

Maulana Abul Kalam Azad University of Technology, West Bengal
(Formerly West Bengal University of Technology)
Syllabus for B. Tech in Computer Science and Engineering
(Internet of Things, Cyber Security including Block Chain Technology)
(Applicable from the academic session 2020-2021)

Curriculum Structure
First Year First Semester

Mandatory Induction Program- 3 week's duration

| Sl No. | Category | Subject Code | Subject Name | Total Number of Contact hours | | | Credits |
|------------------|-----------------------------|---------------------------------|--|-------------------------------|---|---|---------|
| | | | | L | T | P | |
| Theory | | | | | | | |
| 1 | Basic Science Course | BS-PH101/ | Physics-I (Gr-A)/ | 3 | 1 | 0 | 4 |
| | | BS-CH101 | Chemistry-I(Gr-B) | | | | |
| 2 | Basic Science Course | BS-M101/ | Mathematics –IA*/ | 3 | 1 | 0 | 4 |
| | | BS-M102 | Mathematics –IB * | | | | |
| 3 | Engineering Science Courses | ES-EE101 | Basic Electrical Engineering | 3 | 1 | 0 | 4 |
| | | Total Theory | | 9 | 3 | 0 | 12 |
| Practical | | | | | | | |
| 1 | Basic Science Course | BS-PH191/ BS-CH191 | Physics-I Laboratory(Gr-A) / Chemistry-I Laboratory (Gr-B) | 0 | 0 | 3 | 1.5 |
| 2 | Engineering Science Courses | ES-EE191 | Basic Electrical Engineering Laboratory | 0 | 0 | 2 | 1 |
| 3 | Engineering Science Courses | ES-ME191/ ES-ME192 | Engineering Graphics & Design(Gr-B)/ Workshop/Manufacturing Practices(Gr-A) | 1 | 0 | 4 | 3 |
| | | Total Practical | | 1 | 3 | 9 | 5.5 |
| | | Total credit for First Semester | | 10 | 3 | 9 | 17.5 |

* **Mathematics –IA (BS-M101) - CSE, IT, AI&ML and DS**
Mathematics –IB (BS-M102) - All stream except CSE, IT, AI&ML and DS

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| Second Semester | | | | | | | |
|------------------|---|--------------------------|--|-------------------------------|---|----|---------|
| Sl No. | Category | Subject Code | Subject Name | Total Number of Contact hours | | | Credits |
| | | | | L | T | P | |
| Theory | | | | | | | |
| 1 | Basic Science Course | BS-PH201/ BS-CH201 | Physics-I (Gr-B)/ Chemistry-I (Gr-A) | 3 | 1 | 0 | 4 |
| 2 | Basic Science Course | BS-M201/ BS-M202 | Mathematics –IIA#/ Mathematics –IIB # | 3 | 1 | 0 | 4 |
| 3 | Engineering Science Courses | ES-CS201 | Programming for Problem Solving | 3 | 0 | 0 | 3 |
| 4 | Humanities and Social Sciences including Management Courses | HM-HU201 | English | 2 | 0 | 0 | 2 |
| | | Total Theory | | 11 | 2 | 0 | 13 |
| Practical | | | | | | | |
| 1 | Basic Science courses | BS-PH291/ BS-CH291 | Physics-I Laboratory (Gr-B)/ Chemistry-I Laboratory (Gr-A) | 0 | 0 | 3 | 1.5 |
| 2 | Engineering Science Courses | ES-CS291 | Programming for Problem Solving | 0 | 0 | 4 | 2 |
| 3 | Engineering Science Courses | ES-ME291/ ES-ME292 | Engineering Graphics & Design(Gr-A)/ Workshop/Manufacturing Practices(Gr-B) | 1 | 0 | 4 | 3 |
| 4 | Humanities and Social Sciences including Management courses | HM-HU291 | Language Laboratory | 0 | 0 | 2 | 1 |
| | | Total Practical | | 1 | 0 | 13 | 7.5 |
| | | Total of Second Semester | | 12 | 2 | 13 | 20.5 |

Mathematics –II (BS-M201) - CSE , IT, AI&ML and DS

Mathematics –II (BS-M202) - All stream except CSE, IT, AI&ML and DS

| | Group-A | Group-B |
|--------------------------|---|---|
| 1st Year 1st Semester | Physics-I (BS-PH101); Workshop/Manufacturing Practices (ES-ME192) | Chemistry-I (BS-CH101); Engineering Graphics & Design (ES-ME191) |
| 1st Year 2nd Semester | Chemistry-I (BS-CH201); Engineering Graphics & Design (ES-ME291) | Physics-I (BS-PH201); Workshop/Manufacturing Practices (ES-ME292) |

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| Semester III (Second year) | | | | | | | | |
|-----------------------------------|------------------|---|-----------|---|----------------|---|---|-----------|
| Sl No | | Type of Course | Code | Course Title | Hours per week | | | Credits |
| | | | | | L | T | P | |
| 1 | THEORY | Engineering Science Course | ESC301 | Analog and Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | | Professional Core Course | PCCCS301 | Data Structure and Algorithms | 3 | 0 | 0 | 3 |
| 3 | | Professional Core Course | PCCCS302 | Computer Organization | 3 | 0 | 0 | 3 |
| 4 | | Basic Science Course | BSCICB301 | Linear Algebra | 2 | 0 | 0 | 2 |
| 5 | | Humanities Social Science including Management Course | HSMC301 | Economics for Engineers (Humanities II) | 3 | 0 | 0 | 3 |
| 6 | PRACTICAL | Professional Core Course | PCCCS391 | Data Structure and Algorithms | 0 | 0 | 4 | 2 |
| 7 | | Engineering Science Course | ESC391 | Analog and Digital Electronics | 0 | 0 | 4 | 2 |
| 8 | | Professional Core Course | PCCCS392 | Computer Organization | 0 | 0 | 4 | 2 |
| 9 | | Professional Core Course | PCCCS393 | IT Workshop (Python/Matlab/R) | 0 | 0 | 4 | 2 |
| TOTAL CREDITS | | | | | | | | 22 |

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| <i>Semester IV (Second year)</i> | | | | | | | | |
|----------------------------------|------------------|--------------------------|---------------|--------------------------------------|----------------|---|---|-----------|
| Sl No | | Type of Course | Code | Course Title | Hours per week | | | Credits |
| | | | | | L | T | P | |
| 1 | THEORY | Professional Core Course | PCCCS40 1 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | | Professional Core Course | PCCICB40 1 | Data Communication and Networks | 3 | 0 | 0 | 3 |
| 3 | | Professional Core Course | PCCCS40 3 | Formal Language and Automata Theory | 3 | 0 | 0 | 3 |
| 4 | | Professional Core Course | PCCCS40 4 | Design and Analysis of Algorithm | 3 | 0 | 0 | 3 |
| 5 | | Basic Science Course | BSC401 | Biology | 2 | 1 | 0 | 3 |
| 6 | | Mandatory Course | MC401 | Environmental Science | 2 | 0 | 0 | 2 |
| 7 | PRACTICAL | Professional Core Course | PCCICB49 1 | Data Communication and Networks Lab | 0 | 0 | 4 | 2 |
| 8 | | Professional Core Course | PCCCS49 4 | Design and Analysis of Algorithm Lab | 0 | 0 | 4 | 2 |
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| <i>Semester V (Third year)</i> | | | | | | | | |
|--------------------------------|-----------|---|-------------------|---|----------------|---|---|-----------|
| S/No | | Type of Course | Code | Course Title | Hours per week | | | Credits |
| | | | | | L | T | P | |
| 1 | THEORY | Professional Core Course | PCCICB501 | IoT Application and Design | 3 | 0 | 0 | 3 |
| 2 | | Professional Core Course | PCCCS502 | Operating System | 3 | 0 | 0 | 3 |
| 3 | | Professional Core Course | PCCCS503 | Object Oriented Programming | 3 | 0 | 0 | 3 |
| 4 | | Professional Core Course | PCCICB502 | Wireless Sensor Networks | 3 | 0 | 0 | 3 |
| 5 | | Humanities and Social Sciences including Management | HSMC501 | Introduction to Industrial Management | 2 | 0 | 0 | 2 |
| 6 | | Professional Elective | PECICB501 (A/B/C) | Embedded System/ Internet Technology/ Smart Sensors and IoT | 3 | 0 | 0 | 3 |
| 7 | PRACTICAL | Professional Core Course | PCCICB591 | IoT Application and Design Lab | 0 | 0 | 4 | 2 |
| 8 | | Professional Core Course | PCCCS592 | Operating System Lab | 0 | 0 | 4 | 2 |
| 9 | | Professional Core Course | PCCICB593 | Object Oriented Programming Lab | 0 | 0 | 4 | 2 |
| TOTAL CREDITS | | | | | | | | 23 |

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| <i>Semester VI (Third year)</i> | | | | | | | | |
|---------------------------------|-----------|-----------------------------------|-----------|---|----------------|---|---|-----------|
| S/No | | Type of Course | Code | Course Title | Hours per week | | | Credits |
| | | | | | L | T | P | |
| 1 | THEORY | Professional Core Course | PCCICB601 | Cryptography and Network Security | 2 | 0 | 0 | 2 |
| 2 | | Professional Core Course | PCCCS601 | Database Management System | 3 | 0 | 0 | 3 |
| 3 | | Professional Core Course | PCCCS602 | Ethical Hacking | 3 | 0 | 0 | 3 |
| 4 | | Professional Elective (A/B/C/D/E) | PECICB601 | Cloud Computing/ Cyber law and Cyber crime/ Steganography and Watermarking/ Software Engineering/ Digital Forensics | 3 | 0 | 0 | 3 |
| 5 | | Open Elective (A/B/C) | OECICB601 | Human Resource Development and Organizational Behaviour/ Indian Music System/ Economic Policies in India | 3 | 0 | 0 | 3 |
| 6 | PRACTICAL | Professional Core Course | PCCCS691 | Database Management System lab | 0 | 0 | 4 | 2 |
| 7 | | Professional Elective Course | PECICB691 | Lab based on PECICB601 | 0 | 0 | 4 | 2 |
| 8 | | Project-1 | PROJ-681 | Project-1 | 0 | 0 | 6 | 3 |
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| <i>Semester VII (Fourth year)</i> | | | | | | | | |
|-----------------------------------|---------------|---|----------------------|---|----------------|---|----|-----------|
| S/No | | Type of Course | Code | Course Title | Hours per week | | | Credits |
| | | | | | L | T | P | |
| 1 | THEORY | Professional Elective Course | PECICB701 (A/B/C) | Blockchain and Cryptocurrency/ Social Network Analysis/Ecommerce and ERP | 3 | 0 | 0 | 3 |
| 2 | | Professional Elective Course | PECICB702 (A/B/C) | Machine Learning/Information Theory and Coding/Cyber security in Block chain Technology | 3 | 0 | 0 | 3 |
| 3 | | Open Elective Course | OECICB701 (A/B/C) | Soft skill and Interpersonal Communication/ Bio Informatics/ Business Analytics | 3 | 0 | 0 | 3 |
| 4 | | Humanities and Social Sciences including Management | HSMC701 | Project Management and Entrepreneurship | 2 | 0 | 0 | 2 |
| 5 | | Project | PROJICB781 | Project II | 0 | 0 | 12 | 6 |
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| <i>Semester VIII (Fourth year)</i> | | | | | | | | |
|------------------------------------|--------|------------------------------|----------------------|---|----------------|---|----|-----------|
| S/No | | Type of Course | Code | Course Title | Hours per week | | | Credits |
| | | | | | L | T | P | |
| 1 | THEORY | Professional Elective Course | PECICB801 (A/B/C) | Security Assessment and Risk Analysis- (bitcs601)/ Mobile Applications and Services/Deep Learning | 3 | 0 | 0 | 3 |
| 2 | | Open Elective Course | OECICB801 (A/B/C) | Operations Research/ Remote Sensing and GIS/Digital Signal Processing | 3 | 0 | 0 | 3 |
| 3 | | Open Elective Course | OECICB802 (A/B/C) | Numerical Methods/ Multimedia Technology/Introduction to Arts and Aesthetics | 3 | 0 | 0 | 3 |
| 4 | | Sessional-1 | PROJICB88 1 | Project III | 0 | 0 | 12 | 6 |
| 5 | | Sessional - 2 | | Grand Viva | | | | 3 |
| TOTAL CREDITS | | | | | | | | 18 |