



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Computer Science and Engineering)
Programme Structure 2020-24

| | | | | |
|--------------------------------|---|--|------------------------------|--|
| 1. OBJECTIVE | <p>B.Tech is a full-time four year graduation programme, which aims at transforming a student into a technically sound professional. The syllabus contains courses on basic sciences, technical arts, humanities & liberal arts and professional courses. The mix of these courses has been evolved with an aim to produce professionals who have knowledge not only of Engineering but who are good managers to contribute in a cross-functional team and have human values. Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world. The emphasis is to develop all round personality that would enable the students to take up the challenges of the corporate world and also become responsible citizens of the society.</p> | | | |
| 2. DURATION (IN MONTHS) | 48 (Full Time) | | | |
| 3. INTAKE | 180 | | | |
| 4. RESERVATION | I. Within the sanctioned intake | a) SC (In Percentage) | b) ST (In Percentage) | c) Differently abled (In Percentage) |
| | | 15 | 7.5 | 3 |
| | II. Over and above the sanctioned intake | a) Kashmiri Migrants (In Seats) | | b) International Students (In Percentage) |
| | | 2 | | 15 |
| 5. ELIGIBILITY | <p>Passed 10+2 examination with Physics and Mathematics as compulsory subjects along with one of Chemistry/ Biotechnology/ Biology/ Technical Vocational subjects. Obtained at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in the above subjects taken together.</p> <p>B. Tech (Lateral entry to second year) :</p> <p>a) Passed Diploma examination from an AICTE approved Institution; with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) in appropriate branch of Engineering / Technology.</p> <p>b) Passed B.Sc. Degree from a recognized University as defined by UGC, with at least 45% marks or equivalent grade (40% marks or equivalent grade for Scheduled Caste /Scheduled Tribes) and passed XII standard with mathematics as a subject.</p> <p>c) Provided that in case of students belonging to B. Sc. Stream, shall clear the subjects of Engineering Graphics / Engineering Drawing and Engineering Mechanics of the first year Engineering program along with the second year subjects.</p> <p>d) Provided further that, the students belonging to B. Sc. Stream shall be considered only after filling the supernumerary seats in this category with students belonging to the Diploma stream.</p> <p>e) Provided further that students, who have passed Diploma in Engineering and Technology from an AICTE approved Institution or B. Sc. Degree from a recognized University as defined by UGC, shall also be eligible for admission to</p> | | | |



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| | | | | | |
|-----|--|--|-------------------------|--------------------------|--------------|
| | | the first year Engineering Degree courses subject to vacancies in the first year class in case the vacancies at lateral entry are exhausted. However the admissions shall be based strictly on the eligibility criteria as mentioned in a, b, c, and d above. | | | |
| 6. | SELECTION PROCEDURE | Merit list by a valid score of Symbiosis Entrance Test (SIT EEE) or Joint Entrance Examination (JEE - Mains) or All States Engineering Entrance Test | | | |
| 7. | MEDIUM OF INSTRUCTION | English | | | |
| 8. | PROGRAMME PATTERN | Semester | | | |
| 9. | COURSE & SPECIALIZATION | As per Annexure A Students can pursue additional specialization in the following areas by completing 20 credits specified in the program structure of that specialization beyond the minimum requirement for the award of degree. AI and Machine learning, Data Science, Computing, Game Design & Development, Security and Privacy, Internet of Things | | | |
| 10. | FEE | | Academic Fee p.a | Institute Deposit | Total |
| | | Indian Students | 260000 | 20000 | 280000 |
| | | International Students (USD equivalent to INR) | 390000 | 20000 | 410000 |
| 11. | ASSESSMENT | All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 40% internal component and 60% component as external [University] examination. The internal and external will be separate heads of passing. | | | |
| 12. | STANDARD OF PASSING | The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4 out of maximum of 10 CGPA for the programme. | | | |
| 13. | AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE | Bachelor of Technology (Computer Science & Engineering) will be awarded at the end of semester VIII examination by taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA. | | | |

| 14. NATURE WISE DISTRIBUTION OF CREDITS | | | | | | | |
|---|--------------|------------------|---------------------|-------------------------|---------------|----------|------------|
| Semester | Generic Core | Generic Elective | Specialization Core | Specialization Elective | Open Elective | Audit | Total |
| Group A | | | | | | | |
| 1 | 0 | 18 | 0 | 0 | 0 | 0 | 18 |
| 2 | 0 | 21 | 0 | 0 | 0 | 0 | 21 |
| 3 | 23 | 1 | 0 | 0 | 0 | 1* | 24 |
| 4 | 17 | 2 | 0 | 0 | 0 | 1* | 19 |
| 5 | 22 | 3 | 0 | 0 | 0 | 0 | 25 |
| 6 | 14 | 11 | 0 | 0 | 0 | 0 | 25 |
| 7 | 11 | 13 | 0 | 0 | 0 | 0 | 24 |
| 8 | 14 | 0 | 0 | 0 | 0 | 0 | 14 |
| Total | 101 | 69 | 0 | 0 | 0 | 0 | 170 |
| Group B | | | | | | | |
| 1 | 0 | 19 | 0 | 0 | 0 | 0 | 19 |
| 2 | 0 | 20 | 0 | 0 | 0 | 0 | 20 |
| 3 | 23 | 1 | 0 | 0 | 0 | 1* | 24 |
| 4 | 17 | 2 | 0 | 0 | 0 | 1* | 19 |
| 5 | 22 | 3 | 0 | 0 | 0 | 0 | 25 |
| 6 | 14 | 11 | 0 | 0 | 0 | 0 | 25 |
| 7 | 11 | 13 | 0 | 0 | 0 | 0 | 24 |
| 8 | 14 | 0 | 0 | 0 | 0 | 0 | 14 |
| Total | 101 | 69 | 0 | 0 | 0 | 0 | 170 |
| Optional Additional Courses | | | | | | | |
| Total | 0 | 0 | 20 | 0 | 0 | 0 | 20 |
| Grand Total | | | | | | | 190 |

* Satisfactory completion of the non letter grade courses 'Integrated Disaster Management' and 'Fitness for Life' is mandatory for the award of degree.

Note: For additional specializations (optional) as applicable, fees of Rs.25000/- will be charged, additionally in the third year

The revised programme structure supersedes the previously approved programme structure dated 07/07/2020 for the programme.

Programme Structure is approved by the Academic Council subject to its norms & conditions. Any provision in the Programme Structure which violates the basic rules & regulations is deemed to be termed "Null & Void".

Head-Academics

THIS IS SYSTEM GENERATED DOCUMENT AND REQUIRES NO SIGNATURE.



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Annexure A

| Catalog Course Code | Course Code | Course Title | Nature | Teaching Scheme | | | Practical | | Examination Scheme Marks | | Total Credits | Total |
|---------------------------------------|-------------|--|--------|-----------------|---|-----|-----------|-----------|--------------------------|------------|---------------|------------|
| | | | | L | T | Lab | CA | ESE | CA | ESE | | |
| Semester : 1 | | | | | | | | | | | | |
| Group - A | | | | | | | | | | | | |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7168 | 0701220101 | Engineering Mathematics -I | BS | 3 | 1 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| T7391 | 0701220102 | Physics | BS | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7392 | 0701220103 | Physics lab | BS | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7288 | 0701220104 | Programming in C | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7289 | 0701220105 | Programming in C Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7383 | 0701220106 | Communication Skills | HS | 2 | 0 | 0 | 0 | 0 | 20 | 30 | 2 | 50 |
| T7384 | 0701220107 | Communication skills lab | HS | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7188 | 0701220108 | Environmental Science | ES | 2 | 0 | 0 | 0 | 0 | 20 | 30 | 2 | 50 |
| T6773 | 0701220109 | Creative Thinking | HS | 1 | 0 | 0 | 0 | 0 | 25 | 0 | 1 | 25 |
| Total Required Credits | | | | | | | 30 | 45 | 165 | 210 | 18 | 450 |
| Group - B | | | | | | | | | | | | |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7168 | 0701220101 | Engineering Mathematics -I | BS | 3 | 1 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| T7381 | 0701220110 | Chemistry | BS | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7382 | 0701220111 | Chemistry Lab | BS | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7540 | 0701220112 | Basic Electrical and Electronics Engineering | ES | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7593 | 0701220113 | Basic Electrical and Electronics Engineering Lab | ES | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7286 | 0701220114 | Programming and Problem Solving | ES | 2 | 0 | 0 | 0 | 0 | 20 | 30 | 2 | 50 |
| TE7287 | 0701220115 | Programming and Problem Solving Lab | ES | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7925 | 0701220116 | Engineering Graphics Lab | ES | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| T6732 | 0701220117 | Critical Thinking | HS | 1 | 0 | 0 | 0 | 0 | 25 | 0 | 1 | 25 |
| TE7396 | 0701220118 | Software Tools | PC | 0 | 0 | 2 | 25 | 0 | 0 | 0 | 1 | 25 |
| Total Required Credits | | | | | | | 75 | 75 | 145 | 180 | 19 | 475 |
| Semester : 2 | | | | | | | | | | | | |
| Group-A | | | | | | | | | | | | |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7169 | 0701220201 | Engineering Mathematics -II | BS | 3 | 1 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| T7381 | 0701220202 | Chemistry | BS | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7382 | 0701220203 | Chemistry Lab | BS | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7540 | 0701220204 | Basic Electrical and Electronics Engineering | ES | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |



Celebrating 50 Years of Excellence

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|---------------------------------------|-------------|--|--------|-----------------|---|------|------------|-----------|--------------------------|------------|---------------|------------|
| | | | | L | T | La b | CA | ESE | CA | ESE | | |
| T7593 | 0701220205 | Basic Electrical and Electronics Engineering Lab | ES | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7286 | 0701220206 | Programming and Problem Solving | ES | 2 | 0 | 0 | 0 | 0 | 20 | 30 | 2 | 50 |
| TE7287 | 0701220207 | Programming and Problem Solving Lab | ES | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7925 | 0701220208 | Engineering Graphics Lab | ES | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| T6732 | 0701220209 | Critical Thinking | HS | 1 | 0 | 0 | 0 | 0 | 25 | 0 | 1 | 25 |
| TE7396 | 0701220210 | Software Tools | PC | 0 | 0 | 2 | 25 | 0 | 0 | 0 | 1 | 25 |
| TE7300 | 0701220211 | Tinker Lab | ES | 0 | 0 | 4 | 50 | 0 | 0 | 0 | 2 | 50 |
| Total Required Credits | | | | | | | 125 | 75 | 145 | 180 | 21 | 525 |
| Group-B | | | | | | | | | | | | |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7169 | 0701220201 | Engineering Mathematics -II | BS | 3 | 1 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| TE7300 | 0701220211 | Tinker Lab | ES | 0 | 0 | 4 | 50 | 0 | 0 | 0 | 2 | 50 |
| T7391 | 0701220212 | Physics | BS | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7392 | 0701220213 | Physics lab | BS | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7288 | 0701220214 | Programming in C | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7289 | 0701220215 | Programming in C Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7383 | 0701220216 | Communication Skills | HS | 2 | 0 | 0 | 0 | 0 | 20 | 30 | 2 | 50 |
| T7384 | 0701220217 | Communication skills lab | HS | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T6773 | 0701220218 | Creative Thinking | HS | 1 | 0 | 0 | 0 | 0 | 25 | 0 | 1 | 25 |
| TE7188 | 0701220219 | Environmental Science | ES | 2 | 0 | 0 | 0 | 0 | 20 | 30 | 2 | 50 |
| Total Required Credits | | | | | | | 80 | 45 | 165 | 210 | 20 | 500 |
| Semester : 3 | | | | | | | | | | | | |
| Generic Core Courses | | | | | | | | | | | | |
| T7995 | 0701220301 | Discrete Mathematics and Probability Theory | BS | 3 | 1 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| T7996 | 0701220302 | Computer Organization | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7906 | 0701220303 | Fundamentals of Data Structures | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7257 | 0701220304 | Fundamentals of Data Structures Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7512 | 0701220305 | Programming Paradigms | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7513 | 0701220306 | Programming Paradigms Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7997 | 0701220307 | Digital Electronics and Logic Design | ES | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7555 | 0701220308 | Digital Electronics and Logic Design Lab | ES | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |



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|---------------------------------------|-------------|-----------------------------------|--------|-----------------|----------|----------|-----------|-----------|--------------------------|------------|------------------|------------|
| | | | | L | T | Lab | CA | ESE | CA | ESE | | |
| T2646 | 0701220309 | Entrepreneurship Venture | HS | 1 | 0 | 0 | 0 | 0 | 25 | 0 | 1 | 25 |
| F0003 | 0701220310 | Flexi-Credit Course | PC | 3 | 0 | 0 | 0 | 0 | 75 | 0 | 3 | 75 |
| TH4095 | 0701220311 | Fitness for Life * | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Non Letter Grade | 0 |
| Total | | | | 19 | 1 | 6 | 30 | 45 | 260 | 240 | 23 | 575 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| T6761 | 0701220312 | Foundation of Ethics | OE | 1 | 0 | 0 | 0 | 0 | 25 | 0 | 1 | 25 |
| T6760 | 0701220313 | Introduction to Indian Philosophy | OE | 1 | 0 | 0 | 0 | 0 | 25 | 0 | 1 | 25 |
| Total Required Credits | | | | | | | 0 | 0 | 25 | 0 | 1 | 25 |
| Semester : 4 | | | | | | | | | | | | |
| Generic Core Courses | | | | | | | | | | | | |
| TE7170 | 0701220401 | Engineering Mathematics-III | BS | 2 | 1 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| F0004 | 0701220402 | Flexi-Credit Course | PC | 4 | 0 | 0 | 0 | 0 | 100 | 0 | 4 | 100 |
| T7488 | 0701220403 | Data Structures | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7489 | 0701220404 | Data Structures Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7510 | 0701220405 | Operating Systems | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7511 | 0701220406 | Operating Systems Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7290 | 0701220407 | Project Based Learning -I | PIS | 0 | 0 | 4 | 50 | 0 | 0 | 0 | 2 | 50 |
| T4005 | 0701220408 | Integrated Disaster Management * | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | Non Letter Grade | 0 |
| Total | | | | 12 | 1 | 8 | 70 | 30 | 190 | 135 | 17 | 425 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| T6012 | 0701220409 | Basic German I | OE | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| T6014 | 0701220410 | Basic French I | OE | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| T6016 | 0701220411 | Basic Spanish I | OE | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| Total Required Credits | | | | | | | 0 | 0 | 50 | 0 | 2 | 50 |
| Semester : 5 | | | | | | | | | | | | |
| Generic Core Courses | | | | | | | | | | | | |
| T8000 | 0701220501 | Service Learning | HS | 0 | 0 | 8 | 100 | 0 | 0 | 0 | 4 | 100 |
| F0004 | 0701220502 | Flexi-Credit Course | PC | 4 | 0 | 0 | 0 | 0 | 100 | 0 | 4 | 100 |
| T7908 | 0701220503 | Computer Networks | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7482 | 0701220504 | Computer Networks Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7907 | 0701220505 | Database Management Systems | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |



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|---|-------------|-------------------------------------|--------|-----------------|----------|-----------|------------|-----------|--------------------------|------------|---------------|------------|
| | | | | L | T | La b | CA | ESE | CA | ESE | | |
| T7487 | 0701220506 | Data Base Management Systems Lab | PC | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| TE7299 | 0701220507 | Theory of Computation | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T6774 | 0701220508 | Principles of Economics | HS | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| Total | | | | 15 | 0 | 14 | 130 | 45 | 240 | 135 | 22 | 550 |
| Specialization Core Courses for Optional Additional Specialization : AI and Machine Learning (Major) | | | | | | | | | | | | |
| TE7273 | 0701220509 | Machine Learning: Classification | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7274 | 0701220510 | Machine Learning: Regression | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 6 | 0 | 0 | 0 | 0 | 60 | 90 | 6 | 150 |
| Specialization Core Courses for Optional Additional Specialization : Computing (Major) | | | | | | | | | | | | |
| T7476 | 0701220511 | Cloud Computing | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7250 | 0701220512 | Cloud Environment in Public Model | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 6 | 0 | 0 | 0 | 0 | 60 | 90 | 6 | 150 |
| Specialization Core Courses for Optional Additional Specialization : Data Science (Major) | | | | | | | | | | | | |
| TE7281 | 0701220513 | Open Source Tools for Data Science | PE | 4 | 0 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| TE7292 | 0701220514 | R Programming | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 7 | 0 | 0 | 0 | 0 | 70 | 105 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Game Design & Development (Major) | | | | | | | | | | | | |
| TE7267 | 0701220515 | Introduction to Game Development | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7285 | 0701220516 | Principles of Game Design | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 6 | 0 | 0 | 0 | 0 | 60 | 90 | 6 | 150 |
| Specialization Core Courses for Optional Additional Specialization : Internet of Things (Major) | | | | | | | | | | | | |
| TE7268 | 0701220517 | Introduction to IOT | PE | 4 | 0 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| TE7293 | 0701220518 | Raspberry Pi and Python | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 7 | 0 | 0 | 0 | 0 | 70 | 105 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Security and Privacy (Major) | | | | | | | | | | | | |
| TE7296 | 0701220519 | Software Security | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7301 | 0701220520 | Usable Security | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 6 | 0 | 0 | 0 | 0 | 60 | 90 | 6 | 150 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| T7393 | 0701220521 | Computer Based Statistical Packages | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7499 | 0701220522 | Java | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |



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|---|-------------|---|--------|-----------------|----------|----------|-----------|----------|--------------------------|------------|---------------|------------|
| | | | | L | T | La b | CA | ESE | CA | ESE | | |
| T7574 | 0701220523 | MATLAB | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7020 | 0701220524 | Nanotechnology | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T2618 | 0701220525 | Project Management | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7223 | 0701220526 | Smart Urban Planning | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7240 | 0701220527 | Water Resource Planning and Management | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7263 | 0701220528 | Introduction to AI and Machine Learning | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7265 | 0701220529 | Introduction to Data Science | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7332 | 0701220530 | Introduction to Image Processing | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7335 | 0701220531 | Introduction to Robotics | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7339 | 0701220532 | Renewable Energy Systems | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7351 | 0701220533 | 3D Printing and Prototyping | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7365 | 0701220534 | Electrical and Electronics Materials | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7388 | 0701220535 | Quality Management Techniques | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total Required Credits | | | | | | | 0 | 0 | 30 | 45 | 3 | 75 |
| Semester : 6 | | | | | | | | | | | | |
| Generic Core Courses | | | | | | | | | | | | |
| TE7008 | 0701220601 | Distributed Systems and Resource Management | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| F0003 | 0701220602 | Flexi-Credit Course | PC | 3 | 0 | 0 | 0 | 0 | 75 | 0 | 3 | 75 |
| T2658 | 0701220603 | Design Thinking | HS | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| T7674 | 0701220604 | Cyber Security | PC | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| TE7291 | 0701220605 | Project Based Learning-II | PIS | 0 | 0 | 4 | 50 | 0 | 0 | 0 | 2 | 50 |
| T7802 | 0701220606 | Capstone Course | PC | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| Total | | | | 12 | 0 | 4 | 50 | 0 | 255 | 45 | 14 | 350 |
| Specialization Core Courses for Optional Additional Specialization : AI and Machine Learning (Major) | | | | | | | | | | | | |
| TE7266 | 0701220607 | Introduction to Deep Learning | PE | 4 | 0 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| TE7271 | 0701220608 | Machine Learning Clustering and Retrieval | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 7 | 0 | 0 | 0 | 0 | 70 | 105 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Computing (Major) | | | | | | | | | | | | |
| TE7246 | 0701220609 | Block Chain | PE | 4 | 0 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| TE7249 | 0701220610 | Cloud Computing Platforms | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 7 | 0 | 0 | 0 | 0 | 70 | 105 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Data Science (Major) | | | | | | | | | | | | |



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|---|-------------|--------------------------------------|--------|-----------------|----------|----------|-----------|-----------|--------------------------|------------|---------------|------------|
| | | | | L | T | La b | CA | ESE | CA | ESE | | |
| T2228 | 0701220611 | Business Analytics | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7284 | 0701220612 | Power BI | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 6 | 0 | 0 | 0 | 0 | 60 | 90 | 6 | 150 |
| Specialization Core Courses for Optional Additional Specialization : Game Design & Development (Major) | | | | | | | | | | | | |
| TE7275 | 0701220613 | Modern Platforms in Game Development | PE | 4 | 0 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| TE7256 | 0701220614 | Entrepreneurship in Game Development | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 7 | 0 | 0 | 0 | 0 | 70 | 105 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Internet of Things (Major) | | | | | | | | | | | | |
| TE7269 | 0701220615 | IOT Security and Privacy | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7295 | 0701220616 | Software Defined Networking | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 6 | 0 | 0 | 0 | 0 | 60 | 90 | 6 | 150 |
| Specialization Core Courses for Optional Additional Specialization : Security and Privacy (Major) | | | | | | | | | | | | |
| TE7252 | 0701220617 | Cryptography | PE | 4 | 0 | 0 | 0 | 0 | 40 | 60 | 4 | 100 |
| TE7258 | 0701220618 | Hardware Security | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total | | | | 7 | 0 | 0 | 0 | 0 | 70 | 105 | 7 | 175 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7255 | 0701220619 | Data Warehousing and Mining | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7101 | 0701220620 | Internet of Things | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7328 | 0701220621 | Image Processing | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total Required Credits | | | | | | | 0 | 0 | 30 | 45 | 3 | 75 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7013 | 0701220622 | Data Warehousing and Mining Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7528 | 0701220623 | Internet of Things Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7329 | 0701220624 | Image Processing Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| Total Required Credits | | | | | | | 10 | 15 | 0 | 0 | 1 | 25 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| T7473 | 0701220625 | Artificial Intelligence | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7259 | 0701220626 | Human Computer Interface | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7243 | 0701220627 | Advanced Algorithms | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total Required Credits | | | | | | | 0 | 0 | 30 | 45 | 3 | 75 |
| Generic Elective Courses Group | | | | | | | | | | | | |



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Annexure A

| Catalog Course Code | Course Code | Course Title | Nature | Teaching Scheme | | | Practical | | Examination Scheme Marks | | Total Credits | Total |
|---|-------------|--|--------|-----------------|----------|-----------|-----------|------------|--------------------------|-----------|---------------|------------|
| | | | | L | T | Lab | CA | ESE | CA | ESE | | |
| TE7014 | 0701220628 | Artificial Intelligence Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7260 | 0701220629 | Human Computer Interface Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7244 | 0701220630 | Advanced Algorithms Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| Total Required Credits | | | | | | | 10 | 15 | 0 | 0 | 1 | 25 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| T7474 | 0701220631 | Basics of Database | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7616 | 0701220632 | Fundamentals of Automotive Technology | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7529 | 0701220633 | Machine Learning | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7509 | 0701220634 | Open Source Technologies | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7584 | 0701220635 | Printed Circuit Board (PCB) Design | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7650 | 0701220636 | Six sigma | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7394 | 0701220637 | Smart Materials | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7195 | 0701220638 | GIS Applications | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7264 | 0701220639 | Introduction to BIGDATA | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7171 | 0701220640 | Introduction to Mathematical Modelling | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7204 | 0701220641 | Intelligent Transportation Systems | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7334 | 0701220642 | Introduction to Mechatronics | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7338 | 0701220643 | Principles of Modern Communication Systems | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7376 | 0701220644 | Introduction to Operations Research | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7377 | 0701220645 | Introduction to Optimisation | OE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total Required Credits | | | | | | | 0 | 0 | 30 | 45 | 3 | 75 |
| Semester : 7 | | | | | | | | | | | | |
| Generic Core Courses | | | | | | | | | | | | |
| T7804 | 0701220701 | Project | PIS | 0 | 0 | 8 | 40 | 60 | 0 | 0 | 4 | 100 |
| T7477 | 0701220702 | Compiler Construction | PC | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7478 | 0701220703 | Compiler Construction Lab | PC | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| F0003 | 0701220704 | Flexi-Credit Course | PC | 3 | 0 | 0 | 0 | 0 | 75 | 0 | 3 | 75 |
| Total | | | | 6 | 0 | 10 | 50 | 75 | 105 | 45 | 11 | 275 |
| Specialization Core Courses for Optional Additional Specialization : AI and Machine Learning (Major) | | | | | | | | | | | | |
| T7805 | 0701220705 | Project | PIS | 0 | 0 | 10 | 50 | 75 | 0 | 0 | 5 | 125 |
| T7802 | 0701220706 | Seminar | PIS | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| Total | | | | 0 | 0 | 14 | 70 | 105 | 0 | 0 | 7 | 175 |



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| Catalog Course Code | Course Code | Course Title | Nature | Teaching Scheme | | | Practical | | Examination Scheme Marks | | Total Credits | Total |
|---|-------------|--|--------|-----------------|----------|-----------|-----------|------------|--------------------------|-----------|---------------|------------|
| | | | | L | T | Lab | CA | ESE | CA | ESE | | |
| Specialization Core Courses for Optional Additional Specialization : Computing (Major) | | | | | | | | | | | | |
| T7805 | 0701220705 | Project | PIS | 0 | 0 | 10 | 50 | 75 | 0 | 0 | 5 | 125 |
| T7802 | 0701220706 | Seminar | PIS | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| Total | | | | 0 | 0 | 14 | 70 | 105 | 0 | 0 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Data Science (Major) | | | | | | | | | | | | |
| T7805 | 0701220705 | Project | PIS | 0 | 0 | 10 | 50 | 75 | 0 | 0 | 5 | 125 |
| T7802 | 0701220706 | Seminar | PIS | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| Total | | | | 0 | 0 | 14 | 70 | 105 | 0 | 0 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Game Design & Development (Major) | | | | | | | | | | | | |
| T7805 | 0701220705 | Project | PIS | 0 | 0 | 10 | 50 | 75 | 0 | 0 | 5 | 125 |
| T7802 | 0701220706 | Seminar | PIS | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| Total | | | | 0 | 0 | 14 | 70 | 105 | 0 | 0 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Internet of Things (Major) | | | | | | | | | | | | |
| T7805 | 0701220705 | Project | PIS | 0 | 0 | 10 | 50 | 75 | 0 | 0 | 5 | 125 |
| T7802 | 0701220706 | Seminar | PIS | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| Total | | | | 0 | 0 | 14 | 70 | 105 | 0 | 0 | 7 | 175 |
| Specialization Core Courses for Optional Additional Specialization : Security and Privacy (Major) | | | | | | | | | | | | |
| T7805 | 0701220705 | Project | PIS | 0 | 0 | 10 | 50 | 75 | 0 | 0 | 5 | 125 |
| T7802 | 0701220706 | Seminar | PIS | 0 | 0 | 4 | 20 | 30 | 0 | 0 | 2 | 50 |
| Total | | | | 0 | 0 | 14 | 70 | 105 | 0 | 0 | 7 | 175 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| T6004 | 0701220707 | Organizational Behavior | OE | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| TE7438 | 0701220708 | History of Science and Technology | OE | 2 | 0 | 0 | 0 | 0 | 50 | 0 | 2 | 50 |
| Total Required Credits | | | | | | | 0 | 0 | 50 | 0 | 2 | 50 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7253 | 0701220709 | Data Science | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7282 | 0701220710 | Optimization Techniques and Algorithms | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7097 | 0701220711 | Neural Network | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total Required Credits | | | | | | | 0 | 0 | 30 | 45 | 3 | 75 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7112 | 0701220712 | Neural Networks Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7283 | 0701220713 | Optimization Techniques and Algorithms Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |



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Annexure A

| Catalog Course Code | Course Code | Course Title | Nature | Teaching Scheme | | | Practical | | Examination Scheme Marks | | Total Credits | Total |
|---------------------------------------|-------------|---------------------------------|--------|-----------------|----------|-----------|------------|------------|--------------------------|-----------|---------------|------------|
| | | | | L | T | Lab | CA | ESE | CA | ESE | | |
| TE7254 | 0701220714 | Data Science Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| Total Required Credits | | | | | | | 10 | 15 | 0 | 0 | 1 | 25 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| T7529 | 0701220715 | Machine Learning | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7138 | 0701220716 | Network Security | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7103 | 0701220717 | Natural Language Processing | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total Required Credits | | | | | | | 0 | 0 | 30 | 45 | 3 | 75 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7105 | 0701220718 | Machine Learning Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| TE7106 | 0701220719 | Natural Language Processing Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| T7506 | 0701220720 | Network Security Lab | PE | 0 | 0 | 2 | 10 | 15 | 0 | 0 | 1 | 25 |
| Total Required Credits | | | | | | | 10 | 15 | 0 | 0 | 1 | 25 |
| Generic Elective Courses Group | | | | | | | | | | | | |
| TE7251 | 0701220721 | Computer Graphics | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| TE7297 | 0701220722 | Software Testing Tools | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| T7476 | 0701220723 | Cloud Computing | PE | 3 | 0 | 0 | 0 | 0 | 30 | 45 | 3 | 75 |
| Total Required Credits | | | | | | | 0 | 0 | 30 | 45 | 3 | 75 |
| Semester : 8 | | | | | | | | | | | | |
| Generic Core Courses | | | | | | | | | | | | |
| T7912 | 0701220801 | Internship | PIS | 0 | 0 | 24 | 120 | 180 | 0 | 0 | 12 | 300 |
| T7802 | 0701220802 | Seminar | PIS | 0 | 0 | 4 | 50 | 0 | 0 | 0 | 2 | 50 |
| Total | | | | 0 | 0 | 28 | 170 | 180 | 0 | 0 | 14 | 350 |



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| Semester | Internal Credits | External Credits | Total Credits | Total Marks |
|----------------|------------------|------------------|---------------|-------------|
| Group A | | | | |
| Semester1 | 1 | 17 | 18 | 450 |
| Semester2 | 4 | 17 | 21 | 525 |
| Semester3 | 5 | 19 | 24 | 600 |
| Semester4 | 8 | 11 | 19 | 475 |
| Semester5 | 10 | 15 | 25 | 625 |
| Semester6 | 11 | 14 | 25 | 625 |
| Semester7 | 5 | 19 | 24 | 600 |
| Semester8 | 2 | 12 | 14 | 350 |
| Total | 46 | 124 | 170 | 4250 |
| Group B | | | | |
| Semester1 | 2 | 17 | 19 | 475 |
| Semester2 | 3 | 17 | 20 | 500 |
| Semester3 | 5 | 19 | 24 | 600 |
| Semester4 | 8 | 11 | 19 | 475 |
| Semester5 | 10 | 15 | 25 | 625 |
| Semester6 | 11 | 14 | 25 | 625 |
| Semester7 | 5 | 19 | 24 | 600 |
| Semester8 | 2 | 12 | 14 | 350 |
| Total | 46 | 124 | 170 | 4250 |