# Sanjay Ghodawat University Kolhapur




## School of Engineering and Technology
### Department of Computer Science and Engineering

## B. Tech. Computer Science and Engineering

# Curriculum Structure (R25)

**Semester: I-VIII**

# Programme Structure for B Tech.: First Year Computer Science and Engineering (R25)

## Semester I: Teaching Scheme

| Course Code | Course Name | Teaching Scheme (Hrs/week) | | | Credits Assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total credits |
| USTBS101 | Linear Algebra | 3 | - | 1 | 3 | - | 1 | 4 |
| USTBS003 | Applied Chemistry | 3 | - | - | 3 | - | - | 3 |
| USTVE004 | Environmental Science and Sustainability | 2 | - | - | 2 | - | - | 2 |
| USTES001 | Digital Electronics | 3 | - | - | 3 | - | - | 3 |
| USTBS004 | Applied Chemistry Lab | - | 2 | - | - | 1 | - | 1 |
| USTES002 | Digital Electronics Lab | - | 2 | - | - | 1 | - | 1 |
| UHSAE001 | Professional Communication | 1 | 2 | - | 2 | - | - | 2 |
| USTVS102 | C++ Programming | - | 4 | - | - | 2 | - | 2 |
| UHSVE001 | Constitution of India | - | 4 | - | - | 2 | - | 2 |
| UISCC0XX | Co-curricular courses I | 2 | - | - | 2 | - | - | 2 |
| UHSVE005 | Universal Human Values | - | - | - | | | | Audit Course |
| | **Total** | **14** | **14** | **1** | **15** | **6** | **1** | **22** |

- During the Induction Program, students would get an initial exposure to human values through Universal Human Values-I
- C Programming course of 8hours shall be conducted as bridge course before starting of C++ Programming in curriculum

## Semester I: Evaluation Scheme

| Course Code | Course Name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Internal Assessment | | | | SEE | Term work / Tutorial | Practical Oral/ POE | |
| | | T1 | T2 | FET | Total | | | | |
| USTBS101 | Linear Algebra | 10 | 10 | 5 | 25 | 50 | 25 | - | 100 |
| USTBS003 | Applied Chemistry | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| USTVE004 | Environmental Science and Sustainability | - | 10 | 5 | 15 | 35 | - | - | 50 |
| USTES001 | Digital Electronics | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| USTBS004 | Applied Chemistry Lab | - | - | - | - | - | 25 | - | 25 |
| USTES002 | Digital Electronics Lab | - | - | - | - | - | 25 | - | 25 |
| UHSAE001 | Professional Communication | - | 10 | 5 | 15 | 35 | - | - | 50 |
| USTVS102 | C++ Programming | - | - | - | - | - | 25 | 25 | 50 |
| UHSVE001 | Constitution of India | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UISCC0XX | Co-curricular courses I | - | - | - | - | - | 50 | - | 50 |
| UHSVE005 | Universal Human Values | - | - | - | - | - | - | - | Audit Course |
| | | | | | | | | **Total** | **550** |

## Semester II: Teaching Scheme

| Course Code | Course Name | Teaching Scheme (Hrs/week) | | | Credits Assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total Credits |
| USTBS202 | Calculus and Probability | 3 | - | 1 | 3 | - | 1 | 4 |
| USTBS001 | Modern Physics | 3 | - | - | 3 | - | - | 3 |
| UCSPC201 | Data Communication and Computer Networks | 3 | - | - | 3 | - | - | 3 |
| USTES003 | Design Thinking | 2 | - | - | 2 | - | - | 2 |
| USTBS002 | Modern Physics Lab | - | 2 | - | - | 1 | - | 1 |
| USTES004 | Design Thinking Lab | - | 2 | - | - | 1 | - | 1 |
| UCSPC202 | Web Development Lab | - | 4 | - | - | 2 | - | 2 |
| USTIK002 | Ancient Indian Logic for Computer Science and Engineering | 2 | - | - | 2 | - | - | 2 |
| USTVS201 | Python Programming | - | 4 | - | - | 2 | - | 2 |
| UISCC0XX | Co-curricular courses II | - | 4 | - | - | 2 | - | 2 |
| **Total** | | **13** | **16** | **1** | **13** | **8** | **1** | **22** |

## Semester II: Evaluation Scheme

| Course Code | Course Name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Internal Assessment | | | | SEE | Term work/ Tutorial | Practical Oral/POE | |
| | | T1 | T2 | FET | Total | | | | |
| USTBS202 | Calculus and Probability | 10 | 10 | 5 | 25 | 50 | 25 | - | 100 |
| USTBS001 | Modern Physics | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPC201 | Data Communication and Computer Networks | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| USTES003 | Design Thinking | - | 10 | 5 | 15 | 35 | - | - | 50 |
| USTBS002 | Modern Physics Lab | - | - | - | - | - | 25 | - | 25 |
| USTES004 | Design Thinking Lab | - | - | - | - | - | 25 | - | 25 |
| UCSPC202 | Web Development Lab | - | - | - | - | - | 50 | - | 50 |
| USTIK002 | Ancient Indian Logic for Computer Science and Engineering | - | 10 | 5 | 15 | 35 | - | - | 50 |
| USTVS201 | Python Programming | - | - | - | - | - | 25 | 25 | 50 |
| UISCC0XX | Co-curricular courses II | - | - | - | - | - | 50 | - | 50 |
| | | | | | | | | **Total** | **550** |

**Exit Option:**

- Students will have the flexibility to enter the programme in odd semesters and exit the programme after the successful completion of even semesters as per their future career needs. Students exiting the First-Year program after securing minimum 40 credits will be awarded UG Certificate in the relevant Discipline /Subject provided they secure 4-8 credits in work-based vocational courses or internship / Apprenticeship offered during summer vacation in addition to 8 credits from skill-based courses earned during the first and second semester.

## Programme Structure for B Tech.: Second Year Computer Science and Engineering (R25)

### Semester III: Teaching Scheme

| Course code | Course name | Teaching scheme (Hrs/week) | | | Credits assigned | | | Total credits |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | |
| UCSBS301 | Discrete Structures and Graph Theory | 3 | - | - | 3 | - | - | 3 |
| UCSPC302 | Computer Organization and Architecture | 3 | - | - | 3 | - | - | 3 |
| UCSPC303 | Data Structures | 2 | - | - | 2 | - | - | 2 |
| UCSPC304 | Information Theory and Coding | 3 | - | - | 3 | - | - | 3 |
| UXXMM0XX | Multidisciplinary Minor I | 2 | - | - | 2 | - | - | 2 |
| UXXOE01X | Open Elective I | 2 | - | - | 2 | - | - | 2 |
| UCMEM001 | Engineering Economics | 2 | - | - | 2 | - | - | 2 |
| UCSPC305 | Computer Organization and Architecture Lab | - | 2 | - | - | 1 | - | 1 |
| UCSPC306 | Data structures Lab | - | 4 | - | - | 2 | - | 2 |
| UCSFP301 | Field Project | - | 4 | - | - | 2 | - | 2 |
| **Total** | | **17** | **10** | **-** | **17** | **5** | **-** | **22** |

### Semester III: Evaluation Scheme

| Course code | Course Name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Internal Assessment | | | | SEE | Term work | Practical Oral/POE | |
| | | T1 | T2 | FET | Total | | | | |
| UCSBS301 | Discrete Structures and Graph Theory | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPC302 | Computer Organization and Architecture | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPC303 | Data Structures | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCSPC304 | Information Theory and Coding | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0XX | Multidisciplinary Minor I | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UXXOE01X | Open Elective I | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCMEM001 | Engineering Economics | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCSPC305 | Computer Organization and Architecture Lab | - | - | - | - | - | 25 | - | 25 |
| UCSPC306 | Data structures Lab | - | - | - | - | - | 25 | 25 | 50 |
| UCSFP301 | Field Project | - | - | - | - | - | 25 | 25 | 50 |
| | | | | | | | | **Total** | **550** |

## Programme Structure for B Tech.: Second Year Computer Science and Engineering(R25)

### Semester IV: Teaching Scheme

| Course code | Course Name | Teaching scheme (Hrs/week) | | | Credits assigned | | | Total credits |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | |
| UCSPC401 | Operating System | 3 | - | - | 3 | - | - | 3 |
| UCSPC402 | Database Management System | 3 | - | - | 3 | - | - | 3 |
| UXXMM0XX | Multidisciplinary Minor II | 2 | - | - | 2 | - | - | 2 |
| UXXOE02X | Open Elective II | 2 | - | - | 2 | - | - | 2 |
| UCMEM003 | Project Management | 2 | - | - | 2 | - | - | 2 |
| UCSVS401 | Software Proficiency I (Java Programming) | - | 4 | - | - | 2 | - | 2 |
| UCSPC403 | Database Management System Laboratory | - | 4 | - | - | 2 | - | 2 |
| UCSVE003 | Open-Source Technologies | | 2 | - | | 1 | - | 1 |
| UHSAE008 | Employability Skills | 1 | 2 | - | - | 2 | - | 2 |
| USTSVE005 | AI Ethics and Governance | 1 | - | 1 | 1 | - | 1 | 2 |
| **Total** | | **14** | **12** | **1** | **13** | **7** | **1** | **21** |

### Semester IV: Evaluation Scheme

| Course code | Course Name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Internal Assessment | | | | SEE | Term work | Practical Oral /POE | |
| | | T1 | T2 | FET | Total | | | | |
| UCSPC401 | Operating System | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPC402 | Database Management System | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0XX | Multidisciplinary Minor II | - | 10 | 5 | 25 | 35 | - | - | 50 |
| UXXOE02X | Open Elective II | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCMEM003 | Project Management | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCSVS401 | Software Proficiency I (Java Programming) | - | - | - | - | - | 25 | 25 | 50 |
| UCSPC403 | Database Management System Laboratory | - | - | - | - | - | 25 | 25 | 50 |
| UCSVE003 | Open-Source Technologies | - | - | - | - | - | 25 | - | 25 |
| UHSAE008 | Employability Skills | - | - | - | - | - | 25 | 25 | 50 |
| USTSVE005 | AI Ethics and Governance | 10 | 10 | 5 | 25 | - | 25 | - | 50 |
| | | | | | | | | **Total** | **525** |

**Exit Option:**

- Students will have the flexibility to enter a programme in odd semesters and exit a programme after the successful completion of even semesters as per their future career needs.
- Students exiting the Second Year Programme after securing minimum 80credits will be awarded UG Diploma in the relevant Discipline /Subject provided they secure additional 4-8 credits in skill-based vocational courses (skill-based courses, internship, mini projects etc.) offered during summer vacation after the second year.

## Programme Structure for B Tech.: Third Year Computer Science and Engineering(R25)

### Semester V: Teaching Scheme

| Course code | Course name | Teaching scheme (Hrs/week) | | | Credits assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total Credits |
| UCSPC501 | Theory of Computation | 3 | - | 1 | 3 | - | 1 | 4 |
| UCSPC502 | Design and Analysis of Algorithms | 3 | - | - | 3 | - | - | 3 |
| UCSPE5XX | Program Elective I | 3 | - | - | 3 | - | - | 3 |
| UXXMM0X | Multidisciplinary Minor III | 2 | - | - | 2 | - | - | 2 |
| UXXOE03X | Open Elective III | 2 | - | - | 2 | - | - | 2 |
| UCSPC504 | Design and Analysis of Algorithms Lab | - | 2 | - | - | 1 | - | 1 |
| UCSPC505 | Advanced Java programming Lab | - | 4 | - | - | 2 | - | 2 |
| UCSPC505 | Cloud Computing Lab | - | 4 | - | - | 2 | - | 2 |
| UCSPC506 | Software Proficiency II (Advanced Web Technologies) | - | 4 | - | - | 2 | - | 2 |
| **Total** | | **13** | **14** | **1** | **13** | **7** | **1** | **21** |

### Semester V: Evaluation Scheme

| Course code | Course name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Internal Assessment | | | | SEE | | | |
| | | T1 | T2 | FET | Total | | Term work | Practical Oral/POE | |
| UCSPC501 | Theory of Computation | 10 | 10 | 5 | 25 | 50 | 25 | - | 100 |
| UCSPC502 | Design and Analysis of Algorithms | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPE5XX | Program Elective I | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0X | Multidisciplinary Minor III | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UXXOE03X | Open Elective III | - | 10 | 5 | 15 | 35 | | | 50 |
| UCSPC504 | Design and Analysis of Algorithms Lab | - | - | - | - | - | 25 | - | 25 |
| UCSPC505 | Advanced Java programming Lab | - | - | - | - | - | 25 | 25 | 50 |
| UCSPC505 | Cloud Computing Lab | - | - | - | - | | 50 | - | 50 |
| UCSPC506 | Software Proficiency II (Advanced Web Technologies) | - | - | - | - | - | 25 | 25 | 50 |
| | | | | | | | | **Total** | **525** |

## Semester VI: Teaching Scheme

| Course code | Course name | Teaching scheme (Hrs/week) | | | Credits assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total credits |
| UCSPC601 | Software Engineering | 3 | - | - | 3 | - | - | 3 |
| UCSPC602 | System Programming and Compiler Design | 3 | - | 1 | 3 | - | 1 | 4 |
| UCSPC603 | Machine Learning | 3 | - | - | 3 | - | - | 3 |
| UCSPE6XX | Program Elective II | 3 | - | - | 3 | - | - | 3 |
| UCSPE6XX | Program Elective III | 3 | - | - | 3 | - | - | 3 |
| UXXMM0X | Multidisciplinary Minor IV | 2 | - | - | 2 | - | - | 2 |
| UCSVS604 | Software Engineering Lab | - | 2 | - | - | 1 | - | 1 |
| UCSPC605 | Software Proficiency III (Mobile Application Development) | - | 4 | - | - | 2 | - | 2 |
| UCSPC606 | Machine Learning Lab | - | 2 | - | - | 1 | - | 1 |
| **Total** | | **17** | **8** | **1** | **17** | **4** | **1** | **22** |

## Semester VI: Evaluation Scheme

| Course code | Course Name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Evaluation (Theory) | | | | SEE | Evaluation (Lab) | | |
| | | T1 | T2 | FET | Total | | Term work | Practical Oral/POE | |
| UCSPC601 | Software Engineering | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPC602 | System Programming and Compiler Design | 10 | 10 | 5 | 25 | 50 | 25 | - | 100 |
| UCSPC603 | Machine Learning | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPE6XX | Program Elective II | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPE6XX | Program Elective III | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0X | Multidisciplinary Minor IV | 10 | 10 | 5 | 25 | 25 | | | 50 |
| UCSVS604 | Software Engineering Lab | - | - | - | - | - | 25 | - | 25 |
| UCSPC605 | Software Proficiency III (Mobile Application Development) | - | - | - | - | | 25 | 25 | 50 |
| UCSPC606 | Machine Learning Lab | - | - | - | - | - | 25 | | 25 |
| | | | | | | | | **Total** | **550** |

**Exit Option:**

- Students will have the flexibility to enter a programme in odd semesters and exit a programme after the successful completion of even semesters as per their future career needs.
- Students exiting the 3-year UG program will be awarded B.Voc. in the relevant Discipline /Subject upon securing minimum 120 credits with additional 4-8 credits in skill-based vocational courses (skill-based courses, internship, mini projects etc.) offered during summer vacation after the sixth semester.

## Programme structure for B. Tech: Final Year Computer Science and Engineering (R25)

### Semester VII: Teaching Scheme

| Course code | Course name | Teaching scheme (Hrs/week) | | | Credits assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total Credits |
| UCSPC701 | Internet of Things | 3 | - | - | 3 | - | - | 3 |
| UCSPC702 | Distributed Systems | 3 | - | 1 | 3 | - | 1 | 4 |
| UCSPE7XX | Program Elective IV | 3 | - | - | 3 | - | - | 3 |
| USTRM001 | Research Methodology | 3 | - | - | 3 | - | - | 3 |
| UXXMM0XX | Multidisciplinary Minor V | 2 | - | - | 2 | - | - | 2 |
| UCSPC703 | Internet of Things Lab | - | 4 | - | - | 2 | - | 2 |
| UCSPE7XX | Program Elective IV Lab | - | 4 | - | - | 2 | - | 2 |
| UCSPR701<br>**OR**<br>UCSEP701<br>**OR**<br>UCSRE701 | Project Phase I<br>(Industry Internship with Capstone Project Track)<br>**OR**<br>Entrepreneurship Project Phase I<br>(Entrepreneurship Venture Track)<br>**OR**<br>Research Project Phase I<br>(Higher Opportunity Track) | - | 4 | - | - | 2 | - | 2 |
| **Total** | | **14** | **12** | **1** | **14** | **6** | **1** | **21** |

### Semester VII: Evaluation Scheme

| Course code | Course name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Evaluation (Theory) | | | | ESE | Term work | Practical Oral/POE | |
| | | T1 | T2 | FET | Total | | | | |
| UCSPC701 | Internet of Things | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UCSPC702 | Distributed Systems | 10 | 10 | 5 | 25 | 50 | 25 | - | 100 |
| UCSPE7XX | Program Elective IV | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| USTRM001 | Research Methodology | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0XX | Multidisciplinary Minor V | 10 | - | 5 | 15 | 35 | - | - | 50 |
| UCSPC703 | Internet of Things Lab | - | - | - | - | - | 25 | 25 | 50 |
| UCSPE7XX | Program Elective IV Lab | - | - | - | - | - | 50 | - | 50 |
| UAEPR701<br>**OR**<br>UAEEP701<br>**OR**<br>UAERE701 | Project Phase I<br>(Industry Internship with Capstone Project)<br>**OR**<br>Entrepreneurship Project Phase I<br>(Entrepreneurship Venture Track)<br>**OR**<br>Research Project Phase I<br>(Higher Opportunity Track) | - | - | - | - | - | 50 | - | 50 |
| **Total** | | | | | | | | | **525** |

**Note:** The Evaluation of Project Phase I is divided into two parts (Internal Assessment)

a) Preparation and presentation of the proposal of the Project (Motivation/ Relevance, Problem Statement, Literature Survey, Objectives, Methodology and design of the project) for 25marks.

b) Student shall present a seminar on the topic relevant to the Project work for 25 marks.

## Programme structure for B. Tech: Final Year Computer Science and Engineering (R25)

### Track I: Industry Internship with Capstone Project Track

### Semester VIII: Teaching Scheme

| Course code | Course name | Teaching scheme | | | Credits assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total credits |
| UCSPE8XX | Program Elective V | 3 | - | - | 3 | - | - | 3 |
| UXXMM0XX | Multidisciplinary Minor VI | 2 | - | - | 2 | - | - | 2 |
| UCSPR801 | Project Phase II | - | 8 | - | - | 4 | - | 4 |
| UCSOT801 | Internship/On job Training | - | 24 | - | - | 12 | - | 12 |
| **Total** | | **5** | **32** | **-** | **5** | **16** | **-** | **21** |

### Semester VIII: Evaluation Scheme

| Course code | Course name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Evaluation (Theory) | | | | ESE | Evaluation (Lab) | | |
| | | T1 | T2 | FET | Total | | Term work | Practical Oral/POE | |
| UCSPE8XX | Program Elective V | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0XX | Multidisciplinary Minor VI | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCSPR801 | Project Phase II | - | - | - | - | - | 50 | 50 | 100 |
| UCSOT801 | Internship/On job Training | - | - | - | - | - | 200 | 100 | 300 |
| **Total** | | | | | | | | | **525** |

**Note:**

- Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, Term Work , SEE - Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course
- The Program Elective V and Multidisciplinary Minor VI shall be conducted in online mode, by faculty of SGU or other institute/ University. Students can also opt a course from MOOCs platforms such as SWAYAM, NPTEL, Coursera etc. In case there is no assessment and examination conducted by the MOOCs platforms then the assessment and examination will be conducted by SGU.
- Additional Credits for Bachelor's Degree- with Double Minor :12 Credits.
  These are additional credits to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- with Honors: 16-20 Credits.
  These are additional credits from same domain to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- Honors with Research: Minimum 16-20 Credits.
  These are additional credits to be offered in the final year and will be offered as an option to students.

## Programme structure for B. Tech: Final Year Computer Science and Engineering (R25)

## Track II: Entrepreneurship Venture Track

### Semester VIII: Teaching Scheme

| Course code | Course name | Teaching scheme | | | Credits assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total credits |
| UCSPE8XX | Program Elective V | 3 | - | - | 3 | - | - | 3 |
| UXXMM0XX | Multidisciplinary Minor VI | 2 | - | - | 2 | - | - | 2 |
| UCSEP801 | Online Course in Advanced Technology (domain area) | - | - | - | 4 | - | - | 4 |
| UCSEP802 | Entrepreneurship project Phase II | - | 24 | - | - | 12 | - | 12 |
| **Total** | | **5** | **24** | **-** | **9** | **12** | **-** | **21** |

### Semester VIII: Evaluation Scheme

| Course code | Course name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Evaluation (Theory) | | | | ESE | Evaluation (Lab) | | |
| | | T1 | T2 | FET | Total | | Term work | Practical Oral/POE | |
| UCSPE8XX | Program Elective IV | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0XX | Multidisciplinary Minor VI | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCSEP801 | Online Course in Advanced Technology (domain area) | - | - | - | 25 | 75 | - | - | 100 |
| UCSEP802 | Entrepreneurship project Phase II | - | - | - | - | - | 200 | 100 | 300 |
| | | | | | | | | **Total** | **525** |

**Note:**

- Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, Term Work , SEE - Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course
- The Program Elective V and Multidisciplinary Minor VI shall be conducted in online mode, by faculty of SGU or other institute/ University. Students can also opt a course from MOOCs platforms such as SWAYAM, NPTEL, Coursera etc. In case there is no assessment and examination conducted by the MOOCs platforms then the assessment and examination will be conducted by SGU.
- Additional Credits for Bachelor's Degree- with Double Minor :12 Credits.
  These are additional credits to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- with Honors: 16-20 Credits.
  These are additional credits from same domain to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- Honors with Research: Minimum 16-20 Credits.
  These are additional credits to be offered in the final year and will be offered as an option to students.

## Programme structure for B. Tech: Final Year Computer Science and Engineering (R25)
## Track III: Higher Opportunity Track
## Semester VIII: Teaching Scheme

| Course code | Course name | Teaching scheme | | | Credits assigned | | | |
|---|---|---|---|---|---|---|---|---|
| | | Theory | Practical | Tutorial | Theory | Practical | Tutorial | Total credits |
| UCSPE8XX | Program Elective V | 3 | - | - | 3 | - | - | 3 |
| UXXMM0XX | Multidisciplinary Minor VI | 2 | - | - | 2 | - | - | 2 |
| UCSRE801 | Online Course in Advanced Technology (Domain area) | - | - | - | 4 | - | - | 4 |
| UCSRE802 | Research Project Phase II | - | 24 | - | - | 12 | - | 12 |
| **Total** | | **5** | **24** | **-** | **9** | **12** | **-** | **21** |

## Semester VIII: Evaluation Scheme

| Course code | Course name | Theory Marks | | | | | Practical Marks | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | Evaluation (Theory) | | | | ESE | Evaluation (Lab) | | |
| | | T1 | T2 | FET | Total | | Term work | Practical Oral/POE | |
| UCSPE8XX | Program Elective V | 10 | 10 | 5 | 25 | 50 | - | - | 75 |
| UXXMM0XX | Multidisciplinary Minor VI | - | 10 | 5 | 15 | 35 | - | - | 50 |
| UCSRE801 | Online Course in Advanced Technology (Domain area) | - | - | - | 25 | 75 | - | - | 100 |
| UCSRE802 | Research Project Phase II | - | - | - | - | - | 200 | 100 | 300 |
| **Total** | | | | | | | | | **525** |

**Note:**

- Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, Term Work , SEE - Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course
- The Program Elective V and Multidisciplinary Minor VI shall be conducted in online mode, by faculty of SGU or other institute/ University. Students can also opt a course from MOOCs platforms such as SWAYAM, NPTEL, Coursera etc. In case there is no assessment and examination conducted by the MOOCs platforms then the assessment and examination will be conducted by SGU.
- Additional Credits for Bachelor's Degree- with Double Minor :12 Credits.
  These are additional credits to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- with Honors: 16-20 Credits.
  These are additional credits from same domain to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- Honors with Research: Minimum 16-20 Credits.
  These are additional credits to be offered in the final year and will be offered as an option to students.

| List of Co-curricular courses I & II | |
|---|---|
| **Course Code** | **Course Name** |
| UISCC011 | National Service Scheme |
| UISCC012 | Regular and Special NSS Camp Activity |
| UISCC021 | Indian Music |
| UISCC022 | Fine Arts |
| UISCC023 | Indian Dance |
| UISCC031 | Physical Fitness |
| UISCC032 | Yoga & Meditation |

| Program Electives | | | | | | |
|---|---|---|---|---|---|---|
| **Program Elective** | **Vertical I (AI and Data Science)** | | **Vertical II (Information and Cyber Security)** | | **Vertical III (Image Processing)** | |
| | **Code** | **Course Name** | **Code** | **Course Name** | **Code** | **Course Name** |
| **I** | UCSPE511 | AI and Data Science | UCSPE521 | Information Security | UCSPE531 | Digital Image Processing |
| **II** | UCSPE611 | Data Engineering & Big Data | UCSPE621 | Cyber Security | UCSPE631 | Computer Vision |
| **III** | UCSPE612 | Business Intelligence and Data Visualization | UCSPE622 | Ethical Hacking | UCSPE632 | Pattern Recognition |
| **IV** | UCSPE711 | Deep Learning | UCSPE721 | Digital Forensic | UCSPE731 | Advanced Image and Video Analytics |
| **IV Lab** | UCSPE712 | Deep Learning Lab | UCSPE722 | Digital Forensic lab | UCSPE732 | Advanced Image and Video Analytics Lab |
| **V** | UCSPE811 | Advance AI and Data Science Techniques MOOC course | UCSPE821 | Blockchain MOOC course | UCSPE831 | Medical Image Processing MOOC course |

## Minor Tracks for School of Engineering & Technology (UG)

| No. | Minor | School/Department | Credits |
|---|---|---|---|
| 1. | Avionics Engineering | Aerospace Engineering | 12 |
| 2 | Space Technology | | 12 |
| 3 | Drone Technology | | 12 |
| 4 | Data Science | AIML | 12 |
| 5 | Intelligence Systems and Applications | | 12 |
| 6 | Environmental Engineering | Civil Engineering | 12 |
| 7 | Networking | Computer Science and Engineering | 12 |
| 8 | Data Science | | 12 |
| 9 | Cyber Security | | 12 |
| 10 | Software Development | | 12 |
| 11 | Embedded systems and IOT | Electronics and Communication Engineering | 12 |
| 12 | Wireless Communication | | 12 |

**Note:**

- Students are advised to select the minor track from above list.
- Students are not allowed to select the minor track from the same department offering the major courses.
- For the details of the Structure, Syllabus, Teaching and Evaluation Scheme Students should refer the syllabus section of the respective department offering the minor tracks.

| Open Elective I | | | | |
|---|---|---|---|---|
| **No.** | **Course Code** | **Course** | **Faculty/School /Department** | **Credits** |
| 1 | UAEOE011 | Basic Aeronautical Engineering | Department of Aerospace Engg. | 2 |
| 2 | UAIOE011 | Software Models | Department of AIML | 2 |
| 3 | UCEOE011 | Advanced Building Materials | Department of Civil Engg. | 2 |
| 4 | UCSOE011 | Introduction to Latex | Department of Comp. Sc. & Engg. | 2 |
| 5 | UECOE011 | Semiconductor Devices | Department of Elect. & Comm. Engg. | 2 |
| 6 | UCAOE012 | Python Programming | School of Computer Applications | 2 |
| 7 | UPHOE011 | World of Nano Science | School of Physical & Chemical Sciences | 2 |
| 8 | UFSOE012 | Basics of Food Processing | Department of Food Science & Technology | 2 |
| 9 | UDCOE011 | Selling Skills | Department of Commerce | 2 |
| 10 | UBAOE011 | Basics of Marketing | Department of Management | 2 |
| 11 | UAROE011 | Introduction To GIS | Department of Social Sciences | 2 |
| 12 | UAROE012 | Applied Communicative English | Department of Social Sciences | 2 |
| 13 | UBTOE011 | Introduction to Biotechnology | Department of Bio Technology | 2 |
| **Open Elective II** | | | | |
| 1 | UAEOE021 | Aircraft Systems and Instruments | Department of Aerospace Engg. | 2 |
| 2 | UAIOE021 | Introduction to Python | Department of AIML | 2 |
| 3 | UCEOE021 | Green Building | Department of Civil Engg. | 2 |
| 4 | UCSOE021 | Advance Microsoft Office | Department of Comp. Sc. & Engg. | 2 |
| 5 | UECOE021 | Fundamentals of Communication Engineering | Department of Elect. & Comm. Engg. | 2 |
| 6 | UCAOE022 | Data Analytics Tools | School of Computer Applications | 2 |
| 7 | UPHOE021 | Wonders in Nanotechnology | School of Physical & Chemical Sciences | 2 |
| 8 | UFSOE022 | Bakery and Confectionary Skills | Department of Food Science & Technology | 2 |
| 9 | UDCOE021 | Financial Literacy | Department of Commerce | 2 |
| 10 | UBAOE021 | Export- Import Documentation and Procedures | Department of Management | 2 |
| 11 | UAROE021 | Tourism and Travel Management | Department of Social Sciences | 2 |
| 12 | UAROE022 | Language Analytics | Department of Social Sciences | 2 |
| 13 | UBTOE021 | Basics in Bioinformatics | Department of Bio Technology | 2 |
| **Open Elective III** | | | | |
| 1 | UAEOE031 | Unmanned Aerial Vehicle | Department of Aerospace Engg. | 2 |
| 2 | UAIOE031 | Introduction to Data Analytics | Department of AIML | 2 |
| 3 | UCEOE031 | Disaster Management & Mitigation | Department of Civil Engg. | 2 |
| 4 | UCSOE031 | Fundamental of C Programming | Department of Comp. Sc. & Engg. | 2 |
| 5 | UECOE031 | Automotive Electronics | Department of Elect. & Comm. Engg. | 2 |
| 6 | UCAOE032 | Data Visualization Techniques using Tableau | School of Computer Applications | 2 |
| 7 | UCHOE031 | Green Chemistry and Sustainability | School of Physical & Chemical Sciences | 2 |
| 8 | UFSOE032 | Basics of Food Adulteration | Department of Food Science & Technology | 2 |
| 9 | UDCOE031 | Personal Financial Planning | Department of Commerce | 2 |
| 10 | UBAOE031 | Event Management | Department of Management | 2 |
| 11 | UAROE031 | English for Competitive Examinations | Department of Social Sciences | 2 |
| 12 | UAIOE032 | Agentic AI | Department of AIML | 2 |
| 13 | UBTOE031 | Microbial World and Its Applications | Department of Bio Technology | 2 |

**Note: For details of Syllabus, Teaching and Evaluation scheme, please refer to the structure and syllabus of respective departments.**