

**GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT (GITAM)**

(Deemed to be University)

VISAKHAPATNAM \* HYDERABAD \* BENGALURU

Accredited by NAAC with A<sup>++</sup> Grade

**GITAM School of Core Engineering**



**CURRICULUM AND SYLLABUS**

**4 Year Undergraduate Programme**

**UEECE04: B.Tech. Electrical and Computer Engineering**

w.e.f. 2025-26 admitted batch

(Updated on July 2025)

# **Academic Regulations**

**Applicable for the Undergraduate Programmes in the  
School of Core Engineering**

**<https://www.gitam.edu/academics/academic-regulations>**

# **GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT**

## **Vision**

GITAM will be an exceptional knowledge-driven institution advancing on a culture of honesty and compassion to make a difference to the world.

## **Mission**

- Build a dynamic application-oriented education ecosystem immersed in holistic development.
- Nurture valuable futures with global perspectives for our students by helping them find their ikigai.
- Drive impactful integrated research programmes to generate new knowledge, guided by integrity, collaboration, and entrepreneurial spirit.
- Permeate a culture of kindness within GITAM, fostering passionate contributors.

## **Quality Policy**

To achieve global standards and excellence in teaching, research, and consultancy by creating an environment in which the faculty and students share a passion for creating, sharing and applying knowledge to continuously improve the quality of education.

## **VISION AND MISSION OF THE SCHOOL**

### **VISION**

To become a global leader in holistic engineering education and research

### **MISSION**

- To impart a strong academic foundation and practical education through a flexible curriculum, state-of-the-art infrastructure, and best learning resources
- To actively pursue academic and collaborative research with industries and research institutions, both in India and abroad
- To build a congenial and innovative eco system by enabling the latest technologies, thus helping the students, to solve the challenges of societal importance
- To provide our students with the appropriate leadership, management, communication skills and professional ethics for career success and to continuously impact the global lives

## **VISION AND MISSION OF THE DEPARTMENT**

### **VISION**

To become a global leader in holistic engineering education and research

### **MISSION**

- Empower the students with knowledge to face real-world challenges for holistic development.
- Conduct multidisciplinary research that makes an impact on society, addressing key challenges through innovative solutions.
- Foster a culture emphasizing empathy, respect, commitment upholding the ethical standards.

**UEECE04: B.Tech. ELECTRICAL AND COMPUTER ENGINEERING**  
**(w.e.f. academic year 2024-25 admitted batch)**

**Programme Educational Objectives (PEOs)**

- PEO 1** Demonstrate comprehensive knowledge of analytical foundations to Electrical and Computer Engineering in terms of founding principles of circuit theory, design, computing, and machinery.
- PEO 2** Demonstrate critical thinking and problem-solving abilities to handle the real-world problems by applying theoretical foundations and practical skills in different fields of Electrical and Computer Engineering.
- PEO 3** Exhibit qualities of teamwork, appreciation of collaboration that entails inter-disciplinary endeavors and the potential impact of technology on society.
- PEO 4** Develop creativity, Research related skills, self-learning, entrepreneurial and leadership skills in order to meet the ever-changing needs and challenges in the profession.

**PEO Articulation**

|           | <b>PEO1</b> | <b>PEO2</b> | <b>PEO3</b> | <b>PEO4</b> |
|-----------|-------------|-------------|-------------|-------------|
| <b>M1</b> | H           | H           | M           | M           |
| <b>M2</b> | M           | H           | H           | H           |
| <b>M3</b> | L           | M           | H           | M           |

H – High, M – Medium, L – Low

## Programme Outcomes (POs) and Programme Specific Outcomes (PSOs):

At the end of the Programme the students would be able to:

- PO1** Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO2** Problem analysis: Identify, formulate, 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 consideration 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 teamwork: 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 and in multidisciplinary environments.

- PO12** Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
- PSO1** Demonstrate comprehensive knowledge and practical skills in Electrical and Computer Engineering focusing on the subareas of Electric Vehicle Technology, Industrial Automation and Control and Robotics and apply this knowledge to solve advanced problems.
- PSO2** Design and translate abstract concepts in electrical machines, power systems, power electronics and computing to real-time circuits & systems and analyze their performance.
- PSO3** Research and formulate suitable technologies for the implementation of Electrical and Computer Engineering solutions, demonstrating entrepreneurial and research aspects with a commitment to professional ethics and a focus on societal well-being.

# **Curriculum Structure**

## *(Flexible Credit System)*

**Minimum Credit Requirements for the Award of Degree**

| <b>S.No.</b> | <b>Course Category and Category Code</b> | <b>Minimum Credits</b> | <b>% of credits in the Programme</b> |
|--------------|------------------------------------------|------------------------|--------------------------------------|
| 1.           | University Core (UC)                     | 19                     | 11.87                                |
| 2.           | Faculty Core (FC)                        | 53                     | 33.13                                |
| 3.           | Programme Core (PC)                      | 49                     | 30.62                                |
| 4.           | Programme Electives (PE)                 | 15                     | 9.38                                 |
| 5.           | Open Electives (OE)                      | 24                     | 15.00                                |
|              | <b>Total</b>                             | <b>160</b>             | <b>100</b>                           |

| University Core (UC) : 19 Credits                        |       |                                                                  |   |   |   |   |   |   |
|----------------------------------------------------------|-------|------------------------------------------------------------------|---|---|---|---|---|---|
| Course code                                              | Level | Course Title                                                     | L | T | P | S | J | C |
| <b>Ability Enhancement Courses</b>                       |       |                                                                  |   |   |   |   |   |   |
| LANG1201                                                 | 100   | <a href="#">Critical Thinking</a>                                | 2 | 0 | 0 | 0 | 0 | 2 |
| LANG1242                                                 | 100   | <a href="#">Communicative English - I</a>                        | 0 | 0 | 4 | 0 | 0 | 2 |
| LANG1252                                                 | 100   | <a href="#">Communicative English - II</a>                       | 0 | 0 | 4 | 0 | 0 | 2 |
| IENT1051                                                 | 100   | <a href="#">Fundamentals of Entrepreneurship</a>                 | 2 | 0 | 0 | 0 | 0 | 2 |
| <b>Skill Enhancement Courses</b>                         |       |                                                                  |   |   |   |   |   |   |
| GCGC1001                                                 | 100   | <a href="#">Aptitude and Self-Management Skills</a>              | 0 | 0 | 2 | 0 | 0 | 1 |
| GCGC1011                                                 | 100   | <a href="#">Integrated Aptitude and Ethical Communications</a>   | 0 | 0 | 2 | 0 | 0 | 1 |
| GCGC1021                                                 | 100   | <a href="#">Applied Communication and Quantitative Skills</a>    | 0 | 0 | 2 | 0 | 0 | 1 |
| GCGC1031                                                 | 100   | <a href="#">Placement Preparation and Professional Readiness</a> | 0 | 0 | 2 | 0 | 0 | 1 |
| <b>Value Added Courses</b>                               |       |                                                                  |   |   |   |   |   |   |
| ENVS1003                                                 | 100   | <a href="#">Environmental Studies*</a>                           | 3 | 0 | 0 | 0 | 0 | 3 |
| POLS1051                                                 | 100   | <a href="#">The Indian Constitution</a>                          | 1 | 0 | 0 | 0 | 0 | 1 |
| <b>Pass / Fail Courses (Mandatory)</b>                   |       |                                                                  |   |   |   |   |   |   |
| FINA1081                                                 | 100   | <a href="#">Personal Financial Planning *</a>                    | 1 | 0 | 0 | 0 | 0 | 1 |
| PHPY1011                                                 | 100   | <a href="#">Gandhi and the Contemporary World *</a>              | 1 | 0 | 0 | 0 | 0 | 1 |
| <b>Pass / Fail Courses (Any one course to be chosen)</b> |       |                                                                  |   |   |   |   |   |   |
| DOSP1181                                                 | 100   | <a href="#">Yogasana</a>                                         | 0 | 0 | 0 | 2 | 0 | 1 |
| MFST1002                                                 | 100   | <a href="#">Health and Wellbeing *</a>                           | 0 | 0 | 2 | 0 | 0 | 1 |
| DOSL1081                                                 | 100   | <a href="#">Student Life Activities (Participant)</a>            | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1091                                                 | 100   | <a href="#">Student Life Activities (Organizer)</a>              | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1101                                                 | 100   | <a href="#">Student Life Activities (Competitor)</a>             | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1111                                                 | 100   | <a href="#">Foundations of Student (Leadership)</a>              | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSL1042                                                 | 100   | <a href="#">Community Services – Volunteer</a>                   | 0 | 0 | 2 | 0 | 0 | 1 |
| DOSL1052                                                 | 100   | <a href="#">Community Services – Mobilizer</a>                   | 0 | 0 | 2 | 0 | 0 | 1 |
| DOSP1003                                                 | 100   | <a href="#">Badminton</a>                                        | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1033                                                 | 100   | <a href="#">Football</a>                                         | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1043                                                 | 100   | <a href="#">Volleyball</a>                                       | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1053                                                 | 100   | <a href="#">Kabaddi</a>                                          | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1073                                                 | 100   | <a href="#">Table Tennis</a>                                     | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1083                                                 | 100   | <a href="#">Handball</a>                                         | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1093                                                 | 100   | <a href="#">Basketball</a>                                       | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1113                                                 | 100   | <a href="#">Throw ball</a>                                       | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1142                                                 | 100   | <a href="#">Cricket</a>                                          | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1132                                                 | 100   | <a href="#">Functional Fitness</a>                               | 0 | 0 | 0 | 2 | 0 | 1 |
| DOSP1171                                                 | 100   | <a href="#">Martial Arts/Self Defence</a>                        | 0 | 0 | 0 | 2 | 0 | 1 |

\* Massive Open Online Course (MOOC)

| FACULTY CORE (FC) : 53 credits           |       |                                                                                   |   |   |   |   |    |   |
|------------------------------------------|-------|-----------------------------------------------------------------------------------|---|---|---|---|----|---|
| Course code                              | Level | Course title                                                                      | L | T | P | S | J  | C |
| MATH1341                                 | 100   | <a href="#">Calculus and Differential Equations</a>                               | 3 | 1 | 0 | 0 | 0  | 4 |
| MATH1272                                 | 100   | <a href="#">Linear Algebra</a>                                                    | 3 | 1 | 0 | 0 | 0  | 4 |
| MATH2581                                 | 200   | <a href="#">Probability theory and Random process</a>                             | 3 | 1 | 0 | 0 | 0  | 4 |
| MATH2591                                 | 200   | <a href="#">Complex variables &amp; transform techniques</a>                      | 3 | 1 | 0 | 0 | 0  | 4 |
| PHYS1321                                 | 100   | <a href="#">Electromagnetic Fields</a>                                            | 3 | 0 | 2 | 0 | 0  | 4 |
| CHEM1111                                 | 100   | <a href="#">Engineering chemistry</a>                                             | 2 | 1 | 2 | 0 | 0  | 4 |
| 24CSEN1031                               | 100   | <a href="#">Programming for Problem Solving - 1<br/>(Programming with Python)</a> | 0 | 0 | 6 | 0 | 0  | 3 |
| 24CSEN1041                               | 100   | <a href="#">Programming for Problem Solving - 2<br/>(Programming with C)</a>      | 0 | 0 | 6 | 0 | 0  | 3 |
| 24XXXXXXXX                               | xxx   | Engineering Basket - Choice 1                                                     | 2 | 0 | 2 | 0 | 0  | 3 |
| 24XXXXXXXX                               | xxx   | Engineering Basket - Choice 2                                                     | 2 | 0 | 2 | 0 | 0  | 3 |
| MECH1011                                 | 100   | <a href="#">Engineering Visualization and Product Realization</a>                 | 0 | 0 | 4 | 0 | 0  | 2 |
| MECH1041                                 | 100   | <a href="#">Technology Exploration and Product Engineering</a>                    | 0 | 0 | 4 | 0 | 0  | 2 |
| 24PROJ4777                               | 400   | Capstone Project - Introduction                                                   | 0 | 0 | 0 | 0 | 2  | 1 |
| 24INTN3777                               | 300   | Internship-1                                                                      | 0 | 0 | 0 | 0 | 2  | 1 |
| 24PROJ4888/<br>24INTN4888/<br>24RESH4888 | 400   | Capstone Project - Final /<br>Internship-2 /<br>Research                          | 0 | 0 | 0 | 0 | 16 | 8 |
| HSMCH102                                 | 100   | Universal Human Values 2: Understanding Harmony                                   | 2 | 1 | 0 | 0 | 0  | 3 |

## Engineering Basket 1 &amp; 2

Six credits have to be chosen from the basket other than Parent Department course.

| Course code | Level | Course title                                                           | L | T | P | S | J | C |
|-------------|-------|------------------------------------------------------------------------|---|---|---|---|---|---|
| 24EECE2221  | 200   | <a href="#">Fundamentals of Sensors and Internet of Things</a>         | 2 | 0 | 2 | 0 | 0 | 3 |
| 24EECE2211  | 200   | <a href="#">Fundamentals of Electrical and Electronics Engineering</a> | 2 | 0 | 2 | 0 | 0 | 3 |
| 24EECE2231  | 200   | <a href="#">Foundations of Electrical and Electronics Engineering</a>  | 3 | 0 | 2 | 0 | 0 | 4 |
| 24MECH1001  | 100   | <a href="#">Introduction to Mechanical Engineering</a>                 | 2 | 0 | 2 | 0 | 0 | 3 |
| 24CIVL1001  | 100   | <a href="#">Introduction to Civil Engineering</a>                      | 2 | 0 | 2 | 0 | 0 | 3 |
| 24BTEN1021  | 100   | <a href="#">Biotechnology and Bioengineering</a>                       | 2 | 0 | 2 | 0 | 0 | 3 |
| 24BTEN1031  | 100   | <a href="#">Introduction to Biomedical Engineering</a>                 | 2 | 0 | 2 | 0 | 0 | 3 |
| 24CSEN2261  | 200   | <a href="#">Data Structures and Algorithms</a>                         | 2 | 0 | 2 | 0 | 0 | 3 |

| <b>Programme Core (PC) : 49 credits</b>                        |              |                                                             |          |          |          |          |          |          |
|----------------------------------------------------------------|--------------|-------------------------------------------------------------|----------|----------|----------|----------|----------|----------|
| <b>49 credits to be earned through programme core courses.</b> |              |                                                             |          |          |          |          |          |          |
| <b>Course code</b>                                             | <b>Level</b> | <b>Course Title</b>                                         | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>J</b> | <b>C</b> |
| 24EECE1011                                                     | 100          | <a href="#">Electrical Circuit Analysis</a>                 | 3        | 0        | 2        | 0        | 0        | 4        |
| 24EECE2141                                                     | 200          | <a href="#">Analog and Digital Electronics</a>              | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE2151                                                     | 200          | <a href="#">Introduction to Microcontrollers</a>            | 3        | 0        | 2        | 0        | 0        | 4        |
| 24EECE2161                                                     | 200          | <a href="#">Electrical Machines - I</a>                     | 3        | 0        | 2        | 0        | 0        | 4        |
| 24EECE3401                                                     | 300          | <a href="#">Power Electronics</a>                           | 3        | 0        | 2        | 0        | 0        | 4        |
| 24EECE4191                                                     | 400          | <a href="#">Power Systems</a>                               | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3041                                                     | 300          | <a href="#">Control Systems</a>                             | 2        | 1        | 0        | 0        | 0        | 3        |
| 24EECE3411                                                     | 300          | <a href="#">Electrical Machines - II</a>                    | 3        | 0        | 2        | 0        | 0        | 4        |
| 24EECE2011                                                     | 200          | <a href="#">Signals and Systems</a>                         | 2        | 1        | 0        | 0        | 0        | 3        |
| 24CSEN3001                                                     | 300          | <a href="#">Design and Analysis of Algorithms</a>           | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CSEN2161                                                     | 200          | <a href="#">Machine Learning</a>                            | 3        | 0        | 2        | 0        | 0        | 4        |
| 24CSEN2271                                                     | 200          | <a href="#">Fundamentals of Operating Systems</a>           | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CSEN2281                                                     | 200          | <a href="#">Fundamentals of Computer Networks</a>           | 3        | 0        | 0        | 0        | 0        | 3        |
| 24CSEN2291                                                     | 200          | <a href="#">Fundamentals of Database Management Systems</a> | 3        | 0        | 0        | 0        | 0        | 3        |

| <b>Programme Elective (PE) : 15 credits</b>  |              |                                                                 |          |          |          |          |          |          |
|----------------------------------------------|--------------|-----------------------------------------------------------------|----------|----------|----------|----------|----------|----------|
| <b>Electric Vehicle Technology</b>           |              |                                                                 |          |          |          |          |          |          |
| <b>Course code</b>                           | <b>Level</b> | <b>Course Title</b>                                             | <b>L</b> | <b>T</b> | <b>P</b> | <b>S</b> | <b>J</b> | <b>C</b> |
| 24EECE2061                                   | 200          | <a href="#">Introduction to Electric Vehicle Technologies</a>   | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE2171                                   | 200          | <a href="#">Sensors and Communication in Electric Vehicles</a>  | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3421                                   | 300          | <a href="#">Power Industrial Drives for Electric Vehicles</a>   | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3431                                   | 300          | <a href="#">Electric Vehicle Modeling and Dynamics</a>          | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE4201                                   | 400          | <a href="#">Electric Vehicle Thermal and Energy Management</a>  | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3441                                   | 300          | <a href="#">Embedded Systems for Electric Vehicles</a>          | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3451                                   | 300          | <a href="#">Energy Storage and Grid Integration</a>             | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3461                                   | 300          | <a href="#">Soft Computing Techniques for Electric Vehicles</a> | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3471                                   | 300          | <a href="#">Battery Management Systems</a>                      | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE3601                                   | 300          | <a href="#">Model Based System Engineering</a>                  | 3        | 0        | 0        | 0        | 0        | 3        |
| 24EECE2201                                   | 200          | <a href="#">Fundamentals of Autonomous Vehicles</a>             | 3        | 0        | 0        | 0        | 0        | 3        |
| <b>Any 5 Program Electives Total Credits</b> |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |
|                                              |              |                                                                 |          |          |          |          |          |          |

| <b>Industrial Automation and Control</b>     |       |                                                                         |           |   |   |   |   |   |
|----------------------------------------------|-------|-------------------------------------------------------------------------|-----------|---|---|---|---|---|
| Course code                                  | Level | Course Title                                                            | L         | T | P | S | J | C |
| 24EECE3481                                   | 300   | <a href="#">Introduction to Automation and Control</a>                  | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3601                                   | 300   | <a href="#">Model Based System Engineering</a>                          | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3491                                   | 300   | <a href="#">PLC and SCADA systems and Programming</a>                   | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE4211                                   | 400   | <a href="#">Distributed Control Systems</a>                             | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3501                                   | 300   | <a href="#">Signal Conditioning, Data Acquisition and Communication</a> | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE4221                                   | 400   | <a href="#">Industrial Internet of Things</a>                           | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3511                                   | 300   | <a href="#">Process Modelling, Simulation and Control</a>               | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3521                                   | 300   | <a href="#">Manufacturing Execution Systems</a>                         | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3531                                   | 300   | <a href="#">Industrial Sensors and Transducers</a>                      | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE4231                                   | 400   | <a href="#">Soft Computing Techniques in Industrial Control</a>         | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE2191                                   | 300   | <a href="#">Electrical Measurements</a>                                 | 3         | 0 | 0 | 0 | 0 | 3 |
| <b>Any 5 Program Electives Total Credits</b> |       |                                                                         | <b>15</b> |   |   |   |   |   |

| <b>Robotics</b>                              |       |                                                               |           |   |   |   |   |   |
|----------------------------------------------|-------|---------------------------------------------------------------|-----------|---|---|---|---|---|
| Course code                                  | Level | Course Title                                                  | L         | T | P | S | J | C |
| 24EECE3541                                   | 300   | <a href="#">Fundamentals of Robotics</a>                      | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3551                                   | 300   | <a href="#">Introduction to Robot Operating Systems</a>       | 2         | 0 | 2 | 0 | 0 | 3 |
| 24EECE3561                                   | 300   | <a href="#">Industrial Robotics and Automation</a>            | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3571                                   | 300   | <a href="#">Motion Planning and Control for Robotics</a>      | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3581                                   | 300   | <a href="#">Introduction to Robot Kinematics and Dynamics</a> | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE3591                                   | 300   | <a href="#">Introduction to Computer Vision for Robotics</a>  | 3         | 0 | 0 | 0 | 0 | 3 |
| 24EECE2201                                   | 200   | <a href="#">Fundamentals of Autonomous Vehicles</a>           | 3         | 0 | 0 | 0 | 0 | 3 |
| <b>Any 5 Program Electives Total Credits</b> |       |                                                               | <b>15</b> |   |   |   |   |   |

### Open Electives (OE)

A minimum of 24 credits are to be earned under this category of courses, out of which 9 credits are from other departments in the 'School of Computer Science and Engineering' and 'School of Core Engineering' and the remaining 15 credits are from other schools of the university.

### Minor

Students may opt to enroll in a Minor programme for 20 Credits extra beyond the academic requirement of 160 Credits to obtain the B.Tech. degree.

The list of available Minor Programmes are listed [here](#)



---

**GITAM School of Core Engineering**  
**GITAM (Deemed to be University)**  
**Visakhapatnam | Hyderabad | Bengaluru**