

Indian Institute of Technology Tirupati
Dual Degree (B.Tech. & M.Tech) Curriculum:
Computer Science and Engineering
from Academic Year 2018-2019 onwards

Semester-I

| S.No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------------|--|-------------|--------------------|---------------------------------|---------|
| 1. | ES103M/ EA101M | Introduction to Programming/ Engineering Drawing | BET/ BES | 2-0-3-4 1-0-3-3 | ES1101/ EA1101 | 14 4 |
| 2. | CY101L/ CY102L | Physical and Theoretical Chemistry/ Organic and Inorganic Chemistry | SCY | 2-1-0-3 | CY1101/ CY1202 | 4 4 |
| 3. | ES101M | Concepts in Engineering and Design | BET | 1-0-2-2 | ID1101 | 4 |
| 4. | MA101L | Calculus | SMA | 3-1-0-4 | MA1101 | 4 |
| 5. | PH101L | Introduction to Classical Mechanics | SPH | 2-1-0-3 | PH1101 | 4 |
| 6. | PH103P/ CY103P | Physics Laboratory/ Chemistry Laboratory | SPH/SCY | 0-0-3-2 | PH1103/ CY1204 | 4 |
| 7. | EA102P | Workshop-I | BES | 0-0-3-2 | EA1103 | 4 |
| 8. | HS10XN | Language Course (Pass/Fail) | HPF | 2-0-0-2 | HS110X | |
| Total Credits | | | | 22/21 | | |

Approved Language Courses

| Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|-------------|----------------------------------|----------|---------|---------------------------------|--------|
| HS101N | Proficiency in English | HPF | 2-0-0-2 | HS1101 | 4 |
| HS102N | Basic Course in German | | | HS1103 | 6 |
| HS103N | Basic Course in Japanese | | | HS1105 | 6 |
| HS104N | Basic Course in Sanskrit | | | HS1107 | 6 |
| HS105N | Basic Course in Spanish Language | | | HS1109 | 9 |

Semester-II

| S.No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------------|--|-------------|--------------------|---------------------------------|---------|
| 1. | ES103M/ EA101M | Introduction to Programming/ Engineering Drawing | BET/ BES | 2-0-3-4 1-0-3-3 | ES1101/ EA1101 | 14 4 |
| 2. | CY101L/ CY102L | Physical and Theoretical Chemistry/ Organic and Inorganic Chemistry | SCY | 2-1-0-3 | CY1101/ CY1202 | 4 4 |
| 3. | ES102L | Basic Electrical Engineering | BET | 3-1-0-4 | ES1201 | 8 |
| 4. | MA102L | Differential Equations and Matrices | SMA | 3-1-0-4 | MA1202 | 4 |
| 5. | PH102L | Introduction to Electrodynamics and Quantum Mechanics | SPH | 2-1-0-3 | PH1202 | 4 |
| 6. | PH103P/ CY103P | Physics Laboratory/ Chemistry Laboratory | SPH/SCY | 0-0-3-2 | PH1103/ CY1204 | 4 4 |
| 7. | EA103P | Workshop-II | BES | 0-0-3-2 | EA1202 | 4 |
| Total Credits | | | | 21/22 | | |

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Semester-III

| S. No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------------|---|-------------|--------------------|---------------------------------|--------|
| 1. | EE206L | Digital Systems | PMT | 3-1-0-4 | CS/EE2101 | 8 |
| 2. | CS201L | Discrete Mathematics for Computer Science | PMT | 3-0-0-3 | CS2103 | 8 |
| 3. | CS202M | Programming Methodology | PMT | 2-0-3-4 | CS2105 | 8 |
| 4. | EE206P | Digital Systems Laboratory | PML | 0-0-3-2 | CS/EE2191 | 8 |
| 5. | ES201L | Engineering Mechanics | BET | 3-1-0-4 | ES2101 | 4 |
| 6. | ES202L/ ES203L | Ecology and Environment/ Life Sciences | BET/ SLS | 2-0-0-2 2-0-0-2 | ES2103/ BS2101 | 8 9 |
| 7. | HSE1 | Humanities Elective-1 | HSS | 3-0-0-3 | | |
| 8. | MA201L | Linear Algebra | SMA | 3-0-0-3 | MA2021 | 12 |
| Total Credits | | | | 25 | | |

Semester-IV

| S.No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------------|---|-------------|--------------------|---------------------------------|--------|
| 1. | ES202L/ ES203L | Ecology and Environment/ Life Sciences | BET/ SLS | 2-0-0-2 2-0-0-2 | ES2103/ BS2101 | 8 9 |
| 2. | CS205L | Theory of Computation | PMT | 3-0-0-3 | CS2202 | 8 |
| 3. | CS203L | Computer Organization | PMT | 3-0-0-3 | CS2204 | 8 |
| 4. | CS204L | Data Structures and Algorithms | PMT | 3-1-0-4 | CS2206 | 8 |
| 5. | CS203P | Computer Organization Laboratory | PML | 0-0-3-2 | CS2292 | 8 |
| 6. | CS204P | Data Structures and Algorithms Laboratory | PML | 0-0-3-2 | CS2294 | 8 |
| 7. | HSE2 | Humanities Elective-2 | HSS | 3-0-0-3 | | |
| 8. | MA204L | Probability and Statistics | SMA | 3-0-0-3 | MA2023 | 9 |
| Total Credits | | | | 22 | | |

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Semester-V

| S. No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|-----------------------------------|----------|-----------|---------------------------------|--------|
| 1. | CS304L | Design and Analysis of Algorithms | PMT | 3-0-0-3 | CS3101 | 8 |
| 2. | CS301L | Compiler Design | PMT | 3-0-0-3 | CS3103 | 8 |
| 3. | CS302L | Software Engineering | PMT | 3-0-0-3 | CS3105 | 8 |
| 4. | CS305L | Operating Systems | PMT | 3-0-0-3 | CS3107 | 8 |
| 5. | CS303L | Machine Learning | PMT | 3-0-0-3 | CS3109 | 12 |
| 6. | CS301P | Compiler Design Laboratory | PML | 0-0-3-2 | CS3191 | 8 |
| 7. | CS305P | Operating Systems Laboratory | PML | 0-0-3-2 | CS3193 | 8 |
| 8. | FRE1 | Free Elective-1 | FRE | 3-0-0-3 | | |
| Total Credits | | | | 22 | | |

Semester-VI

| S.No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|---------------------------------|----------|-----------|---------------------------------|--------|
| 1. | CS306L | Computer Networks | PMT | 3-0-0-3 | CS3202 | 8 |
| 2. | CS307L | Artificial Intelligence | PMT | 3-0-0-3 | CS3204 | 12 |
| 3. | CS308M | Database Systems | PMT | 3-0-2-4 | CS3206 | 8 |
| 4. | CS306P | Computer Networks Laboratory | PML | 0-0-3-2 | CS3292 | 8 |
| 5. | CS302P | Software Engineering Laboratory | PML | 0-0-3-2 | CS3294 | 8 |
| 6. | CS303P | Intelligent Systems Laboratory | PML | 0-0-3-2 | CS3296 | 12 |
| 7. | HSE3 | Humanities Elective-3 | HSS | 3-0-0-3 | | |
| 8. | FRE2 | Free Elective-2 | FRE | 3-0-0-3 | | |
| SUMMER | | | | | | |
| 9. | CS391G | Industrial/Research Internship | PIT | ---2 | IT3202 | 1 |
| Total Credits | | | | 24 | | |

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Semester-VII

| S. No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|---------------------------------------|----------|-----------|---------------------------------|--------|
| 1. | CS401L | Computer System Design | PMT | 3-0-0-3 | CS4101 | 8 |
| 2. | CS401P | Computer System Design Laboratory | PML | 0-0-3-2 | CS4191 | 8 |
| 3. | CS520L | Parallel Computing | PMT | 3-0-0-3 | CS5105 | 12 |
| 4. | CS515L | Computational Methods in Optimization | PMT | 3-0-0-3 | CS5107 | 12 |
| 5. | CS516L | Data Science and Engineering | PMT | 3-0-0-3 | CS5109 | 12 |
| 6. | DPE1 | Department Elective 1 | PMT | 3-0-0-3 | | |
| 7. | CS516P | Data Science Programming Laboratory | PML | 0-0-3-2 | CS5195 | 12 |
| 8. | CS493N | Industrial Lecture | PIL | 1-0-0-1 | IL4101 | 1 |
| Total Credits | | | | 20 | | |

Semester-VIII

| S. No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|-----------------------|----------|-----------|---------------------------------|--------|
| 1. | CS523L | Distributed Systems | PMT | 3-0-0-3 | CS5208 | 12 |
| 2. | CS518L | Deep Learning | PMT | 3-0-0-3 | CS5223 | 12 |
| 3. | DPE2 | Department Elective 2 | PMT | 3-0-0-3 | | |
| 4. | DPE3 | Department Elective 3 | PMT | 3-0-0-3 | | |
| 5. | FRE3 | Free Elective 3 | FRE | 3-0-0-3 | | |
| 6. | HS401L | Professional Ethics | HPE | 2-0-0-2 | HS4202 | 7 |
| Total Credits | | | | 17 | | |

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Semester-IX

| S. No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|-----------------------|----------|-----------|---------------------------------|--------|
| 1. | FRE4 | Free Elective 4 | FRE | 3-0-0-3 | | |
| 2. | DPE4 | Department Elective 4 | PMT | 3-0-0-3 | | |
| 3. | CS693G | Seminar | PMT | - - - 1 | CS6110 | 4 |
| 4. | CS691G | Project Phase I | PMP | - - - 10 | CS6150 | 4 |
| Total Credits | | | | 17 | | |

Semester-X

| S. No. | Course Code | Course Name | Category | L-T-P-C | Course Code (prior to Jul 2022) | Senate |
|----------------------|-------------|------------------|----------|-----------|---------------------------------|--------|
| 1. | CS692G | Project Phase II | PMP | - - - 15 | CS6250 | 4 |
| Total Credits | | | | 15 | | |

TOTAL CREDITS: 205