

Symbiosis Institute of Technology, Pune
Bachelor of Technology (Information Technology)
Programme Structure 2018-22

| | | | | |
|--------------------------------|---|--|------------------------------|--|
| 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.</p> <p>Being a professional programme it ensures a healthy balance between theoretical foundation and practical exposure to the present day world.</p> <p>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 | 60 | | | |
| 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 valid score of Symbiosis Entrance Test (SET) or Joint Entrance Examination (JEE - Main) or Maharashtra Common Entrance Test (MHT-CET) | | | |
| 7. | MEDIUM OF INSTRUCTION | English | | | |
| 8. | PROGRAMME PATTERN | Semester | | | |
| 9. | COURSE & SPECIALIZATION | As per Annexure A | | | |
| 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 (Information Technology) 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 |
| 1 | 24 | 2 | 0 | 0 | 0 | 0 | 26 |
| 2 | 25 | 0 | 0 | 0 | 0 | 0 | 25 |
| 3 | 25 | 2 | 0 | 0 | 0 | 0 | 27 |
| 4 | 25 | 2 | 0 | 0 | 0 | 0 | 27 |
| 5 | 23 | 3 | 0 | 0 | 0 | 1* | 26 |
| 6 | 15 | 3 | 0 | 9 | 0 | 0 | 27 |
| 7 | 17 | 0 | 0 | 8 | 0 | 1* | 25 |
| 8 | 0 | 17 | 0 | 0 | 0 | 0 | 17 |
| Total | 154 | 29 | 0 | 17 | 0 | 0 | 200 |

* Satisfactory completion of the non letter grade course 'Integrated Disaster Management' and 'Certificate in COVID-19 Care for the Community' is mandatory for award of degree.

The revised programme structure supersedes the previously approved programme structure dated 27/11/2020 for the programme.

This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council. Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.

Head - Academics

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Annexure A

| Catalog Course Code | Course Code | Course Title | Specialization | Credits | Internal Marks | External Mark | Internal Practical Marks | External Practical Marks | Total Marks |
|---------------------------------------|-------------|--|----------------|-----------|----------------|---------------|--------------------------|--------------------------|-------------|
| Semester : 1 | | | | | | | | | |
| Generic Core Courses | | | | | | | | | |
| T7385 | 070124101 | Engineering Mathematics -I | | 5 | 50 | 75 | 0 | 0 | 125 |
| T7381 | 070124102 | Chemistry | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7382 | 070124103 | Chemistry Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7540 | 070124104 | Basic Electrical and Electronics Engineering | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7593 | 070124105 | Basic Electrical and Electronics Engineering Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7414 | 070124106 | Engineering Mechanics | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7415 | 070124107 | Engineering Mechanics Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7924 | 070124108 | Engineering Graphics | | 2 | 20 | 30 | 0 | 0 | 50 |
| T7925 | 070124109 | Engineering Graphics Lab | | 2 | 0 | 0 | 20 | 30 | 50 |
| T7943 | 070124110 | Technical English & Communication Skill | | 2 | 50 | 0 | 0 | 0 | 50 |
| T7944 | 070124111 | Technical English & Communication Skill Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| Total | | | | 24 | 210 | 240 | 60 | 90 | 600 |
| Generic Elective Courses Group | | | | | | | | | |
| T7946 | 070124112 | Economics for Engineers | | 2 | 50 | 0 | 0 | 0 | 50 |
| Total Required Credits | | | | 2 | 50 | 0 | 0 | 0 | 50 |
| Semester : 2 | | | | | | | | | |
| Generic Core Courses | | | | | | | | | |
| T7387 | 070124201 | Engineering Mathematics-II | | 5 | 50 | 75 | 0 | 0 | 125 |
| T7391 | 070124202 | Physics | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7392 | 070124203 | Physics lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7418 | 070124204 | Environmental & Civil Engineering | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7458 | 070124205 | Environmental & Civil Engineering Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7934 | 070124206 | C Programming | | 2 | 20 | 30 | 0 | 0 | 50 |
| T7935 | 070124207 | C Programming Lab | | 2 | 0 | 0 | 20 | 30 | 50 |
| T7947 | 070124208 | Computational Thinking and Problem Solving | | 2 | 20 | 30 | 0 | 0 | 50 |
| T7658 | 070124209 | Workshop Practice | | 2 | 0 | 0 | 20 | 30 | 50 |
| T7604 | 070124210 | Basic Mechanical Engineering | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7605 | 070124211 | Basic Mechanical Engineering lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| Total | | | | 25 | 180 | 270 | 70 | 105 | 625 |
| Semester : 3 | | | | | | | | | |

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|---------------------------------------|-------------|---|----------------|-----------|----------------|---------------|--------------------------|--------------------------|-------------|
| Generic Core Courses | | | | | | | | | |
| T7995 | 070124301 | Discrete Mathematics and Probability Theory | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7512 | 070124302 | Programming Paradigms | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7513 | 070124303 | Programming Paradigms Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7495 | 070124304 | Fundamentals of Data Structures | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7496 | 070124305 | Fundamentals of Data Structures Lab | | 2 | 0 | 0 | 20 | 30 | 50 |
| T7996 | 070124306 | Computer Organization | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7997 | 070124307 | Digital Electronics and Logic Design | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7555 | 070124308 | Digital Electronics and Logic Design Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T8000 | 070124309 | Service Learning | | 4 | 100 | 0 | 0 | 0 | 100 |
| Total | | | | 25 | 270 | 255 | 40 | 60 | 625 |
| Generic Elective Courses Group | | | | | | | | | |
| T2353 | 070124310 | Entrepreneurship | | 2 | 50 | 0 | 0 | 0 | 50 |
| Total Required Credits | | | | 1 | 0 | 0 | 0 | 0 | 0 |
| Semester : 4 | | | | | | | | | |
| Generic Core Courses | | | | | | | | | |
| T7388 | 070124401 | Engineering Mathematics-III | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7998 | 070124402 | Operating Systems | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7999 | 070124403 | Java Programming | | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7001 | 070124404 | Java Programming Lab | | 2 | 0 | 0 | 20 | 30 | 50 |
| TE7002 | 070124405 | Data Structures | | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7003 | 070124406 | Data Structures Lab | | 2 | 0 | 0 | 20 | 30 | 50 |
| T7577 | 070124407 | Microprocessor Techniques | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7511 | 070124408 | Operating Systems Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7578 | 070124409 | Microprocessor Techniques Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| Total | | | | 25 | 190 | 285 | 60 | 90 | 625 |
| Generic Elective Courses Group | | | | | | | | | |
| T6186 | 070124411 | Basic French I | | 2 | 50 | 0 | 0 | 0 | 50 |
| T6188 | 070124412 | Basic Spanish I | | 2 | 50 | 0 | 0 | 0 | 50 |
| T6184 | 070124413 | Basic German I | | 2 | 50 | 0 | 0 | 0 | 50 |
| Total Required Credits | | | | 4 | 100 | 0 | 0 | 0 | 100 |
| Semester : 5 | | | | | | | | | |

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|---------------------------------------|-------------|---|----------------|-----------|----------------|---------------|--------------------------|--------------------------|------------------|
| Generic Core Courses | | | | | | | | | |
| T7518 | 070124501 | Theory of Computation | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7486 | 070124502 | Data Base Management Systems | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7487 | 070124503 | Data Base Management Systems Lab | | 2 | 0 | 0 | 20 | 30 | 50 |
| T7908 | 070124504 | Computer Networks | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7482 | 070124505 | Computer Networks Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7490 | 070124506 | Design and Analysis of Algorithms | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7491 | 070124507 | Design and Analysis of Algorithms Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7516 | 070124508 | Software Engineering | | 4 | 40 | 60 | 0 | 0 | 100 |
| T4005 | 070124515 | Integrated Disaster Management * | | 0 | 0 | 0 | 0 | 0 | Non Letter Grade |
| Total | | | | 23 | 190 | 285 | 40 | 60 | 575 |
| Generic Elective Courses Group | | | | | | | | | |
| T7457 | 070124509 | Integrated Water Resources Development and Management | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7499 | 070124510 | Java | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7574 | 070124511 | MATLAB | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7616 | 070124512 | Fundamentals of Automotive Technology | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7020 | 070124513 | Nanotechnology | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7393 | 070124514 | Computer Based Statistical Packages | | 3 | 30 | 45 | 0 | 0 | 75 |
| Total Required Credits | | | | 3 | 30 | 45 | 0 | 0 | 75 |
| Semester : 6 | | | | | | | | | |
| Generic Core Courses | | | | | | | | | |
| T7517 | 070124601 | System Programming | | 3 | 30 | 45 | 0 | 0 | 75 |
| TE7024 | 070124602 | Web Technologies | | 3 | 30 | 45 | 0 | 0 | 75 |
| TE7025 | 070124603 | Web Technologies Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| TE7008 | 070124604 | Distributed Systems and Resource Management | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7903 | 070124605 | Distributed Systems and Resource management Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T6274 | 070124606 | Foundations of Ethics | | 2 | 50 | 0 | 0 | 0 | 50 |
| TE7038 | 070124607 | Project Planning and Charter | | 2 | 0 | 0 | 20 | 30 | 50 |
| Total | | | | 15 | 140 | 135 | 40 | 60 | 375 |

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|---|-------------|---|------------------------|----------|----------------|---------------|--------------------------|--------------------------|-------------|
| Generic Elective Courses Group | | | | | | | | | |
| T7456 | 070124617 | Town & Country Planning | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7509 | 070124618 | Open Source Technologies | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7474 | 070124619 | Basics of Database | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7584 | 070124620 | Printed Circuit Board (PCB) Design | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7650 | 070124621 | Six sigma | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7394 | 070124622 | Smart Materials | | 3 | 30 | 45 | 0 | 0 | 75 |
| Total Required Credits | | | | 3 | 30 | 45 | 0 | 0 | 75 |
| Specialization Elective : Information Technology | | | | | | | | | |
| TE7010 | 070124608 | Data Warehousing and Mining | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7011 | 070124609 | Artificial Intelligence | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7012 | 070124610 | Network Analysis and Design | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| Total Required Credits | | | | 4 | 40 | 60 | 0 | 0 | 100 |
| Specialization Elective : Information Technology | | | | | | | | | |
| TE7013 | 070124611 | Data Warehousing and Mining Lab | Information Technology | 1 | 0 | 0 | 10 | 15 | 25 |
| TE7014 | 070124612 | Artificial Intelligence Lab | Information Technology | 1 | 0 | 0 | 10 | 15 | 25 |
| TE7015 | 070124613 | Network Analysis and Design Lab | Information Technology | 1 | 0 | 0 | 10 | 15 | 25 |
| Total Required Credits | | | | 1 | 0 | 0 | 10 | 15 | 25 |
| Specialization Elective : Information Technology | | | | | | | | | |
| TE7016 | 070124614 | Big Data Stores | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7079 | 070124615 | Neural Networks | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7080 | 070124616 | Network Security | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| Total Required Credits | | | | 4 | 40 | 60 | 0 | 0 | 100 |
| Semester : 7 | | | | | | | | | |
| Generic Core Courses | | | | | | | | | |
| T7507 | 070124701 | Object Oriented Analysis and Design | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7508 | 070124702 | Object Oriented Analysis and Design Lab | | 1 | 0 | 0 | 10 | 15 | 25 |

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|---|-------------|--|------------------------|-----------|----------------|---------------|--------------------------|--------------------------|------------------|
| TE7007 | 070124703 | Skill Development Lab | | 4 | 0 | 0 | 40 | 60 | 100 |
| TE7026 | 070124704 | Mobile Applications | | 3 | 75 | 0 | 0 | 0 | 75 |
| T7804 | 070124705 | Project | | 4 | 0 | 0 | 40 | 60 | 100 |
| T7674 | 070124706 | Cyber Security | | 2 | 50 | 0 | 0 | 0 | 50 |
| TH4272 | 070124713 | Certificate in COVID-19 Care for the Community * | | 0 | 0 | 0 | 0 | 0 | Non Letter Grade |
| Total | | | | 17 | 155 | 45 | 90 | 135 | 425 |
| Specialization Elective : Information Technology | | | | | | | | | |
| TE7019 | 070124707 | Big Data Analytics | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7021 | 070124708 | Optimization Techniques and Algorithms | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7020 | 070124709 | Wireless Sensor Networks | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| Total Required Credits | | | | 4 | 40 | 60 | 0 | 0 | 100 |
| Specialization Elective : Information Technology | | | | | | | | | |
| TE7022 | 070124710 | Predictive Analytics | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| TE7023 | 070124711 | Machine learning | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| T7527 | 070124712 | Internet of Things | Information Technology | 4 | 40 | 60 | 0 | 0 | 100 |
| Total Required Credits | | | | 4 | 40 | 60 | 0 | 0 | 100 |
| Semester : 8 | | | | | | | | | |
| Choose any 1 courses group | | | | | | | | | |
| Generic Elective Courses | | | | | | | | | |
| T7912 | 070124801 | Internship | | 13 | 0 | 0 | 130 | 195 | 325 |
| T7671 | 070124802 | Seminar | | 4 | 0 | 0 | 40 | 60 | 100 |
| Total Required Credits | | | | 17 | 0 | 0 | 170 | 255 | 425 |
| Generic Elective Courses | | | | | | | | | |
| T7905 | 070124803 | Internship(6-8 Weeks) | | 5 | 0 | 0 | 50 | 75 | 125 |
| T7048 | 070124804 | Project Management | | 4 | 40 | 60 | 0 | 0 | 100 |
| T7139 | 070124805 | Software Testing and Quality Assurance | | 3 | 30 | 45 | 0 | 0 | 75 |
| T7080 | 070124806 | Software Testing and Quality Assurance Lab | | 1 | 0 | 0 | 10 | 15 | 25 |
| T7509 | 070124807 | Open Source Technologies | | 3 | 30 | 45 | 0 | 0 | 75 |
| TE7006 | 070124808 | Open Source Technologies Lab | | 1 | 0 | 0 | 10 | 15 | 25 |

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|------------------------|-------------|--------------|----------------|---------|----------------|---------------|--------------------------|--------------------------|-------------|
| Total Required Credits | | | | 17 | 100 | 150 | 70 | 105 | 425 |

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| Semester | Internal Credits | External Credits | Total Credits | Total Marks |
|--------------|------------------|------------------|---------------|-------------|
| Semester 1 | 4 | 22 | 26 | 650 |
| Semester 2 | 0 | 25 | 25 | 625 |
| Semester 3 | 6 | 21 | 27 | 675 |
| Semester 4 | 2 | 25 | 27 | 675 |
| Semester 5 | 0 | 26 | 26 | 650 |
| Semester 6 | 2 | 25 | 27 | 675 |
| Semester 7 | 5 | 20 | 25 | 625 |
| Semester 8 | 0 | 17 | 17 | 425 |
| Total | 19 | 181 | 200 | 5000 |