

# **Dr. Ambedkar Institute of Technology, Bengaluru-56**

(An Autonomous Institution, Affiliated to VTU, Approved by AICTE, Accredited by NAAC with A+ grade)

## **School of Computer Science and Engineering**

### **Bachelor of Computer Applications (BCA) Programme**



**Scheme 2026 – 2029**

**BCA I – VI Semester**

**Effective from the Academic Year 2026-27**



# **Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY**

(An Autonomous Institution, Affiliated to VTU, Belagavi, Approved by AICTE,  
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## **BACHELOR OF COMPUTER APPLICATIONS (BCA) PROGRAMME**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dr. AIT- VISION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>To create Dynamic, Resourceful, Adept and Innovative Technical professionals to meet global challenges.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Dr. AIT- MISSION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ul style="list-style-type: none"><li>▪ To offer state-of-the-art under graduate, post graduate and doctoral programs in the fields of Engineering, Technology and Management</li><li>▪ To generate new knowledge by engaging faculty and students in research, development and innovation.</li><li>▪ To provide strong theoretical foundation to the students, supported by extensive practical training to meet the industrial requirements.</li><li>▪ To instil moral and ethical values with social and professional commitment.</li></ul> |
| <b>BCA PROGRAM- VISION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>To Develop technically competent and ethical human resource to address the global challenges</b>                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>BCA PROGRAM- MISSION</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"><li>• To provide the industry-oriented quality education in association with all stake holders.</li><li>• To promote entrepreneurship and research for sustainable development.</li><li>• To inculcate a sense of commitment to the students towards socio-economic development of the nation.</li></ul>                                                                                                                                                                                                     |
| <b>PROGRAM EDUCATIONAL OBJECTIVES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>PEO1:</b> Apply the principles of software engineering and software development in verticals related to information technology and Information Technology Enabled Services (ITES).</p> <p><b>PEO2:</b> Inculcate creative and innovative ideas with latest developments in the industry to be displayed as an entrepreneur or a researcher or an academician.</p> <p><b>PEO3:</b> To incorporate the lifelong learning process with leadership skills and corporate social responsibilities.</p>                                         |



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### BACHELOR OF COMPUTER APPLICATIONS (BCA) PROGRAMME

#### PROGRAM SPECIFIC OUTCOMES

- PS01:** Apply advanced computing concepts, programming skills, algorithms, databases, and software engineering principles to develop effective software solutions for real-world problems.
- PS02:** Design and develop innovative applications using emerging technologies such as Artificial Intelligence, Machine Learning, Data Science, Cloud Computing, Cyber Security, and Generative AI.
- PS03:** Analyze, evaluate, and implement computing solutions using appropriate tools and methodologies while demonstrating.

#### PROGRAM OUTCOMES (POs)

- P01 (Foundation Knowledge):** Apply knowledge of mathematics, programming logic and coding fundamentals for solution architecture and problem solving.
- P02 (Problem Analysis):** Identify, review, formulate and analyse problems for primarily focusing on customer requirements using critical thinking frameworks.
- P03 (Development of Solutions):** Design, develop and investigate problems with as an innovative approach for solutions incorporating ESG/SDG goals.
- P04 (Modern Tool Usage):** Select, adapt and apply modern computational tools such as development of algorithms with an understanding of the limitations including human biases.
- P05 (Individual and Teamwork):** Function and communicate effectively as an individual or a team leader in diverse and multidisciplinary groups. Use methodologies such as agile.
- P06 (Project Management and Finance):** Use the principles of project management such as scheduling, work breakdown structure and be conversant with the principles of Finance for profitable project management.
- P07 (Ethics):** Commit to professional ethics in managing software projects with financial aspects. Learn to use new technologies for cyber security and insulate customers from malware.
- P08 (Life-long learning):** Change management skills and the ability to learn, keep up with contemporary technologies and ways of working.



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School of Computer Science and Engineering

## BACHELOR OF COMPUTER APPLICATIONS PROGRAMME

Scheme of Teaching and Examination effective from the Academic Year 2026 – 27

### I SEMESTER

| Sl. No | Course | Course Code | Course Title                | Teaching Learning Scheme   |   |                          |         |                  | Examination    |           |           |             | Credits |
|--------|--------|-------------|-----------------------------|----------------------------|---|--------------------------|---------|------------------|----------------|-----------|-----------|-------------|---------|
|        |        |             |                             | Class Instruction in Hours |   | Lab Instruction in Hours | TW & SL | Total Hours/ Sem | Duration (Hrs) | CIE Marks | SEE Marks | Total Marks |         |
|        |        |             |                             | L                          | T | P                        |         |                  |                |           |           |             |         |
| 1      | AEC    | 1BCAT101A   | Balike Kannada (MCQ)        | 28                         |   |                          | 32      | 60               | 01             | 50        | 50        | 100         | 2       |
|        |        | 1BCAT101B   | Samskrutika Kannada (MCQ)   |                            |   |                          |         |                  |                |           |           |             |         |
| 2      | AEC    | 1BCAT102    | Communication English (MCQ) | 28                         |   |                          | 32      | 60               | 01             | 50        | 50        | 100         | 2       |
| 3      | IPCC   | 1BCAU103    | Computer Fundamentals       | 42                         |   | 28                       | 50      | 120              | 03             | 50        | 50        | 100         | 4       |
| 4      | PCC    | 1BCAT104    | Programming Using C         | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 5      | PCC    | 1BCAT105    | Fundamentals of Mathematics | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 6      | PCC    | 1BCAT106    | Fundamentals of Accountancy | 42                         |   |                          | 48      | 90               | 01             | 50        | 50        | 100         | 3       |
| 7      | PCCL   | 1BCAL107    | Programming Using C Lab     | 14                         |   | 28                       | 18      | 60               | 03             | 50        | 50        | 100         | 2       |
| 8      | VAC    | 1BCAT108    | Environmental studies (MCQ) | 14                         |   |                          | 16      | 30               | 01             | 50        | 50        | 100         | 1       |
| 9      | NCMC   | 1BCDN109    | Placement Training          | 28                         | - | -                        | -       | 28               | 01             | 50        | -         | 50          | NP/PP   |
| TOTAL  |        |             |                             |                            |   |                          |         |                  |                | 450       | 400       | 850         | 20      |

**AEC**-Ability Enhancement Courses, **PCC** – Professional Core Courses, **PCCL** – Professional Core Course Laboratory, **VAC** – Value Added Courses. **BCA15A**- Fundamentals of Mathematics- This is for students other than those in the science stream at 10+2 level. **BCA15B**- for Science Stream students. **SDA**- Skill Development Activities.

**T**-Theory, **U**- Lab Integrated, **L**- Lab, **NMC**-Non-Credit Mandatory Course

**BCA11A**- Balike Kannada (for non-Karnataka students) and **BCA11B**- Samskrutika Kannada- (For Karnataka Students)

**Integrated courses (IPCC)**-combining theory with practical components. (i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week. (ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). (iii) The practical component shall be assessed only through CIE.

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Scheme of Teaching and Examination effective from the Academic Year 2026 - 27

#### II SEMESTER

| Sl. No | Course | Course Code | Course Title                     | Teaching Learning Scheme   |   |                          |         |                  | Examination    |           |           |             | Credits |
|--------|--------|-------------|----------------------------------|----------------------------|---|--------------------------|---------|------------------|----------------|-----------|-----------|-------------|---------|
|        |        |             |                                  | Class Instruction in Hours |   | Lab Instruction in Hours | TW & SL | Total Hours/ Sem | Duration (Hrs) | CIE Marks | SEE Marks | Total Marks |         |
|        |        |             |                                  | L                          | T | P                        |         |                  |                |           |           |             |         |
| 1      | IPCC   | 1BCAU201    | Unix and Shell Scripting         | 42                         |   | 28                       | 50      | 120              | 01             | 50        | 50        | 100         | 4       |
| 2      | PCC    | 1BCAT202    | Data Structures Using C          | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 3      | PCC    | 1BCAT203    | Introduction to Web Technologies | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 4      | PCC    | 1BCAT204    | Discrete Mathematical Structure  | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 5      | SEC    | 1BCAT205    | Introduction to Fintech (MCQ)    | 28                         |   |                          | 32      | 60               | 03             | 50        | 50        | 100         | 2       |
| 6      | PCCL   | 1BCAL206    | Data Structure Using C Lab       | 14                         |   | 28                       | 18      | 60               | 01             | 50        | 50        | 100         | 2       |
| 7      | PCCL   | 1BCAL207    | Web Technologies Lab             | 14                         |   | 28                       | 18      | 60               | 03             | 50        | 50        | 100         | 2       |
| 8      | VAC    | 1BCAT208    | Constitution of India (MCQ)      | 14                         |   |                          | 16      | 30               | 01             | 50        | 50        | 100         | 1       |
| 9      | NCMC   | 1BCDN209    | Placement Training               | 28                         | - | -                        | -       | 28               | 01             | 50        | -         | 50          | NP/PP   |
| TOTAL  |        |             |                                  |                            |   |                          |         |                  | 450            | 400       | 850       | 20          |         |

**AEC**-Ability Enhancement Courses, **PCC** – Professional Core Courses, **PCCL** – Professional Core Course Laboratory, **VAC** – Value Added Courses. SEC-Skill Enhancement Course;

**SDA**- Skill Development Activities. , **T**-Theory, **U**- Lab Integrated, **L**- Lab, **NCMC**-Non-Credit Mandatory Course

**Integrated courses (IPCC)**-combining theory with practical components. (i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week. (ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). (iii) The practical component shall be assessed only through CIE.

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#### III SEMESTER

| Sl. No | Course | Course Code | Course Title                              | Teaching Learning Scheme   |    |                          |         | Total Hours/ Sem | Examination    |           |           |             | Credits |    |
|--------|--------|-------------|-------------------------------------------|----------------------------|----|--------------------------|---------|------------------|----------------|-----------|-----------|-------------|---------|----|
|        |        |             |                                           | Class Instruction in Hours |    | Lab Instruction in Hours | TW & SL |                  | Duration (Hrs) | CIE Marks | SEE Marks | Total Marks |         |    |
|        |        |             |                                           | L                          | T  | P                        |         |                  |                |           |           |             |         |    |
| 1      | IPCC   | 1BCAU301    | Introduction to Python Programming        | 42                         |    | 28                       | 50      | 120              | 01             | 50        | 50        | 100         | 4       |    |
| 2      | PCC    | 1BCAT302    | Object Oriented Programming with Java     | 42                         |    |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |    |
| 3      | PCC    | 1BCAT303    | Database Management System                | 42                         | 28 |                          | 50      | 120              | 03             | 50        | 50        | 100         | 4       |    |
| 4      | PCC    | 1BCAT304    | Operating Systems                         | 42                         |    |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |    |
| 5      | AEC    | 1BCAT305    | Indian Knowledge System (MCQ)             | 28                         |    |                          | 32      | 60               | 03             | 50        | 50        | 100         | 2       |    |
| 6      | PCCL   | 1BCAL306    | Object Oriented Programming with Java Lab | 14                         |    | 28                       | 18      | 60               | 01             | 50        | 50        | 100         | 2       |    |
| 7      | PCCL   | 1BCAL307    | Database Management System Lab            | 14                         |    | 28                       | 18      | 60               | 03             | 50        | 50        | 100         | 2       |    |
| 8      | VAC    | 1BCAT308    | Business Ethics (MCQ)                     |                            |    |                          | 30      | 30               | 01             | 50        | 50        | 100         | 1       |    |
| 9      | NCMC   | 1BCDN309    | Placement Training                        | 28                         | -  | -                        | -       | 28               | 01             | 50        | -         | 50          | NP/PP   |    |
| TOTAL  |        |             |                                           |                            |    |                          |         |                  |                |           | 450       | 400         | 850     | 21 |

**AEC**-Ability Enhancement Courses, **PCC** – Professional Core Courses, **PCCL** – Professional Core Course Laboratory, **VAC** – Value Added Courses. **SDA**- Skill Development Activities, **SEC**- Skill Enhancement Cours. , **T**-Theory, **U**- Lab Integrated, **L**- Lab, **NCMC**-Non-Credit Mandatory Course

**Integrated courses (IPCC)**-combining theory with practical components. (i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week. (ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). (iii) The practical component shall be assessed only through CIE.

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#### IV SEMESTER

| Sl. No | Course | Course Code | Course Title                                      | Teaching Learning Scheme   |   |                          |         |                  | Examination    |           |           |             | Credits |
|--------|--------|-------------|---------------------------------------------------|----------------------------|---|--------------------------|---------|------------------|----------------|-----------|-----------|-------------|---------|
|        |        |             |                                                   | Class Instruction in Hours |   | Lab Instruction in Hours | TW & SL | Total Hours/ Sem | Duration (Hrs) | CIE Marks | SEE Marks | Total Marks |         |
|        |        |             |                                                   | L                          | T | P                        |         |                  |                |           |           |             |         |
| 1      | IPCC   | 1BCAU401    | Data Analytics using Python                       | 42                         |   | 28                       | 50      | 120              | 03             | 50        | 50        | 100         | 4       |
| 2      | PCC    | 1BCAT402    | Design and Analysis of Algorithms                 | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 3      | PCC    | 1BCAT403    | Object Oriented Modelling and Design              | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 4      | PCC    | 1BCAT404    | Software Engineering                              | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 5      | PCC    | 1BCAT405    | Computer Networks                                 | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 6      | PCCL   | 1BCAL406    | Design and Analysis of Algorithms Lab             | 14                         |   | 28                       | 18      | 60               | 03             | 50        | 50        | 100         | 2       |
| 7      | PCCL   | 1BCAL407    | Web Application Development Lab                   | 14                         |   | 28                       | 18      | 60               | 03             | 50        | 50        | 100         | 2       |
| 8      | SDC    | 1BCAM408    | Mini Project                                      |                            |   |                          | 60      | 60               | 03             | 50        | 50        | 100         | 2       |
| 9      | NCMC   | 1BYOG409    | Yoga                                              |                            |   |                          | 28      | 28               | 01             | 100       | --        | 100         | NP/PP   |
|        |        | 1BNSS409    | National Service Scheme (NSS)                     |                            |   |                          |         |                  |                |           |           |             |         |
|        |        | 1BPE409     | Physical Education (PE)<br>(Sports and Athletics) |                            |   |                          |         |                  |                |           |           |             |         |
|        |        | 1BMUK409    | Music                                             |                            |   |                          |         |                  |                |           |           |             |         |
| 10     | NCMC   | 1BCDN410    | Placement Training                                | 28                         | - | -                        | -       | 28               | 01             | 50        | -         | 50          | NP/PP   |
| TOTAL  |        |             |                                                   |                            |   |                          |         |                  |                | 550       | 400       | 950         | 22      |

AEC-Ability Enhancement Courses, PCC – Professional Core Courses, PCCL – Professional Core Course Laboratory, VAC – Value Added Courses. SDA- Skill Development Activities, SEC-

Skill Enhancement Course., NCMC-Non-Credit Mandatory Course, **T**-Theory, **U**- Lab Integrated, **L**- Lab, **NCMC**-Non-Credit Mandatory Course

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Yoga/NSS/Physical Education/Music is a Mandatory Course (MC) (Non-credit). All students have to register for any one of the courses from the Yoga/NSS/Physical Education/Music. Successful completion of the course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for these activities. This course shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

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#### V SEMESTER

| Sl. No | Course | Course Code | Course Title                                      | Teaching Learning Scheme   |   |                          |         |                  | Examination    |           |           |             | Credits |
|--------|--------|-------------|---------------------------------------------------|----------------------------|---|--------------------------|---------|------------------|----------------|-----------|-----------|-------------|---------|
|        |        |             |                                                   | Class Instruction in Hours |   | Lab Instruction in Hours | TW & SL | Total Hours/ Sem | Duration (Hrs) | CIE Marks | SEE Marks | Total Marks |         |
|        |        |             |                                                   | L                          | T | P                        |         |                  |                |           |           |             |         |
| 1      | PCC    | 1BCAT501    | Introduction to Artificial Intelligence           | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 2      | PCC    | 1BCAT502    | Data Mining and Data Warehousing                  | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 3      | PCC    | 1BCAT503    | Cloud Computing                                   | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 4      | PEC    | 1BCAT504    | Theory of Computation                             | 56                         |   |                          | 64      | 120              | 03             | 50        | 50        | 100         | 4       |
| 5      | IPEC   | 1BCAU505X   | Integrated Professional Elective Course – Group 1 | 42                         |   | 28                       | 50      | 120              | 03             | 50        | 50        | 100         | 4       |
| 6      | SDC    | 1BCAP506    | Project Work                                      |                            |   |                          |         | 120              | 03             | 100       | 100       | 200         | 4       |
| TOTAL  |        |             |                                                   |                            |   |                          |         |                  |                | 350       | 350       | 700         | 21      |

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**Integrated courses (IPCC)**-combining theory with practical components. (i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week. (ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). (iii) The practical component shall be assessed only through CIE.

#### **INTEGRATED PROFESSIONAL ELECTIVE-1**

| S.No | Course Code      | Course Title                   |
|------|------------------|--------------------------------|
| 1.   | <b>1BCAU5051</b> | Internet of Things             |
| 2.   | <b>1BCAU5052</b> | Mobile Application Development |
| 4.   | <b>1BCAU5053</b> | R Programming                  |

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#### VI SEMESTER

| Sl. No | Course | Course Code | Course Title                                                                 | Teaching Learning Scheme   |   |                          |         |                  | Examination    |           |           |             | Credits |
|--------|--------|-------------|------------------------------------------------------------------------------|----------------------------|---|--------------------------|---------|------------------|----------------|-----------|-----------|-------------|---------|
|        |        |             |                                                                              | Class Instruction in Hours |   | Lab Instruction in Hours | TW & SL | Total Hours/ Sem | Duration (Hrs) | CIE Marks | SEE Marks | Total Marks |         |
|        |        |             |                                                                              | L                          | T | P                        |         |                  |                |           |           |             |         |
| 1      | IPCC   | 1BCAU601    | Cyber Security                                                               | 42                         |   | 28                       | 50      | 120              | 03             | 50        | 50        | 100         | 4       |
| 2      | PEC    | 1BCAT602X   | Professional Elective Course - Group 1                                       | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 3      | PEC    | 1BCAT603X   | Professional Elective Course - Group 2 (Online VTU/NPTEL Courses) – 12 weeks | 42                         |   |                          | 48      | 90               | 03             | 50        | 50        | 100         | 3       |
| 4      | TS     | 1BCAS604    | Technical Seminar                                                            |                            |   |                          | 30      | 30               | --             | 100       | --        | 100         | 1       |
| 5      | INT    | 1BCAI605    | Industry Internship (5 weeks)                                                |                            |   |                          |         | 120              | 03             | 100       | 100       | 200         | 5       |
| TOTAL  |        |             |                                                                              |                            |   |                          |         |                  |                | 350       | 250       | 600         | 16      |

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**Integrated courses (IPCC)**-combining theory with practical components. (i) Theory sessions shall be conducted for 3 hours per week, while the practical sessions shall be conducted for 2 hours per week. (ii) Theory components shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). (iii) The practical component shall be assessed only through CIE.

**Industry Internship of 4 weeks must be completed during the vacation of 4th to 5th semester and/or 5th to 6th semester.**

#### **TW & SL – Team Work and Self Learning**

Students shall enrol for the Industry Internship (1BCAI605) immediately after completion of 5th semester examination and before starting the 6th semester.

The teaching-learning duration of VI Semester is split into two phases:

- Phase 1: Internship (First 5 weeks duration)
- Phase 2: Remaining courses (Next 9-10 weeks duration)

| Professional Elective Course - Group 2 |             |                                   | Professional Elective Course - Group 3 |             |                         |
|----------------------------------------|-------------|-----------------------------------|----------------------------------------|-------------|-------------------------|
| S.No                                   | Course Code | Course Title                      | Sl.NO.                                 | Course Code | Course Title            |
| 1.                                     | 1BCAT6021   | Blockchain Technology             | 1.                                     | 1BCAT6031   | VTU/NPTEL Online Course |
| 2.                                     | 1BCAT6022   | Cryptography and Network Security | 2.                                     | 1BCAT6032   | VTU/NPTEL Online Course |
| 3.                                     | 1BCAT6023   | Business Intelligence             | 3.                                     | 1BCAT6033   | VTU/NPTEL Online Course |

| Grand Total       |                    |
|-------------------|--------------------|
| Total Marks: 4800 | Total Credits: 120 |

# Overview of Courses, Credits, Projects, and Internships under VTU Curriculum

## I. Abbreviations used in the Scheme of Teaching and Examinations

| Abbreviations | Expanded Form of the Abbreviations              |
|---------------|-------------------------------------------------|
| <b>AICTE</b>  | <b>All India Council of Technical Education</b> |
| <b>NCrF</b>   | <b>National Credit Framework</b>                |
| <b>VTU</b>    | <b>Visvesvaraya Technological University</b>    |
| <b>AEC</b>    | Ability Enhancement Course                      |
| <b>ASC</b>    | Applied Science Course                          |
| <b>BSC</b>    | Basic Science Course                            |
| <b>CIE</b>    | Continuous Internal Evaluation                  |
| <b>CI</b>     | Classroom Instruction                           |
| <b>CCA</b>    | Continuous Comprehensive Assessment             |
| <b>CGPA</b>   | Cumulative Grade Point Average                  |
| <b>CUL</b>    | Cultural                                        |
| <b>COE</b>    | Centre for Online Education                     |
| <b>HSMC</b>   | Humanities Studies and Management Course        |
| <b>IPCC</b>   | Integrated Professional Core Course             |
| <b>LI</b>     | Laboratory Instruction                          |
| <b>L</b>      | Lecture                                         |
| <b>NCMC</b>   | Non-Credit Mandatory Course                     |
| <b>NSS</b>    | National Service Scheme                         |

|                   |                                                               |
|-------------------|---------------------------------------------------------------|
| <b>NPTEL</b>      | National Programme for Technical Enhanced Learning            |
| <b>OEC</b>        | Open Elective (Interdepartmental or interdisciplinary) Course |
| <b>PCC</b>        | Professional Core Course                                      |
| <b>PCCL</b>       | Professional Core Course Laboratory                           |
| <b>PEC</b>        | Professional Elective Courses                                 |
| <b>PE</b>         | Physical Education                                            |
| <b>P</b>          | Practical                                                     |
| <b>SEC</b>        | Skill Enhancement Courses                                     |
| <b>SEE</b>        | Semester End Evaluation                                       |
| <b>SL</b>         | Self-Learning                                                 |
| <b>SGPA</b>       | Semester Grade Point Average                                  |
| <b>SWAYAM</b>     | Study Webs of Active-Learning for Young Aspiring Minds        |
| <b>TW</b>         | Term Work                                                     |
| <b>T</b>          | Tutorial                                                      |
| <b>VTU online</b> | VTU online courses offered by Centre for Online Education,    |
| <b>YOG</b>        | Yoga                                                          |

|                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------|
| <b>II. Credit Representation</b>                                                                                         |
| 1-hour Lecture (L) per week=1Credit                                                                                      |
| 2-hoursTutorial(T) per week=1Credit                                                                                      |
| 2-hours Practical / Drawing (P) per week=1Credit                                                                         |
| <b>Teaching &amp; Learning Scheme</b>                                                                                    |
| As per the new National Credit Framework (NCrF), 30 hours of learning of a student is considered equivalent to 1 credit. |

A semester is considered as a 14-week period of academic interaction with students.

**The learning components are categorized as follows:**

1. Classroom Instruction (CI): Includes different instructional / implementation strategies i.e. Lecture (L), Tutorial (T), Case method, Demonstrations, Video 09052026 Scheme Template for 2026-27 scheme V1 10 demonstration, Problem based learning etc. to deliver theoretical concepts within the classroom measured in Number of hours per semester.
2. Laboratory Instruction (LI): Expressed as number of hours per semester which Includes experiments / practical performances / problem-based experiences in laboratory, workshop, field or other locations using different instructional / Implementation strategies.
3. Term work (TW): Includes assignments, seminars, presentations, case studies, micro projects, field activities, industrial visits, academic preparation duration and any other student activities in Number of hours per semester.
4. Self-Learning (SL): MOOCs (SWAYAM/NPTEL/Industry certified courses), spoken tutorials, online educational resources, self-initiated projects, Learning through digital resources etc in Number of hours per semester. (If provided in curriculum structure).

**III. Details of Courses**

**(1) Integrated Professional Core Course (IPCC):** The Integrated Professional Core Course (IPCC) refers to a core theory course that is integrated with a laboratory of the same subject. Each IPCC carries 4 credits, with Teaching–Learning hours structured (L : T : P) as either (3:0:2). The theory component of the IPCC shall be evaluated through both Continuous Internal Evaluation (CIE) and Semester End Examination (SEE). The laboratory part shall be assessed exclusively through CIE, with no SEE. However, questions derived from the laboratory part may be included in the SEE question paper to ensure comprehensive evaluation

**(2) Non-Credit Mandatory Courses (NCMC):** are aimed at enhancing students' knowledge, skills, and awareness beyond the core curriculum. Successful completion of the NCMC is compulsory for fulfilling the requirements of the academic program. It shall not be considered for the computation of SGPA, CGPA and vertical progression. Each student shall register for the prescribed NCMC(s) in the prescribed semester. A student who fails to qualify in the prescribed NCMC shall not be eligible for the conferment of the degree.

**(3) Professional Elective Courses (PEC):** A professional elective course (PEC) is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum of the same discipline.

**(4) Open Elective Courses (OEC):** A open elective course (OEC) is a course offered by departments other than a student's parent department. These interdepartmental /interdisciplinary courses allow students to explore disciplines beyond their core area of study. These courses are

intended to promote interdisciplinary learning, broad-based education, thereby enhancing a student's overall knowledge, creativity, and employability. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor/Proctor.

(5) **Ability Enhancement Course Laboratory (AEC):** An Ability Enhancement Course Laboratory is a practical, skill-oriented lab course designed to strengthen students' practical abilities, professional competencies that support communication, environmental awareness, computational thinking, interdisciplinary learning, and application skills through hands-on learning experiences. The laboratory may pertain to disciplinary or interdisciplinary involving experiments, design tasks, and mini-projects aligned with current industry practices.

(6) **Skill Enhancement Courses (SEC):** These courses are intended to develop specific practical skills and competencies that improve students' employability, technical proficiency, and professional readiness to bridge the gap between academic and industry requirements. These courses emphasize hands-on training, application of theoretical knowledge, and development of discipline-relevant and transferable skills required in industry and society, and develop entrepreneurship and start-up skills. 09052026 Scheme Template for 2026-27 scheme V1 13

(7) **Online Courses:** Online courses are educational programs delivered over the Internet through a digital platform, allowing students to access lessons, assignments, and discussions from anywhere at any time. Most online courses offer flexibility, allowing students to access materials and complete assignments on their own schedule. However, students have to pass the course within a stipulated period as per the norms of the university.

(8) **VTU Online Courses:** VTU Online courses are online courses offered by Centre of Online Education (COE) Mysuru. A wide range of multidisciplinary courses are available to learners anywhere, anytime to earn university-prescribed credits through proctored examination for the award of a degree.

(9) **NPTEL/SWAYAM Online Courses:** The National Programme on Technology Enhanced Learning (NPTEL)/SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) are the specific Indian platforms to host national Massive Open Online Courses (MOOCs). It offers online courses on a wide range of disciplines to learners anywhere, anytime, to earn university-prescribed credits through proctored examination for the award of a degree. All NPTEL/SWAYAM courses are MOOCs, but not all MOOCs are offered on these specific Indian platforms.

|           |                                          |                                                   |
|-----------|------------------------------------------|---------------------------------------------------|
|           | <b>Course Details</b>                    |                                                   |
| <b>1.</b> | <b>One Credit Theory Courses:</b>        |                                                   |
|           | Teaching-Learning sessions in a semester | 14 hours                                          |
|           | Examination pattern for CIE and SEE      | Multiple Choice Question (MCQ)                    |
|           | Teaching hours per week - L:T:P          | 1:0:0                                             |
| <b>2.</b> | <b>One Credit Laboratory Courses:</b>    |                                                   |
|           | Teaching-Learning sessions in a semester | 28 hours (2 hours session /week)                  |
|           | Examination pattern for CIE and SEE      | Continuous assessments, lab Internal test and SEE |
|           | Teaching hours per week - L:T:P          | 0:0:2                                             |
| <b>3.</b> | <b>Two Credit Theory Courses:</b>        |                                                   |
|           | Teaching-Learning Sessions in a semester | 28 hours                                          |