

Indian Institute of Technology Bhubaneswar  
Curriculum(M.Tech. AI)

|              | Subject Name                                        | Subject Code | L-T-P | Credit | Contact Hours |
|--------------|-----------------------------------------------------|--------------|-------|--------|---------------|
| Semester I   | Mathematical Foundations of Artificial Intelligence | CS6L029      | 3-0-0 | 3      | 3             |
|              | Machine Learning                                    | CS6L004      | 3-0-0 | 3      | 3             |
|              | Artificial Intelligence                             | CS6L019      | 4-0-0 | 4      | 4             |
|              | Elective-1                                          |              | 3-0-0 | 3      | 3             |
|              | Elective-2 / Open Elective                          |              | 3-0-0 | 3      | 3             |
|              | Machine Learning Lab                                | CS6P014      | 0-0-3 | 2      | 3             |
|              | Artificial Intelligence Lab                         | CS6P015      | 0-0-3 | 2      | 3             |
| Semester II  | Deep Learning                                       | CS6L038      | 3-0-0 | 3      | 3             |
|              | Elective-3                                          |              | 3-0-0 | 3      | 3             |
|              | Elective-4                                          |              | 3-0-0 | 3      | 3             |
|              | Elective-5 / Open Elective                          |              | 3-0-0 | 3      | 3             |
|              | Deep Learning Lab                                   | CS6P008      | 0-0-3 | 2      | 3             |
|              | Advanced Machine Learning Lab                       | CS6P009      | 0-0-3 | 2      | 3             |
|              | Thesis Part-1                                       | CS6D005      |       | 2      |               |
| Semester III | Thesis Part-2                                       | CS6D006      |       | 14     |               |
| Semester IV  | Thesis Part-3                                       | CS6D007      |       | 14     |               |
| Total        |                                                     |              |       | 66     | 40            |

Indian Institute of Technology Bhubaneswar  
Curriculum(M.Tech. AI)

**List of Electives:**

| <b>Subject Code</b> | <b>Subject Name</b>                                 | <b>L-T-P-C</b> | <b>Hours</b> |
|---------------------|-----------------------------------------------------|----------------|--------------|
| CS6L015             | Mathematical Foundations of Computer Science        | 3-0-0-3        | 3            |
| CS6L007             | Advanced Algorithms                                 | 4-0-0-4        | 4            |
| CS6L047             | Advanced Computer Architecture                      | 4-0-0-4        | 4            |
| CS6L048             | Advanced Computer Networks                          | 3-0-0-3        | 3            |
| CS6L050             | Graph Theory                                        | 3-0-0-3        | 3            |
| CS6L051             | Advanced Data Structures                            | 3-0-0-3        | 3            |
| CS6L052             | Mathematical Tools for Theoretical Computer Science | 3-0-0-3        | 3            |
| CS6L053             | Approximation Algorithms                            | 3-0-0-3        | 3            |
| CS6L054             | Randomized Algorithms                               | 3-0-0-3        | 3            |
| CS6L055             | Parameterized Algorithms                            | 3-0-0-3        | 3            |
| CS6L056             | Parallel Algorithms                                 | 3-0-0-3        | 3            |
| CS6L057             | Distributed Algorithms                              | 3-0-0-3        | 3            |
| CS6L031             | Game Theory                                         | 3-0-0-3        | 3            |
| CS6L012             | Complexity Theory                                   | 3-0-0-3        | 3            |
| CS6L058             | Extremal Combinatorics                              | 3-0-0-3        | 3            |
| CS6L059             | Combinatorial Optimization                          | 3-0-0-3        | 3            |
| CS6L060             | Selected Topics in Theoretical Computer Science     | 3-0-0-3        | 3            |
| CS6L061             | Computational Geometry                              | 3-0-0-3        | 3            |
| CS6L062             | Computer Graphics                                   | 3-0-0-3        | 3            |
| CS6L025             | Object Oriented System Design                       | 3-0-0-3        | 3            |
| CS6L063             | Number Theory                                       | 3-0-0-3        | 3            |
| CS6L064             | Symbolic Logic and Automated Reasoning              | 3-0-0-3        | 3            |
| CS6L022             | Complex Networks                                    | 3-0-0-3        | 3            |
| CS6L065             | Advanced Compiler Design                            | 3-0-0-3        | 3            |
| CS6L066             | Advanced Database Management Systems                | 3-0-0-3        | 3            |
| CS6L067             | Advanced Operating Systems                          | 3-0-0-3        | 3            |
| CS6L068             | Wireless Networks                                   | 3-0-0-3        | 3            |
| CS6L026             | Wireless Sensor Networks                            | 3-0-0-3        | 3            |
| CS6L069             | Software-Defined Networking                         | 3-0-0-3        | 3            |
| CS6L070             | Cyber-Physical Systems                              | 3-0-0-3        | 3            |
| CS6L071             | Performance Evaluation of Computing Systems         | 3-0-0-3        | 3            |
| CS6L011             | Web Technology                                      | 3-0-0-3        | 3            |
| CS6L072             | Digital Design Verification and Testable Systems    | 3-0-0-3        | 3            |
| CS6L073             | Parallel Computer Architecture                      | 3-0-0-3        | 3            |
| CS6L074             | Memory Systems                                      | 3-0-0-3        | 3            |
| CS6L075             | GPU Programming and Architecture                    | 3-0-0-3        | 3            |
| CS6L008             | Cloud Computing                                     | 3-0-0-3        | 3            |
| CS6L002             | Networks and Systems Security                       | 3-0-0-3        | 3            |
| CS6L005             | Cryptography                                        | 3-0-0-3        | 3            |
| CS6L076             | Quantum Cryptography                                | 3-0-0-3        | 3            |

Indian Institute of Technology Bhubaneswar  
Curriculum(M.Tech. AI)

|         |                                                 |         |   |
|---------|-------------------------------------------------|---------|---|
| CS6L077 | Blockchain and Access Control                   | 3-0-0-3 | 3 |
| CS6L030 | Data Intensive Computations                     | 3-0-0-3 | 3 |
| CS6L024 | Internet-of-Things                              | 3-0-0-3 | 3 |
| CS6L006 | Fault Tolerant Systems                          | 3-0-0-3 | 3 |
| CS6L081 | Selected Topics in Systems                      | 3-0-0-3 | 3 |
| CS6L078 | Data Mining                                     | 3-0-0-3 | 3 |
| CS6L079 | Reinforcement Learning                          | 3-0-0-3 | 3 |
| CS6L038 | Information Retrieval                           | 3-0-0-3 | 3 |
| CS6L027 | Natural Language Processing                     | 3-0-0-3 | 3 |
| CS6L080 | Large Language Models                           | 3-0-0-3 | 3 |
| CS6L040 | Machine Learning and Cyber Security             | 3-0-0-3 | 3 |
| CS6L013 | Multimedia Systems                              | 3-0-0-3 | 3 |
| CS6L045 | Computer Vision                                 | 3-0-0-3 | 3 |
| CS6L046 | Pattern Recognition                             | 3-0-0-3 | 3 |
| CS6L043 | Current Topics in AI & ML                       | 3-0-0-3 | 3 |
| CS6L082 | AI and Computer Vision for Autonomous Vehicles  | 3-0-0-3 | 3 |
| CS6L083 | Robot Vision                                    | 3-0-0-3 | 3 |
| CS6L084 | Image Processing                                | 3-0-0-3 | 3 |
| CS6L085 | Deep Learning for Computer Vision               | 3-0-0-3 | 3 |
| CS6L086 | Spatio-Temporal Data Mining                     | 3-0-0-3 | 3 |
| CS6L087 | Social Media Data Analytics                     | 3-0-0-3 | 3 |
| CS6L088 | Ethical and Responsible Artificial Intelligence | 3-0-0-3 | 3 |
| CS6L044 | Advanced Topics in AI & Architecture            | 3-0-0-3 | 3 |
| CS6L034 | Software Engineering                            | 3-0-0-3 | 3 |
| CS6L023 | Software Testing and Verification               | 3-0-0-3 | 3 |
| CS6L003 | Software Reliability                            | 3-0-0-3 | 3 |
| CS6L049 | Principles of Programming Languages             | 3-0-0-3 | 3 |