**ADD ON COURSES**

**FOR**

**MASTER OF TECHNOLOGY**

**COMPUTER SCIENCE & ENGINEERING**

**2-YEAR/4-SEMESTER**

**Add- On Course - 01**

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| **MT-FT-AOC-01: Green Computing** |
| Course Type | Course Credit | Contact Hours/Week | Delivery Mode | Maximum Marks | Exam Duration | Assessment Methods |
| External | Internal |
| Extra Credit Theory  | 02 | 02 | Lecture | 35 | 15 | 3 Hours | TEE/MTE/ Assignment/ Attendance |
| **Instructions to paper setter for Term-End Examination:** Term-end examination shall cover the whole content of the course. Total number of questions shall be nine. Question number one will be compulsory and will be consisting of short/objective type questions from complete syllabus. In addition to compulsory first question there shall be four units in the question paper each consisting of two questions. Student will attempt one question from each unit in addition to compulsory question. All questions will carry equal marks. |
| **Course Objectives**: The objective of this course is to make the students aware about impact of information technology and computing industry on the environment/ecology and how can they contribute in saving the mother earth by aligning their buying/operating/disposal practices in respect of computing and IT gadgets. |
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| **Course Outcomes**  | At the end of this course, the students will be able to:  |
| CO1 | enumerate the concepts and issues in: green computing, green IT, electronic waste management, IEEE 1680. |
| CO2 | understand and describe the concept and issues in: green IT, impacts of electronics manufacturing, usage and disposal on human ecology, standards for green computing. |
| CO3 | use and apply the information/knowledge gained thus far in: their daily life, procurement, operations and disposal of IT, electrical and electronic products. |
| CO4 | categorise (i) IT, electrical and electronic products as bronze green, silver green, gold green; (ii) e-waste management practices as safe or unsafe for human and ecology.  |
| CO5 | choose between (i) environmentally safe or unsafe e-waste management practice and (ii) IT, electrical and electronic products that has been designed/manufactured using an environmentally sage process.  |
| CO6 | formulate a green computing/IT policy for the organization they work for. |

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| **CO-PEO Mapping Matrix for Course MT-FT-AOC-01**

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| --- | --- | --- | --- | --- | --- |
| COs | PEO1 | PEO2 | PEO3 | PEO4 | PEO5 |
| CO1 | 1 | 1 | 3 | 3 | 3 |
| CO2 | 2 | 2 | 3 | 3 | 3 |
| CO3 | 3 | 3 | 3 | 3 | 3 |
| CO4 | 3 | 3 | 3 | 3 | 3 |
| CO5 | 3 | 3 | 3 | 3 | 3 |
| CO6 | 3 | 3 | 3 | 3 | 3 |
| Average | 2.5 | 2.5 | 3 | 3 | 3 |

**CO-PO Mapping Matrix for Course MT-FT-AOC-01** |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 1 | 3 | 1 | 1 | 1 | - | 3 | - | - | - | 1 | 3 |
| CO2 | 2 | 1 | 1 | 3 | 1 | - | 3 | - | - | - | 2 | 3 |
| CO3 | 3 | 1 | 1 | 3 | 3 | - | 3 | - | - | - | 3 | 3 |
| CO4 | 3 | 3 | 1 | 3 | 1 | - | 3 | - | - | - | 3 | 3 |
| CO5 | 3 | 1 | 1 | 3 | 3 | - | 3 | - | - | - | 3 | 3 |
| CO6 | 3 | 3 | 3 | 3 | 3 | - | 3 | - | - | - | 3 | 3 |
| Average | 2.5 | 2 | 3 | 2 | 2 | - | 3 | - | - | - | 3 | 3 |
| **CO-PSO Mapping Matrix for Course MT-FT-AOC-01** |
| COs | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 2 | 1 | - | 3 |
| CO2 | 3 | 2 | 2 | - | 3 |
| CO3 | 3 | 2 | 3 | - | 3 |
| CO4 | 3 | 2 | 3 | - | 3 |
| CO5 | 3 | 2 | 3 | - | 3 |
| CO6 | 3 | 2 | 3 | - | 3 |
| Average | 3 | 2 | 2.5 | - | 3 |

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| **Course Content****MT-FT-AOC-01: Green Computing** |
| **Unit I** | The concept, importance and issues involved in Green Computing/ Information Technology; Carbon footprint in manufacturing of computing and IT products; other effluents in IT manufacturing; the concept of design for environment; |
| **Unit - II** | Carbon footprint in operations of IT/computing gadget; green IT usage; Data centre and server farms design, power, cooling and location; virtualization; BPR for sustainable IT/computing. |
| **Unit - III** | Disposal practices in e-waste; e-waste recycling, formal vs. informal e-waste recycling; extended producer responsibility; IT for paperless offices; IT for saving travel cost, time and environment;  |
| **Unit - IV** | Electronic waste management regulations in India; IEEE 1680 standard for green computing. |
| **Text/Reference Books** |
| **Text Books** | 1. John Lamb, The Greening of IT – How Companies Can Make a Difference for the Environment” IBM Press, 2009.
 |
| **Reference Books** | 1. Toby J. Velete, Anthony T. Velete, Robert Elsenpeter, Green IT – Reduce Your Information System’s Environmental Impact While Adding to the Bottom Line” 1e, McGraw-Hill, 2008.
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**Add-On Course - 02**

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| **MT-FT-AOC-02:Cyber Laws and Ethics in Computing** |
| Course Type | Course Credit | Contact Hours/Week | Delivery Mode | Maximum Marks | Exam Duration | Assessment Methods |
| External | Internal |
| Extra Credit Theory  | 02 | 02 | Lecture | 35 | 15 | 3 Hours | TEE/MTE/ Assignment/ Attendance |
| **Instructions to paper setter for Term-End Examination:** Term-end examination shall cover the whole content of the course. Total number of questions shall be nine. Question number one will be compulsory and will be consisting of short/objective type questions from complete syllabus. In addition to compulsory first question there shall be four units in the question paper each consisting of two questions. Student will attempt one question from each unit in addition to compulsory question. All questions will carry equal marks. |
| **Course Objectives**: The objective of this course is to make the students aware about the laws governing cyberspace and also about the professional ethics in computing and IT profession. |
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| **Course Outcomes**  | At the end of this course, the students will be able to: |
| CO1 | define: most common cybercrimes, main sections/clauses of IT Act 2000, major IPRs, main ethical issues in IT profession. |
| CO2 | understand and describe: commonly occurring cybercrimes, main sections of IT Act 2000, intellectual property rights, ethical issues in IT profession and ACM ethics code. |
| CO3 | use and apply: information/knowledge gained thus far in their daily life in avoiding cyber law and IPR infringements, prevent and avoid cybercrimes and practice the code of computing professional ethics. |
| CO4 | categorise: (i) cybercrimes and cyber offences, (ii) IPR issues and ethics for individuals and IT professionals. |
| CO5 | justify: deployment of cyber security system for an individual or an organization and following the cyber laws, IPR laws and IT professional ethics. |
| CO6 | formulate: cyber security policy, code of ethics and IPR policy for the organization they work for. |

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| **CO-PEO Mapping Matrix for Course MT-FT-AOC-02**

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| --- | --- | --- | --- | --- | --- |
| COs | PEO1 | PEO2 | PEO3 | PEO4 | PEO5 |
| CO1 | 1 | 1 | 3 | 3 | 3 |
| CO2 | 2 | 1 | 3 | 3 | 3 |
| CO3 | 3 | 1 | 3 | 3 | 3 |
| CO4 | 3 | 1 | 3 | 3 | 3 |
| CO5 | 3 | 1 | 3 | 3 | 3 |
| CO6 | 3 | 1 | 3 | 3 | 3 |
| Average | 2.5 | 1 | 3 | 3 | 3 |

**CO-PO Mapping Matrix for Course MT-FT-AOC-02** |
| COs | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
| CO1 | 1 | 3 | 1 | 1 | 1 | 1 | - | 3 | - | - | 1 | 3 |
| CO2 | 2 | 1 | 1 | 3 | 1 | 1 | - | 3 | - | - | 2 | 3 |
| CO3 | 3 | 1 | 1 | 3 | 3 | 1 | - | 3 | - | - | 3 | 3 |
| CO4 | 3 | 3 | 1 | 3 | 1 | 1 | - | 3 | - | - | 3 | 3 |
| CO5 | 3 | 1 | 1 | 3 | 3 | 1 | - | 3 | - | - | 3 | 3 |
| CO6 | 3 | 3 | 3 | 3 | 3 | 1 | - | 3 | - | - | 3 | 3 |
| Average | 2.5 | 2 | 3 | 2 | 2 | 1 | - | 3 | - | - | 3 | 3 |
| **CO-PSO Mapping Matrix for Course MT-FT-AOC-02** |
| COs | PSO1 | PSO2 | PSO3 | PSO4 | PSO5 |
| CO1 | 3 | 1 | 1 | 3 | 3 |
| CO2 | 3 | 1 | 2 | 3 | 3 |
| CO3 | 3 | 1 | 3 | 3 | 3 |
| CO4 | 3 | 1 | 3 | 3 | 3 |
| CO5 | 3 | 1 | 3 | 3 | 3 |
| CO6 | 3 | 1 | 3 | 3 | 3 |
| Average | 3 | 1 | 2.5 | 3 | 3 |

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| **Course Content****MT-FT-AOC-02:Cyber Laws and Ethics in Computing** |
| **Unit I** | Cyber laws in general, IT Act 2000 and its amendments, various provisions of IT Act to deal with cyber offences and cybercrimes. Case of Section 66A of IT Act 2000. |
| **Unit - II** | Cybercrime: classification and typography, statistics, and issues; review of Indian cyber security strategy, privacy issues. |
| **Unit - III** | Intellectual Property: Copy rights, Patents, Trade Secret Laws, Key Intellectual property issues, Plagiarism, Competitive Intelligence, Cybersquatting, Information warfare policy. |
| **Unit - IV** | Ethics in business world, Ethic s in IT, Ethics for IT professionals and IT users, IT professional malpractices, communications eavesdropping, ACM ethics code. |
| **Text/Reference Books** |
| **Text Books** | 1. George Reynolds, “Ethics in information Technology”, 5e, Cengage Learning.
2. Debora Johnson,” Computer Ethics”, 3e, Pearson Education.
3. Sara Baase, “A Gift of Fire: Social, Legal and Ethical Issues, for Computing and the Internet,” PHI Publications.
4. Mike W Martin and Roland Schinzinger, Ethics in Engineering, Tata McGraw Hill, 2003.
 |
| **Reference Books** | 1. Michael Cross, Norris L Johnson, Tony Piltzecker, Security, Shroff Publishers and Distributors Ltd.
2. Hon C Graff, Cryptography and E-Commerce - A Wiley Tech Brief, Wiley Computer Publisher, 2001.
3. Govindarajan M, Natarajan S, Senthil Kumar V S, Engineering Ethics, Prentice Hall of India, 2004.
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