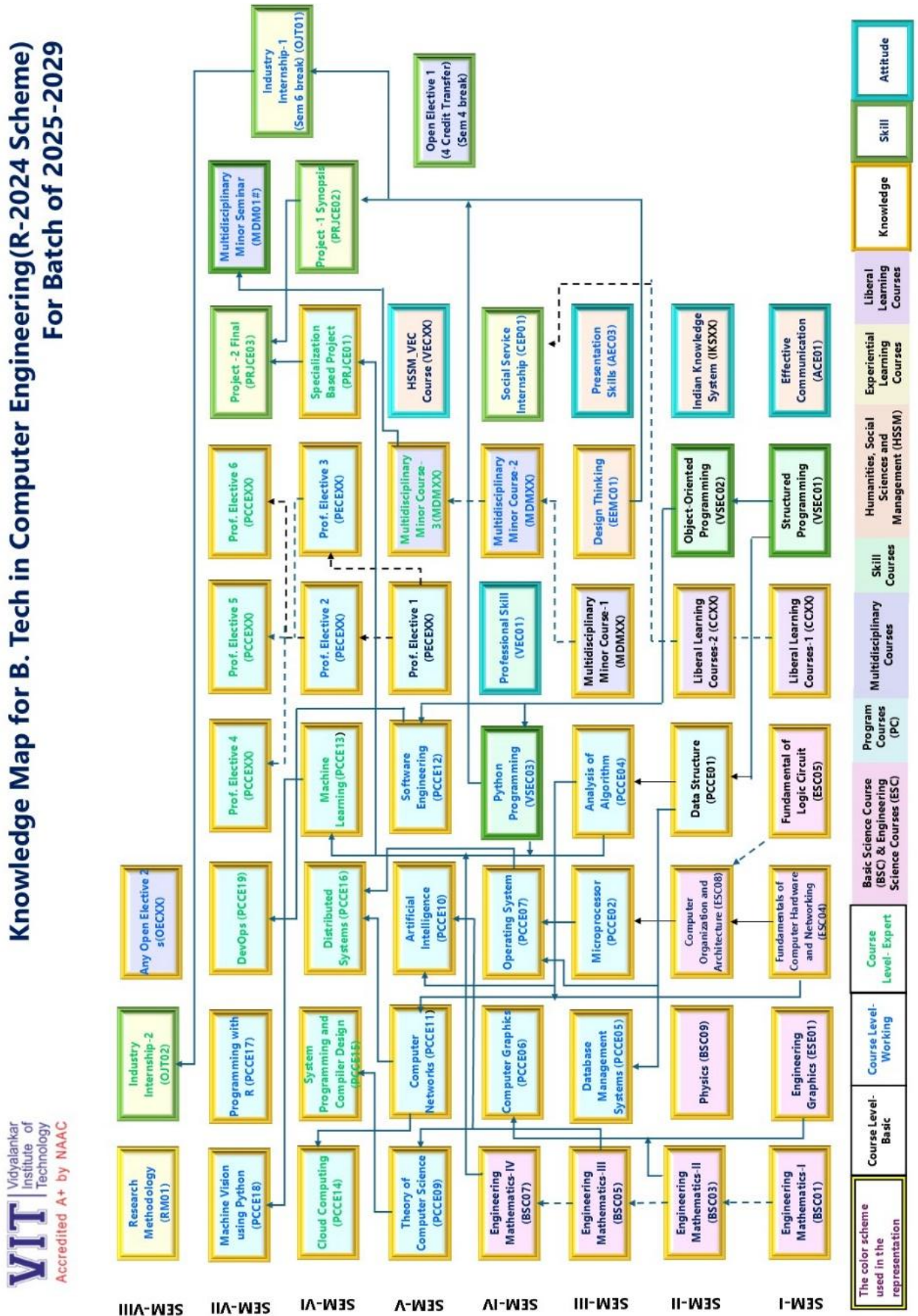
VII. Liberal Learning Courses (LLC)

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 NCeF)	KSA Mapping	Hours Per Week			Credits	Preferred Semester
			Fall	Spring	Summer	Winter					Theory	Practical	Tutorial		
1	CC01	Various Dance Forms	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
2	CC02	Corporate and Social Etiquettes	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
3	CC03	Global Citizenship Education	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
4	CC04	Wellness – Body, Mind & Spirit	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
5	CC05	IQ vs EQ	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
6	CC06	Nutrition and Physical Wellness	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
7	CC07	Facets of Astronomy	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
8	CC08	Railways - Wonders of Infrastructure	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
9	CC09	Financial Literacy for Engineers	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
10	CC10	Mastering Advanced Excel	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
11	CC11	Personal Grooming Essentials	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
12	CC12	Various Music Forms	√	√	-	-	-	-	4.5	K	2	-	-	2	Any
Total Offered Credits														24	

Knowledge Map of VIT_CMPN_R-2025 Curriculum



Illustrative Semester wise
Credit Distribution Structure and Assessment Guidelines
(Based on NEP 2020 Guidelines)
for
Bachelor of Technology
in
Computer Engineering

Programme Structure (R-2025) for Bachelor of Technology (B.Tech.) – Computer Engineering

Verticals	Sub-Verticals	Sem 1		Sem 2		Sem 3		Sem 4		Sem 5		Sem 6		Sem 7		Sem 8		Total Credits
		Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	Credits	Certification	
Basic Science and Engineering Science Courses (BSES)	Basic Science Courses (BSC)	3		6		3		3										15
	Engineering Science Courses (ESC)	9	1	3														12
Program Courses (PC)	Programme Core Course (PCC)			3	1	9	3	6	2	12	4	10	3	4	3			44
	Programme Elective Course (PEC)									3	1	8	1	9	3			20
Multidisciplinary Courses (MDC)	Multidisciplinary Minor (MDM)					4		4		4	1			2				14
	Open Elective (OE)									4						4		8
Skill Courses (SC)	Vocational and Skill Enhancement Course (VSEC)	3	1	3	1			2	1									8
	Ability Enhancement Course (AEC)	3				1												4
Humanities Social Science and Management (HSSM)	Entrepreneurship/ Economics/ Management Course (EEMC)					3	1											3
	Indian Knowledge System (IKS)			2														2
	Value Education Course (VEC)							3		2								5
	Research Methodology (RM)															3		3
Experiential Learning Courses (ELC)	Comm. Engg. Project (CEP)/ Field Project (FP)							2										2
	Project											2		4				6
	Internship/ OIT													5	1	7	1	12
Liberal Learning Courses (LLC)	Co-Curricular Courses (CC)	2		2														4
	Total	20	2	19	2	20	4	20	3	25	6	20	4	24	7	14	1	162

First Year B. Tech. Computer Engineering
Course Structure and Assessment Guidelines

Preferred Semester: I

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	BSC01	Engineering Mathematics-I	NIL	BSCO3	K	3	-	-	3	20	30	50	100		
BSES_ESC	ESC01T	Engineering Graphics	NIL	PCCE06	K	2	-	-	2	15	20	40	075		
BSES_ESC	ESC01P	Engineering Graphics Lab	NIL	PCCE06	S	-	2	-	1	25	-	25	050		
BSES_ESC	ESC04T	Fundamentals of Computer Hardware and Networking	NIL	PCCE11, ESC08	K	2	-	-	2	15	20	40	075	Y	
BSES_ESC	ESC04P	Fundamentals of Computer Hardware and Networking Lab	NIL	PCCE11, ESC08	S	-	2	-	1	25	-	25	050		
BSES_ESC	ESC05T	Fundamental of Logic Circuits	NIL	ESC08	K	2	-	-	2	15	20	40	075		
BSES_ESC	ESC05P	Fundamental of Logic Circuits Lab	NIL	ESC08	S	-	2	-	1	25	-	25	050		
SC_VSEC	VSEC01T	Structured Programming	-	PCCE01, BSEC02	K	2	-	-	2	15	20	40	075	Y	
SC_VSEC	VSEC01P	Structured Programming Lab	-	PCCE01, BSEC02	S	-	2	-	1	25	-	25	050		
HSSM_AEC	AEC01T	Effective Communication	-	-	S&A	2	-	-	2	15	20	40	075		
HSSM_AEC	AEC01P	Effective Communication Lab	-	-	S&A	-	2	-	1	25	-	25	050		
LLC_CC	CCXX*	Any LLC_CC course offered	As per list below						2	As per list below					
Total Credits									20						

*Selection based on the subset of courses made available by the Institute for the semester.

§Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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 Liberal Learning_ Cocurricular Courses

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%)	
CC01	Various Dance Forms	-	-	K	2	-	-	2	25	-	50	075	
CC02	Corporate and Social Etiquettes	-	-	K	2	-	-	2	25	-	50	075	
CC03	Global Citizenship Education	-	-	K	2	-	-	2	25	-	50	075	
CC04	Wellness – Body, Mind & Spirit	-	-	K	2	-	-	2	25	-	50	075	
CC05	IQ vs EQ	-	-	K	2	-	-	2	25	-	50	075	
CC06	Nutrition and Physical Wellness	-	-	K	2	-	-	2	25	-	50	075	
CC07	Facets of Astronomy	-	-	K	2	-	-	2	25	-	50	075	
CC08	Railways - Wonders of Infrastructure	-	-	K	2	-	-	2	25	-	50	075	
CC09	Financial Literacy for Engineers	-	-	K	2	-	-	2	25	-	50	075	
CC10	Mastering Advanced Excel	-	-	K	2	-	-	2	25	-	50	075	
CC11	Personal Grooming Essentials	-	-	K	2	-	-	2	25	-	50	075	
CC12	Various Music Forms	-	-	K	2	-	-	2	25	-	50	075	

First Year B. Tech. Computer Engineering

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	BSC03	Engineering Mathematics-II	BSCO1	PCCE06	K	3	-	-	3	20	30	50	100		
BSES_BSC	BSC09T	Physics	NIL	NIL	K	2	-	-	2	15	20	40	075		
BSES_BSC	BSC09P	Physics Lab	NIL	NIL	S	-	2	-	1	25	-	25	050		
BSES_ESC	ESC08	Computer Organization and Architecture	ESC04, ESC05	PCCE02	K	3	-	-	3	20	30	50	100		
PC_PCC	PCCE01T	Data Structure	VSEC01	PCCE04, PCCE05	K	2	-	-	2	15	20	40	075	Y	
PC_PCC	PCCE01P	Data Structure Lab	VSEC01	PCCE04, PCCE05	S	-	2	-	1	25	-	25	050		
SC_VSEC	VSEC02T	Object-Oriented Programming	VSEC01	VSEC03	K	2	-	-	2	15	20	40	075	Y	
SC_VSEC	VSEC02P	Object-Oriented Programming Lab	VSEC01	VSEC03	S	-	2	-	1	25	-	25	050		
HSSM_IKS	IKSXX*	Any HSSM_IKS course	As per list below						2	As per list below					
LLC_CC	CCXX*	Any LLC_CC course offered	As per list below						2	As per list below					
Total Credits									19						

*Selection based on the subset of courses made available by the Institute for the semester.

^{\$}Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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

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%)	
IKS01	Indian Traditional Knowledge System	-	-	K & A	2	-	-	2	25	-	50	075	
IKS02	Indian Constitution	-	-	K & A	2	-	-	2	25	-	50	075	
IKS03	Exploring Indian Art	-	-	K & A	2	-	-	2	25	-	50	075	

List of Liberal Learning_ Cocurricular Courses

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%)	
CC01	Various Dance Forms	-	-	K	2	-	-	2	25	-	50	075	
CC02	Corporate and Social Etiquettes	-	-	K	2	-	-	2	25	-	50	075	
CC03	Global Citizenship Education	-	-	K	2	-	-	2	25	-	50	075	
CC04	Wellness – Body, Mind & Spirit	-	-	K	2	-	-	2	25	-	50	075	
CC05	IQ vs EQ	-	-	K	2	-	-	2	25	-	50	075	
CC06	Nutrition and Physical Wellness	-	-	K	2	-	-	2	25	-	50	075	
CC07	Facets of Astronomy	-	-	K	2	-	-	2	25	-	50	075	
CC08	Railways - Wonders of Infrastructure	-	-	K	2	-	-	2	25	-	50	075	
CC09	Financial Literacy for Engineers	-	-	K	2	-	-	2	25	-	50	075	
CC10	Mastering Advanced Excel	-	-	K	2	-	-	2	25	-	50	075	
CC11	Personal Grooming Essentials	-	-	K	2	-	-	2	25	-	50	075	
CC12	Various Music Forms	-	-	K	2	-	-	2	25	-	50	075	

Second Year B. Tech. Computer Engineering
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%)	
BSES_BSC	BSC05	Engineering Mathematics-III	BSC01	PCCE09, PCCE10	K	3	-	-	3	20	30	50	100	Y
PC_PCC	PCCE02T	Microprocessor	ESC08	NIL	K	2	-	-	2	15	20	40	075	
PC_PCC	PCCE02P	Microprocessor Lab	ESC08	NIL	S	-	2	-	1	25	-	25	050	
PC_PCC	PCCE04T	Analysis of Algorithms	PCCE01	PCCE10, PCCE11, PCCE13	K	2	-	-	2	15	20	40	075	Y
PC_PCC	PCCE04P	Analysis of Algorithms Lab	PCCE01	PCCE10, PCCE11, PCCE13	S	-	2	-	1	25	-	25	050	
PC_PCC	PCCE05T	Database Management Systems	PCCE01	PCCE12	K	2	-	-	2	15	20	40	075	Y
PC_PCC	PCCE05P	Database Management Systems Lab	PCCE01	PCCE12	S	-	2	-	1	25	-	25	050	
HSSM_EEMC	EEMC01	Design Thinking	-	PRJCE02, OJT01	S	2	2	-	3	50	-	50	100	Y
HSSM_AEC	AEC03	Presentation Skills	-	-	S&A	-	2	-	1	50	-	-	050	
MDC_MDM	MDMXX [#]	MDM Course1 of chosen Title	As per list below						4	As per list below				
Total Credits									20					

[#]Selection based on the MD M Title chosen by the student.

^{\$}Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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 – Refer Appendix-B

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

Multidisciplinary Elective Course1 (MDMXX)

MD M Title	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%)	
Bioinformatics	MDM BI01	Introduction to Bioinformatics	-	MDM BI02	K & S	3	-	1	4	45	30	50	125	
Innovation, Entrepreneurial and Venture Development	MDM IE01	Foundations of Innovation and Entrepreneurship	-	MDM IE02	K & S	3	-	1	4	45	30	50	125	
Business Development, Marketing and Finance	MDM BD01	Introduction to Business Development and Marketing Principles	-	MDM BD02	K & S	3	-	1	4	45	30	50	125	
Robotics	MDM RB01	Fundamentals of Robotics and Control	-	MDM RB02	K & S	3	2	-	4	45	30	50	125	

Second Year B. Tech. Computer Engineering

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%)		
BSES_BSC	BSC07	Engineering Mathematics-IV	NIL	PCCE13	K	3	-	-	3	20	30	50	100		
PC_PCC	PCCE06T	Computer Graphics	BSC03, ESC01	NIL	K	2	-	-	2	15	20	40	075	Y	
PC_PCC	PCCE06P	Computer Graphics Lab	BSC03, ESC01	NIL	S	-	2	-	1	25	-	25	050		
PC_PCC	PCCE07T	Operating Systems	PCCE01	PCCE16	K	2	-	-	2	15	20	40	075	Y	
PC_PCC	PCCE07P	Operating Systems Lab	PCCE01	PCCE16	S	-	2	-	1	25	-	25	050		
SC_VSEC	VSEC03	Python Programming	VSEC02P	PCCE13, PRJCE01, PRJCE02, OJT01	S	-	4	-	2	50	-	25	075	Y	
HSSM_VEC	VEC01T	Professional Skills	-	-	S & A	2	-	-	2	15	20	40	075		
HSSM_VEC	VEC01P	Professional Skills Lab	-	-	S & A	-	2	-	1	25	-	25	050		
ELC_CEP	CEP01*	Social Service Internship/ Project	-	-	S & A	-	4	-	2	25	-	50	075		
MDC_OEC	OEC14	Professional Competency Development 1	-	-	S	-	2	-	1	50	-	-	050		
MDC_MDM	MDMXX [#]	MDM Course2 of chosen Title	As per list below						4	As per list below					
Total Credits									21						

***For CEP01- Social Service Internship/ Project:** 1 hour / week slot will be provided during the semester (in regular timetable). Additional work of 45 hours needs to be completed during the semester (besides regular timetable).

[#]Selection based on the MDM Title chosen by the student.

^{\$}Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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 Course2 (MDMXX)

MDM Title	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%)	
Bioinformatics	MDM BI02	Algorithms and Data Structures in Bioinformatics	MDM BI01	MDM BI03	K & S	3	-	1	4	45	30	50	125	
Innovation, Entrepreneurial and Venture Development	MDM IE02	Startup Planning and Development	MDM IE01	MDM IE03	K & S	3	-	1	4	45	30	50	125	
Business Development, Marketing and Finance	MDM BD02	Financial Basics for Engineers and Technopreneurs	MDM BD01	MDM BD03	K & S	3	-	1	4	45	30	50	125	
Robotics	MDM RB02	Machine Vision and Robotic Perception	MDM RB01	MDM RB03	K & S	3	2	-	4	45	30	50	125	

Second Year B. Tech. Computer Engineering - Summer Break

Vertical_ Subvertical	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%)	
MDC_OE	OEC01*	Collaborative Inter-Institute Studies	-	-	K	As per offering institute			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. Computer Engineering
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%)	
PC_PCC	PCCE09	Theory of Computer Science	BSC05	PCCE15	K	2	-	1	3	40	20	40	100	
PC_PCC	PCCE11T	Computer Networks	ESC04, PCCE04	PCCE16	K	2	-	-	2	15	20	40	075	Y
PC_PCC	PCCE11P	Computer Networks Lab	ESC04, PCCE04	PCCE16	S	-	2	-	1	25	-	25	050	
PC_PCC	PCCE10T	Artificial Intelligence	PCCE04, BSC05	PCCE13	K	2	-	-	2	15	20	40	075	Y
PC_PCC	PCCE10P	Artificial Intelligence Lab	PCCE04, BSC05	PCCE13	S	-	2	-	1	25	-	25	050	
PC_PCC	PCCE12T	Software Engineering	VSEC02	PCCE19	K	2	-	-	2	15	20	40	075	Y
PC_PCC	PCCE12P	Web Design Lab	VSEC02	PCCE19	S	-	2	-	1	25	-	25	050	Y
MDC_OEC	OEC15	Professional Competency Development 2	-	-	S	-	2	-	1	50	-	-	050	
PC_PEC	PECEXX*	Programme Elective-1	As per list below						3	As per list below				
HSSM_VEC	VECXX*	Any HSSM_VEC course	As per list below						2	As per list below				
MDC_MDM	MDMXX [#]	MDM Course3 of chosen Title	As per list below						4	As per list below				
Total Credits									22					
Course credits completed during the previous inter-semester break will appear in this semester's marksheet														
MDC_OE	OEC01	Collaborative Inter-Institute Studies	-	-	K	As per offering institute			4	125	-	-	125	

*Selection based on the subset of courses made available by the Institute for the semester.

#Selection based on the MDM Title chosen by the student.

^{\$}Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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 (PECEXXT and PECEXXP)

Specialization Track Name [#]	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%)	
Artificial Intelligence and Machine Learning (AIML)	PECE02T	Data Warehousing and Data Mining	PCCE05	PECE10, PECE14	K	2	-	-	2	15	20	40	075	Y
	PECE02P	Data Warehousing and Data Mining Lab	PCCE05	PECE10, PECE14	S	-	2	-	1	25	-	25	050	
Data Science (DS)	PECE02T	Data Warehousing and Data Mining	PCCE05	PECE10, PECE14	K	2	-	-	2	15	20	40	075	
	PECE02P	Data Warehousing and Data Mining Lab	PCCE05	PECE10, PECE14	S	-	2	-	1	25	-	25	050	
Internet of Things (IoT)	PECE03T	Modern Sensors for Internet of Things	PCCE11, PCCE02	PECE22	K	2	-	-	2	15	20	40	075	
	PECE03P	Modern Sensors for Internet of Things lab	PCCE11, PCCE02	PECE22	S	-	2	-	1	25	-	25	050	
Computer Security (CSec)	PECE04T	Computer and Network Security	PCCE11	PECE08, PECE21	K	2	-	-	2	15	20	40	075	Y
	PECE04P	Computer and Network Security Lab	PCCE11	PECE08, PECE21	S	-	2	-	1	25	-	25	050	

[#]For details of Specialization Certificate, refer Appendix-A

List of Value Education Courses (VECXX)

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%)	
VEC02	E-waste and Environmental Management	-	-	S & A	2	-	-	2	15	20	40	075	
VEC03	Universal Human Values	-	-	S & A	2	-	-	2	25	-	50	075	
VEC04	Responsibility towards sustainable environment	-	-	S & A	2	-	-	2	25	-	50	075	
VEC05	Four Pillars of Democratic Nation	-	-	S & A	2	-	-	2	25	-	50	075	

Multidisciplinary Elective Course3 (MDMXX)

MDM Title	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%)	
Bioinformatics	MDM BI03	Machine Learning Applications in Bioinformatics	MDM BI02	-	K & S	3	-	1	4	45	30	50	125	Y
Innovation, Entrepreneurial and Venture Development	MDM IE03	Innovation Management and Scaling Startups	MDM IE02	-	K & S	3	-	1	4	45	30	50	125	Y
Business Development, Marketing and Finance	MDM BD03	Strategic Marketing and Business Planning	MDM BD02	-	K & S	3	-	1	4	45	30	50	125	Y
Robotics	MDM RB03	Intelligent Mobile Robotics	MDM RB02	-	K & S	3	2	-	4	45	30	50	125	Y

Guidelines for Award of Honours/ Minor/ Honours by Research Degree

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

Third Year B. Tech. Computer Engineering

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%)	
PC_PCC	PCCE14	Cloud Computing Lab	PCCE16	PECE19T	S	-	2	-	1	25	-	25	050	Y
PC_PCC	PCCE15	System Programming and Compiler Design	PCCE09	-	K	3	-	-	3	20	30	50	100	
PC_PCC	PCCE16T	Distributed Systems	PCCE07, PCCE11	PCCE14	K	2	-	-	2	15	20	40	075	Y
PC_PCC	PCCE16P	Distributed Systems Lab	PCCE07, PCCE11	PCCE14	S	-	2	-	1	25	-	25	050	
PC_PCC	PCCE13T	Machine Learning	PCCE04, PCCE10,	PECE13	K	2	-	-	2	15	20	40	075	Y
PC_PCC	PCCE13P	Machine Learning Lab	PCCE04, PCCE10,	PECE13	S	-	2	-	1	25	-	25	050	
PC_PEC	PECEXX*	Programme Elective-2	As per list below						3	As per list below				
PC_PEC	PECEXX*	Programme Elective-3	As per list below						3	As per list below				
PC_PEC	PRJCE01	Specialization-Based Project	PCCE04, VSEC03, BSC07	PRJCE03	S & A	-	4	-	2	25	-	50	075	
MDC_MDM	MDM03	Professional Competency Development 3	-	-	S	-	2	-	1	50	-	-	050	
ELC_PRJ	PRJCE02	Project-1 (Synopsis)	EEMC01, VSEC03	PRJCE03	K, S & A	2	-	-	2	50	-	25	075	
Total Credits									21					

*Selection based on the subset of courses made available by the Institute for the semester.

^{\$}Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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 (PECEXXT and PECEXP)

Specialization Track Name#	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%)	
Artificial Intelligence and Machine Learning (AIML)	PECE01T	Soft Computing	BSC05, PCCE10	PCCE05, PECE13	K	2	-	-	2	15	20	40	075	Y
	PECE01P	Soft Computing Lab	BSC05, PCCE10	PCCE05, PECE13	S	-	2	-	1	25	-	25	050	
Data Science (DS)	PECE06T	Advanced Databases	PCCE05	PECE14	K	2	-	-	2	15	20	40	075	Y
	PECE06P	Advanced Databases Lab	PCCE05	PECE14	S	-	2	-	1	25	-	25	050	
Internet of Things (IoT)	PECE11T	Embedded Systems Design and Tiny OS	PCCE07, PECE03	PECE17, PECE19	S	2	-	-	2	15	20	40	075	
	PECE11P	Embedded Systems Design and Tiny OS Lab	PCCE07, PECE03	PCCE17, PCCE19	K	-	2	-	1	25	-	25	050	
Computer Security (CSec)	PECE08T	System Security and Ethical Hacking	PECE04	PECE16, PECE12	K	2	-	-	2	15	20	40	075	Y
	PECE08P	System Security and Ethical Hacking Lab	PECE04	PECE16, PECE12	S	-	2	-	1	25	-	25	050	

#For details of Specialization Certificate, refer Appendix-A

Programme Elective-3 Courses (PECEXXT and PECEXXP)

Specialization Track Name [#]	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%)	
Artificial Intelligence and Machine Learning (AIML)	PECE10	Probabilistic and Graphical Model	BSC05, PECE02	PECE07, PECE09, PECE18	K	3	-	-	3	40	20	40	100	
Data Science (DS)	PECE10	Probabilistic and Graphical Model	PCCE05	PECE14	K	3	-	-	3	40	20	40	100	
Internet of Things (IoT)	PECE22T	Principles of Internet of Things	PECE03	PECE20, PECE19	K	2	-	-	2	15	20	40	075	
	PECE22P	Principles of Internet of Things Lab	PECE03	PECE20, PECE19	S	-	2	-	1	25	-	25	050	
Computer Security (CSec)	PECE21T	Digital Forensics	PECE04	PECE15	K	2	-	-	2	15	20	40	075	
	PECE21P	Digital Forensics Lab	PECE04	PECE15	S	-	2	-	1	25	-	25	050	

[#]For details of Specialization Certificate, refer Appendix-A

Third Year B. Tech. Computer Engineering - Summer Break

Course Code	Course Name	Required Prerequisite	Prerequisite for	KSA Mapping	Total Hours			Credits	Assessment Guidelines (Marks)				Preparedness for Industry-Level Certification ^{\$}
					Theory	Practical	Tutorial		Total ISA	Total MSE	Total ESE	Total Marks (Passing @40%)	
OJT01	Industry Internship 1	EEMC01, VSEC03	OJT02	K, S & A	150 hours			5	75	-	75	150	Y
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. Computer Engineering

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	PCCE18	Machine Vision using Python	VSEC03	NIL	K	-	2	-	1	25	-	25	050	Y	
PC_PCC	PCCE17	Programming with R	VSEC01	PCCE13	S	-	2	-	1	25	-	25	050	Y	
PC_PCC	PCCE19	DevOps	PCCE14, PCCE12	PRJCE01, PRJCE03	S	1	2	-	2	50	-	25	075	Y	
MDC_MDM	MDM04	Professional Competency Development 4	-	-	S	-	2	-	1	50	-	-	050		
PC_PEC	PECEXX*	Programme Elective-4	As per list below						3	As per list below					
PC_PEC	PECEXX*	Programme Elective-5	As per list below						3	As per list below					
PC_PEC	PECEXX*	Programme Elective-6	As per list below						3	As per list below					
ELC_PRJ	PRJCE03	Project 2 (final)	-	PRJCE02	K, S & A	-	8	-	4	75	-	50	125		
Total Credits									18						
Course credits completed during the previous inter-semester break will appear in this semester's marksheet															
ELC_OJT	OJT01	Industry Internship 1	EEMC01, VSEC03	OJT02	K, S & A	Total 150 Hours			5	75	-	75	150	Y	

*Selection based on the subset of courses made available by the Institute for the semester.

#Seminar based on the MDM Title chosen by the student.

^{\$}Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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 (PECEXXT and PECEXPX)

Specialization Track Name*	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%)	
Artificial Intelligence and Machine Learning (AIML)	PECE05T	Natural language processing	PECE01, PCCE09, PCCE15, PCCE13	-	K	2	-	-	2	15	20	40	075	Y
	PECE05P	Natural language processing Lab	PECE01, PCCE09, PCCE15, PCCE13	-	S	-	2	-	1	25	-	25	050	
Data Science (DS)	PECE07T	Text, Web & Social Media Analytics	PECE10	-	K	2	-	-	2	15	20	40	075	Y
	PECE07P	Text, Web & Social Media Analytics Lab	PECE10	-	S	-	2	-	1	25	-	25	050	
Internet of Things (IoT)	PECE17T	IoT & Edge Computing	PECE11	--	K	2	-	-	2	15	20	40	075	
	PECE17P	IoT & Edge Computing Lab	PECE11	--	S	-	2	-	1	25	-	25	050	
Computer Security (CSec)	PECE12T	Web Application Security	PECE08	-	K	2	-	-	2	15	20	40	075	
	PECE12P	Web Application Security Lab	PECE08	-	S	-	2	-	1	25	-	25	050	

#For details of Specialization Certificate, refer Appendix-A

Programme Elective-5 Courses (PECEXXT and PECEXP)

Specialization Track Name [#]	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%)	
Artificial Intelligence and Machine Learning (AIML)	PECE09T	Advance Machine Learning	PCCE13, PECE10	-	K	2	-	-	2	15	20	40	075	
	PECE09P	Advance Machine Learning Lab	PCCE13, PECE10	-	S	-	2	-	1	25	-	25	050	
Data Science (DS)	PECE14T	Big Data Analytics	PECE02, PECE06	-	K	2	-	-	2	15	20	40	075	Y
	PECE14P	Big Data Analytics Lab	PECE02, PECE06	-	S	-	2	-	1	25	-	25	050	
Internet of Things (IoT)	PECE19T	IoT Security & Trust	PECE11, PECE22	-	K	2	-	-	2	15	20	40	075	
	PECE19P	IoT Security & Trust Lab	PECE11, PECE22	-	S	-	2	-	1	25	-	25	050	
Computer Security (CSec)	PECE15T	Malware Analysis	PECE08, PECE21	-	K	2	-	-	2	15	20	40	075	
	PECE15P	Malware Analysis Lab	PECE08, PECE21	-	S	-	2	-	1	25	-	25	050	

#For details of Specialization Certificate, refer Appendix-A

Programme Elective-6 Courses (PECEXXT and PECEXXP)

Specialization Track Name [#]	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%)	
Artificial Intelligence and Machine Learning (AIML)	PECE13T	Deep learning	PECE01, PCCE13	-	K	2	-	-	2	15	20	40	075	Y
	PECE13P	Deep learning Lab	PECE01, PCCE13	-	S	-	2	-	1	25	-	25	050	
Data Science (DS)	PECE18T	Recommendation System	PECE10	-	K	2	-	-	2	15	20	40	075	Y
	PECE18P	Recommendation System Lab	PECE10	-	S	-	2	-	1	25	-	25	050	
Internet of Things (IoT)	PECE20T	Industrial IoT	PECE22	-	K	2	-	-	2	15	20	40	075	
	PECE20P	Industrial IoT Lab	PECE22	-	S	-	2	-	1	25	-	25	050	
Computer Security (CSec)	PECE16T	Mobile and Wireless Security	PECE08	-	K	2	-	-	2	15	20	40	075	Y
	PECE16P	Mobile and Wireless Security Lab	PECE08	-	S	-	2	-	1	25	-	25	050	

#For details of Specialization Certificate, refer Appendix-A

Final Year B. Tech. Computer Engineering
Course Structure and Assessment Guidelines

Preferred Semester: VIII

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	OJT02	Industry Internship 2	OJT01	-	S & A	-	210	-	7	100	-	100	200	Y
ELC_RM	RM01	Research Methodology	-	-	K & S	3	-	-	3	20	30	50	100	
MDC_OE	OECXX*	Any Open Elective course	As per list below		K	2	-	-	2	As per list below				
Total Credits									12					

*Selection based on the subset of courses made available by the Institute for the semester.

#Seminar based on the MD M Title chosen by the student.

\$Details regarding Industry-Level Certification(s) can be obtained from syllabus of respective course.

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)

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%)	
OEC02	Cyber Law	-	-	K	2	-	-	2	15	20	40	075	
OEC03	Project Management	-	-	K	2	-	-	2	15	20	40	075	
OEC04	Product Lifecycle Management	-	-	K	2	-	-	2	15	20	40	075	
OEC05	Sustainability Management	-	-	K	2	-	-	2	15	20	40	075	
OEC06	Renewable Energy Management	-	-	K	2	-	-	2	15	20	40	075	

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 Computer Engineering offers the following specialization tracks:

1. Artificial Intelligence and Machine Learning (AIML)
2. Data Science (DS)
3. Internet of Things (IoT)
4. Computer Security (CSec)

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	PECE02T	Data Warehousing and Data Mining
V	PECE02P	Data Warehousing and Data Mining Lab
VI	PECE01T	Soft Computing
VI	PECE01P	Soft Computing Lab
VI	PECE10	Probabilistic and Graphical Model
VII	PECE05T	Natural language processing
VII	PECE05P	Natural language processing Lab
VII	PECE09T	Advance Machine Learning
VII	PECE09P	Advance Machine Learning Lab
VII	PECE13T	Deep learning
VII	PECE13P	Deep learning Lab

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

Semester	Course Code	Course Name
V	PECE02T	Data Warehousing and Data Mining
V	PECE02P	Data Warehousing and Data Mining Lab
VI	PECE06T	Advanced Databases
VI	PECE06P	Advanced Databases Lab
VI	PECE10	Probabilistic and Graphical Model
VII	PECE07T	Text, Web & Social Media Analytics
VII	PECE07P	Text, Web & Social Media Analytics Lab

Semester	Course Code	Course Name
VII	PECE14T	Big Data Analytics
VII	PECE14P	Big Data Analytics Lab
VII	PECE18T	Recommendation System
VII	PECE18P	Recommendation System Lab

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

Semester	Course Code	Course Name
V	PECE03T	Modern Sensors for Internet of Things
V	PECE03P	Modern Sensors for Internet of Things Lab
VI	PECE11T	Embedded Systems Design and Tiny OS
VI	PECE11P	Embedded Systems Design and Tiny OS Lab
VI	PECE22T	Principles of Internet of Things
VI	PECE22P	Principles of Internet of Things Lab
VII	PECE17T	IoT & Edge Computing
VII	PECE17P	IoT & Edge Computing Lab
VII	PECE19T	IoT Security & Trust
VII	PECE19P	IoT Security & Trust Lab
VII	PECE20T	Industrial IoT
VII	PECE20P	Industrial IoT Lab

CSec track: Courses to be chosen for specialization in Computer Security

Semester	Course Code	Course Name
V	PECE04T	Computer and Network Security
V	PECE04P	Computer and Network Security Lab
VI	PECE08T	System Security and Ethical Hacking
VI	PECE08P	System Security and Ethical Hacking Lab
VI	PECE21T	Digital Forensics
VI	PECE21P	Digital Forensics Lab
VII	PECE12T	Web Application Security
VII	PECE12P	Web Application Security Lab
VII	PECE15T	Malware Analysis
VII	PECE15P	Malware Analysis Lab
VII	PECE16T	Mobile and Wireless Security
VII	PECE16P	Mobile and Wireless Security Lab

Appendix-B

Guidelines for Multidisciplinary Elective Courses

In alignment with the NEP objectives and the evolving demands of the engineering profession, the introduction of a Multidisciplinary Minor courses 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 Computer Engineering offers the following Multidisciplinary Minor Titles for B.Tech. Computer Engineering students:

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

Bioinformatics (BI):

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):

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):

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):

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