**Model Curriculum Scheme for Bachelor of Technology (B.Tech.) in Information Technology (IT) Program**

**(Credit-Based Scheme of Studies/Examination from 2018-19 Onwards in-Phased Manner)**



**Kurukshetra University, Kurukshetra**

**( ‘A+’ Grade, NAAC Accredited)**

**A. Definition of Credit:**

|  |  |
| --- | --- |
| 1 Hour Lecture (L) per week | 1 credit |
| 1Hour Tutorial (T) per week | 1 credit |
| 1 Hour Practical (P) per week | 0.5 credit |
| 2 Hours Practical (Lab) per week | 1 credit |

**B. Range of Credits:**

A total credit of 160 is required for a student to be eligible to get Under Graduate degree in Information Technology (IT).

**C.** **Abbreviations Used for Various Course Codes:**

BS: Basic Science Courses

ES: Engineering Science Courses

HM: Humanities and Social Sciences including Management Courses

PC: Professional Core Courses

MC: Mandatory Courses

PE: Professional Elective Courses/Program Elective Courses

OE: Open Elective Courses

PROJ: Project

IT: Information Technology (IT)

OE-IT: Open Elective Courses- Information Technology (IT)

A: Applications

D: Data Science and Machine Intelligence

S: Systems

T: Theory and Algorithms

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| **Bachelor of Technology (Information Technology )** | | | | | | | | | | |
| **Credit-Based Scheme of Studies/Examination** | | | | | | | | | | |
| **Semester III (w.e.f. session 2019-2020 )** | | | | | | | | | | |
| **S. No.** | **Course Code** | **Subject** | **L:T:P** | **Hours/Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam (Hrs)** |
|
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | ES-201A | Basic Electronics | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | ES-203A | Digital Electronics and logic design | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | PC-IT-205A | Data Structure | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | PC-IT-207A | Object Oriented Programming using C++ | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | BS-209A | Mathematics - III | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 6 | HM-902A | Fundamentals of Management | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 7 | ES-211AL | Basic Electronics Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 8 | ES-213AL | Digital Electronics and logic design Lab | 0:0:2 | 2 | 1 | 0 | 40 | 60 | 100 | 3 |
| 9 | PC-IT-215A L | Object Oriented Programming Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| **Total** | | |  | **25** | **21.5** | **450** | **270** | **180** | **900** |  |
| 10 | SIM-201A\* | Seminar on Summer Internship | 2:0:0 | 2 | 0 | 0 | 50 | 0 | 50 |  |

**\*Note:** SIM-201A\* is a mandatory credit-less course in which the students will be evaluated for the Summer Internship (training) undergone after 2nd semester and students will be required to get passing marks to qualify.

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| **Bachelor of Technology (Information Technology )** | | | | | | | | | | |
| **Credit-Based Scheme of Studies/Examination** | | | | | | | | | | |
| **Semester IV (w.e.f. session 2019-2020 )** | | | | | | | | | | |
| **S. No.** | **Course Code** | **Subject** | **L:T:P** | **Hours/Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam (Hrs)** |
|
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | ES-IT-202A | Basics of Communication | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | PC-IT- 204A | Discrete Mathematics | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | PC-IT-206A | Operating System | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | PC-IT-208A | Microprocessor Interfacing and Application | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | PC-IT-210A | Database Management Systems | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 6 | HM-901A | Management Information system | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 7 | PC-IT- 212AL | Microprocessor Interfacing and application Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 8 | PC-IT-214AL | Operating Systems Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 9 | PC-IT-216AL | Database Management Systems Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| **Total** | | |  | **27** | **22.5** | **450** | **270** | **180** | **00** |  |
| 10 | MC-901A | Environmental Sciences | 3:0:0 | 3 | 0 |  | 100 | 0 | 100 | 3 |

**Note: Students be encouraged to go to 6-8 weeks summer internships mandatory during the summer break after the completion of fourth semester exams.**

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| **Bachelor of Technology (Information Technology )** | | | | | | | | | | |
| **Credit-Based Scheme of Studies/Examination** | | | | | | | | | | |
| **Semester V (w.e.f. session 2020-2021 )** | | | | | | | | | | |
| **S. No.** | **Course Code** | **Subject** | **L:T:P** | **Hours/Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam (Hrs)** |
|
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | ES-301A | JAVA Programming | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | PC-IT-301A | Internet and Web Technology | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | PC-IT-303A | Computer Graphics | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | PC-IT-305A | Computer Organization & Architecture | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | PC-IT-307A | Programming with MATLAB | 2:0:0 | 2 | 2 | 75 | 25 | 0 | 100 | 3 |
| 6 | OE | Elective-I | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 7 | PC-IT-309AL | JAVA programming Lab | 0:0:4 | 4 | 2 | 0 | 40 | 60 | 100 | 3 |
| 8 | PC-IT-311AL | Internet and Web Technology Lab | 0:0:4 | 4 | 2 | 0 | 40 | 60 | 100 | 3 |
| **Total** | | |  | **25** | **21** | **450** | **230** | **120** | **800** |  |
| 9 | MC-904A | Energy Resources & Management | 3:0:0 | 3 | 0 | 0 | 100 | 0 | 100 | 3 |
| 10 | SIM-301A\* | Seminar on Summer Internship | 2:0:0 | 2 | 0 | 0 | 50 | 0 | 50 |  |

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| **OE Elective-I** |
| Digital Data Communication: OE-IT-T301A |
| Computer Networks: OE-IT-T303A |
| Wireless sensor networks: OE-IT-T305A |

**\*Note:** SIM-301\* is a mandatory credit-less course in which the students will be evaluated for the Summer Internship undergone after 4th semester and students will be required to get passing marks to qualify.

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| **Bachelor of Technology (Information Technology )** | | | | | | | | | | |
| **Credit-Based Scheme of Studies/Examination** | | | | | | | | | | |
| **Semester VI (w.e.f. session 2020-2021 )** | | | | | | | | | | |
| **S. No.** | **Course Code** | **Subject** | **L:T:P** | **Hours/Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam (Hrs.)** |
|
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | PC-IT-302A | Software Engineering | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | PC-IT-304A | Linux | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | PE | Elective-II | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | PE | Elective-III | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 5 | OE | Open Elective-I | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 6 | PROJ –IT-302A | Project-1 | 0:0:6 | 6 | 3 | 0 | 40 | 60 | 100 | 3 |
| 7 | PC-IT-306AL | Software Engineering Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 8 | PC-IT-308AL | Linux Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| **Total** | | |  | **29** | **21** | **375** | **245** | **180** | **800** |  |

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| **PEC Elective-II** | **PEC Elective-III** |
| Data ware housing and Data Mining: PE-IT-S302A | Soft computing: PE-IT-S310A |
| Advance Database management System: PE-IT-S304A | Mobile Computing: PE-IT-S312A |
| Big Data Analytics: PE-IT-S306A | Agile Software Engineering: PE-IT-S314A |
| **OEC Elective-I** |
| Soft Skills and Interpersonal Communication: OE-IT-302A |
| Non conventional Energy Resources: OE-IT-304A |
| Enterprise Resource Planning: OE-IT-306A |

**Note: Students be encouraged to go to 6-8 weeks summer internships mandatory during the summer break after the completion of sixth semester exams.**

**The course of both PE & OE will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.**

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| **Bachelor of Technology (Information Technology )** | | | | | | | | | | |
| **Credit-Based Scheme of Studies/Examination** | | | | | | | | | | |
| **Semester VII (w.e.f. session 2021-2022 )** | | | | | | | | | | |
| **S. No.** | **Course Code** | **Subject** | **L:T:P** | **Hours/Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam (Hrs)** |
|
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | PE | Elective-IV | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | PE | Elective-V | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 3 | OE | Open Elective-II | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 4 | PROJ-IT-401A | Project-II | 0:0:12 | 12 | 6 | 0 | 40 | 60 | 100 | 3 |
| 5 | PE-L | Server side programming Lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| 6 | PE-L | Mobile Application Development lab | 0:0:3 | 3 | 1.5 | 0 | 40 | 60 | 100 | 3 |
| **Total** | | |  | **21** | **18** | **225** | **115** | **60** | **400** |  |
| 7 | SIM-401A\* | Seminar on Summer Internship | 2:0:0 | 2 | 0 | 0 | 50 | 0 | 50 |  |

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| **PEC Elective-IV** | **PEC Elective-V** |
| Advanced Computer Networks: PE-IT-D401A | Software Testing: PE-IT-D409A |
| Introduction to computer animation: PE-IT-D403A | Software Project management:PE-IT-D411A |
| Parallel Computing: PE-IT-D405A | Distributed Operating System: PE-IT-D413A |
| Complier Design: PE-IT-D407A | Natural Language Processing: PE-IT-D415A |
| **OEC Elective-II** |
| Cyber Law and Ethics: OE-IT-401A |
| Signal and System: OE-IT-403A |
| Neural Networks and Deep Learning: OE-IT-405A |
| Digital Signal Processing: OE-IT-407A |

**The course of both PE & OE will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.**

**\*Note:** SIM-401\* is a mandatory credit-less course in which the students will be evaluated for Summer Internship undergone after 6th semester and students will be required to get passing marks to qualify.

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| **Bachelor of Technology (Information Technology )** | | | | | | | | | | |
| **Credit-Based Scheme of Studies/Examination** | | | | | | | | | | |
| **Semester VIII (w.e.f. session 2021-2022 )** | | | | | | | | | | |
| **S. No.** | **Course Code** | **Subject** | **L:T:P** | **Hours/Week** | **Credits** | **Examination Schedule (Marks)** | | | | **Duration of Exam (Hrs.)** |
|
| **Major Test** | **Minor Test** | **Practical** | **Total** |
| 1 | PE | Elective-VI | 3:0:0 | 3 | 3 | 75 | 25 | 0 | 100 | 3 |
| 2 | OE | Open Elective-III | 2:0:0 | 2 | 2 | 75 | 25 | 0 | 100 | 3 |
| 3 | OE | Open Elective-IV | 2:0:0 | 2 | 2 | 75 | 25 | 0 | 100 | 3 |
| 4 | PROJ-IT-402A | Project-III | 0:0:12 | 12 | 6 | 0 | 40 | 60 | 100 | 3 |
| 5 | PE-L | Elective-VI Lab | 0:0:4 | 4 | 2 | 0 | 40 | 60 | 100 | 3 |
|  |  | **Total** |  | **23** | **15** | **225** | **155** | **120** | **500** |  |

**The course of both PE & OE will be offered at 1/3rd strength or 20 students (whichever is smaller) of the section.**

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| **PE Elective-VI** |
| Introduction to Internet of Things: PE-IT-A402A |
| Cloud Computing: PE-IT-A404A |
| Machine learning: PE-IT-A406A |
| Mobile Apps Development: PE-IT-A408A |
| **OE Elective-III** | **OE Elective-IV** |
| Cyber Security: OE-IT-402A | Information Security: OE-IT-410A |
| Bioinformatics: OE-IT-404A | Image Processing: OE-IT-412A |
| Social Networks: OE-IT-406A | IPR, Bioethics and Biosafety: OE-IT-414A |
| Human Computer Interaction: OE-IT-408A | Sensor and Transducer: OE-IT-416A |