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| PESU | **PES University, Bengaluru**  (Established under Karnataka Act No. 16 of 2013) |

**Program :B.Tech in Electronics and Communication Communication Engineering**

**Program Outcomes**

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| **ID** | **NBA Program Outcomes** | **PESU B.Tech.-ECE**  **Program Outcomes** | **AHEP Mapping** |
| **UE16ECE\_UG\_PO1** | **Engineering knowledge:**Apply the knowledge of mathematics, science, engineering fundamentals, and engg. specialization to the solution of complex engineering problem | Apply mathematical and theoretical principles in the modeling and design high-quality electronic systems using state-of-the-art technology | **SM1P, SM2P, SM3P** |
| **UE16ECE\_UG\_PO2** | **Problem analysis:** Identify, formulate, research literature, and  analyze engineering problems to arrive at substantiated conclusions using first principles of mathematics, natural, and engineering sciences | Conduct in-depth study of research literature in the area of Electronics & Communication and analyze problems in order to arrive at substantiated conclusions using first principles of math and allied sciences. | **D1p,D2p,EA1p,EA2p,EP1p** |
| **UE16ECE\_UG\_PO3** | **Design/development of solutions:** Design solutions for complex engineering problems and design system components, processes to meet the specifications with consideration for the public health and safety, and thecultural, societal, and environmental considerations. | Design, implement, and evaluate electronic systems and processes that meet partial/complete specifications with concern for society, environment and culture | **D4p,EA3p,EA4p,EP6p** |
| **UE16ECE\_UG\_PO4** | **Conduct investigations of complex problems:**  Use research-based knowledge including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions | Design and conduct experiments, collect data, analyze and interpret the results to investigate complex engineering problems | **D3p,EP4p** |
| **UE16ECE\_UG\_PO5** | **Modern tool usage:**  Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools  including prediction and modeling to complex engineering activities with an understanding of the limitations. | Apply state-of-the-art techniques and modern software and hardware tools in prediction, comparison and modeling of complex engineering activities | **EP2p** |
| **UE16ECE\_UG\_PO6** | **The engineer and society:**  Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice | Have sound understanding of professional, legal, security and social issues and responsibilities in Engineering actives | **ET2p, ET5p ,EP7p** |
| **UE16ECE\_UG\_PO7** | **Environment and sustainability:**  Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development. | Understand Societal and Environmental concerns and demonstrate responsibility in sustainable development of solutions | **ET4p** |
| **UE16ECEP\_UG\_O8** | **Ethics**:  Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice | Be aware of ethical and professional responsibilities in engineering situations; make informed judgments regarding intellectual property and rights in relation to technical solutions in global, economic, environmental, and societal contexts. | **ET1p** |
| **UE16ECE\_UG\_PO9** | **Individual and team work:**  Function effectively as an individual, and as a member or leader in teams, and in multidisciplinary settings | Able to function effectively in teams to establish goals, plan tasks, meet deadlines, manage risk and produce high-quality technical solutions | **EP9p** |
| **UE16ECE\_UG\_PO10** | **Communication**:  Communicate effectively with the  engineering community and with society at large. Be able to comprehend and write effective reports documentation. Make  effective presentations, and give and receive clear instructions | Contribute and communicate effectively with the society, be able to write effective reports and design documents by adhering to appropriate standards, make effective presentations, give and receive clear instructions | **D6P** |
| **UE16ECE\_UG\_PO11** | **Project management and finance:**  Demonstrate knowledge and understanding of engineering and management principles and apply these to one’s own work, as a member and leader in a team. Manage projects in multidisciplinary environments. | Apply skills in clear communication, responsible teamwork and time management by, for example, managing a team or project and communicating with external stakeholders. | **D5p, ET3p,ET6p** |
| **UE16ECE\_UG\_PO12** | **Lifelong learning:**  Recognize the need for, and have the preparation and ability to engage in independent and life long  learning in the broadest context of technological change. | Recognize the need for and demonstrate an ability to engage in continuing professional development in its broadest sense | **Ep3p,Ep5p,Ep8p** |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2017 – 2021**

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| **Course Code: UE17CS101** | | | | | |  | | **Course Name :Introduction to Computing Using Python** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE17CS102** | | | | | |  | | **Course Name : Introduction to Computing Using Python Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
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| **Course Code: UE17CS151** | | | | | |  | | **Course Name :Problem Solving with C** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2017 – 2021**

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| **Course Code: UE17CS152** | | | | | |  | | **Course Name : Problem Solving with C** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS201** | | | | | |  | | **Course Name : Digital Design & Computer Organization** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS202** | | | | | |  | | **Course Name : Data Structures** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS203** | | | | | |  | | **Course Name : Introduction to Data Science** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS204** | | | | | |  | | **Course Name : Web Technologies 1** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS205** | | | | | |  | | **Course Name : Discrete Mathematics and Logic** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS206** | | | | | |  | | **Course Name : Digital Design & Computer Organization Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS207** | | | | | |  | | **Course Name : Data Structures Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS208** | | | | | |  | | **Course Name : Web Technologies 1 Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS251** | | | | | |  | | **Course Name : Design and Analysis of Algorithms** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS252** | | | | | |  | | **Course Name : Data Base Management Systems** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS253** | | | | | |  | | **Course Name : Microprocessors & Computer Architecture** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS254** | | | | | |  | | **Course Name : Theory of Computation** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE16CS255** | | | | | |  | | **Course Name : Design and Analysis of Algorithms Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS256** | | | | | |  | | **Course Name : Data Base Management Systems Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS257** | | | | | |  | | **Course Name : Microprocessor & Computer Architecture Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE16CS301** | | | | | |  | | **Course Name : Computer Networks** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS302** | | | | | |  | | **Course Name : Introduction to Operating Systems** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS303** | | | | | |  | | **Course Name : Principles of Programming Languages** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS304** | | | | | |  | | **Course Name : Computer Networks Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS305** | | | | | |  | | **Course Name : Introduction to Operating Systems Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS306** | | | | | |  | | **Course Name : Principles of Programming Languages Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS311** | | | | | |  | | **Course Name : Advanced Algorithms** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS312** | | | | | |  | | **Course Name : Processor & SoC Architecture** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code:** UE1**6**CS313 | | | | | |  | | **Course Name : Advanced Database Management Systems** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS314** | | | | | |  | | **Course Name : Big Data** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS315** | | | | | |  | | **Course Name : Multimedia Computing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS316** | | | | | |  | | **Course Name : XML Technologies** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS321** | | | | | |  | | **Course Name : Computer Graphics and Visualization** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS322** | | | | | |  | | **Course Name : Data Analytics** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS323** | | | | | |  | | **Course Name : Fuzzy Logic** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS324** | | | | | |  | | **Course Name :** **Scientific- computing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS325** | | | | | |  | | **Course Name : Artificial Intelligence** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS326** | | | | | |  | | **Course Name : Mobile Computing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS327** | | | | | |  | | **Course Name : Reconfigurable Computing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS351** | | | | | |  | | **Course Name : Compiler Design** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS352** | | | | | |  | | **Course Name : Unix System Programming** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE16CS353** | | | | | |  | | **Course Name : Machine Learning** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS354** | | | | | |  | | **Course Name : Compiler Design Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS355** | | | | | |  | | **Course Name : Unix System Programming Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS356** | | | | | |  | | **Course Name : Machine Learning Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS331** | | | | | |  | | **Course Name : Computer Network Security** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS332** | | | | | |  | | **Course Name : Storage Area Networks** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS333** | | | | | |  | | **Course Name : Natural Language Processing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS334** | | | | | |  | | **Course Name : High Performance computing Architecture** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS335** | | | | | |  | | **Course Name : Advanced Computer Networks** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS336** | | | | | |  | | **Course Name : Parallel Computing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS337** | | | | | |  | | **Course Name : Generic Programming** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS338** | | | | | |  | | **Course Name : Architecture of Open Source Technologies** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE16CS341** | | | | | |  | | **Course Name : Cloud Computing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS342** | | | | | |  | | **Course Name : Ad-hoc Sensor Networks** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS343** | | | | | |  | | **Course Name : Software Defined Networks** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE16CS344** | | | | | |  | | **Course Name : Knowledge management** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS345** | | | | | |  | | **Course Name : Semantic Web Technologies** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS346** | | | | | |  | | **Course Name : System Modeling and Simulation** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE16CS347** | | | | | |  | | **Course Name : Network Management** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE16CS348** | | | | | |  | | **Course Name : Digital Image Processing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

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| **Course Code: UE15CS401** | | | | | |  | | **Course Name : Object Oriented Modeling and Design** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS402** | | | | | |  | | **Course Name : Software Engineering** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS403** | | | | | |  | | **Course Name : Web Technologies II** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2016 – 2020**

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| **Course Code: UE15CS404** | | | | | |  | | **Course Name : Object Oriented Modeling and Design Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS405** | | | | | |  | | **Course Name : Web Technologies II Laboratory** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS406** | | | | | |  | | **Course Name : Seminar** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

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| **Course Code: UE15CS407** | | | | | |  | | **Course Name : Research Methodology** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS411** | | | | | |  | | **Course Name : Green Computing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS412** | | | | | |  | | **Course Name : Enterprise Resource Planning** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

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| **Course Code: UE15CS413** | | | | | |  | | **Course Name : Design Patterns** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS414** | | | | | |  | | **Course Name : Algorithms for Information Retrieval** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS415** | | | | | |  | | **Course Name : Content Management** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE15CS416** | | | | | |  | | **Course Name : Cognitive Science** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS417** | | | | | |  | | **Course Name : Computer Vision** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS421** | | | | | |  | | **Course Name : Information Security** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE15CS422** | | | | | |  | | **Course Name : Web Services** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS423** | | | | | |  | | **Course Name : Optical Networks** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS424** | | | | | |  | | **Course Name : Algorithms for Intelligent Web** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code: UE15CS425** | | | | | |  | | **Course Name : Social Network Analytics** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS426** | | | | | |  | | **Course Name : Computer Systems Performance Analysis** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS427** | | | | | |  | | **Course Name : Software Metrics** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

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| **Course Code: UE15CS428** | | | | | |  | | **Course Name : Software Design** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS429** | | | | | |  | | **Course Name : Advanced Machine Learning** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code:** UE15CS490 | | | | | |  | | **Course Name : Project Work** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

**Mapping of Course outcomes to NBA Program Outcomes**

**Program: B. Tech in Computer Science & Engineering Batch: 2015 – 2019**

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| **Course Code: UE15CS451** | | | | | |  | | **Course Name :** **Android Application Development** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS452** | | | | | |  | | **Course Name : Introduction to Software Testing** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |

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| **Course Code: UE15CS453** | | | | | |  | | **Course Name : Introduction to Business** | | | | | | |
|  | **UE16ECE\_PG\_PO1** | **UE16ECE\_PG\_PO2** | **UE16ECE\_PG\_PO3** | **UE16ECE\_PG\_PO4** | **UE16ECE\_PG\_PO5** | | **UE16ECE\_PG\_PO6** | | **UE16ECE\_PG\_PO7** | **UE16ECE\_PG\_PO8** | **UE16ECE\_PG\_PO9** | **UE16ECE\_PG\_P10** | **UE16ECE\_PG\_P11** | **UE16ECE\_PG\_P12** |
| **CO1** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO2** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO3** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO4** |  |  |  |  |  | |  | |  |  |  |  |  |  |
| **CO5** |  |  |  |  |  | |  | |  |  |  |  |  |  |