

| JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN               |                |              |                                                  |              |   |       |         |             |
|------------------------------------------------------------------|----------------|--------------|--------------------------------------------------|--------------|---|-------|---------|-------------|
| COURSE CURRICULUM OF CSE&IT DEPARTMENT- 2023 Batch (165 CREDITS) |                |              |                                                  |              |   |       |         |             |
| B. TECH (INFORMATION TECHNOLOGY) 1 <sup>st</sup> SEMESTER        |                |              |                                                  |              |   |       |         |             |
| S. No.                                                           | Category Code  | Subject Code | Name of the Subjects                             | Course Hours |   |       | Credits | Total Hours |
|                                                                  |                |              |                                                  | L            | T | P     |         |             |
| 1                                                                | HSS            | 21B11HS111   | English                                          | 2            | 0 | 0     | 2       | 2           |
| 2                                                                | Basic Sciences | 18B11MA111   | Engineering Mathematics -I                       | 3            | 1 | 0     | 4       | 4           |
| 3                                                                | Basic Sciences | 18B11PH111   | Engineering Physics-I                            | 3            | 1 | 0     | 4       | 4           |
| 4                                                                | Engg Science   | 19B11CI111   | Programming for Problem Solving-II               | 2            | 0 | 0     | 2       | 2           |
| 5                                                                | Engg Science   | 18B17GE171   | Workshop Practices OR                            | 0            | 0 | 3     | 1.5     | 3           |
| 6                                                                |                | 18B17GE173   | Engineering Graphics                             | 0            | 0 | 3     |         | 3           |
| 7                                                                | Basic Sciences | 18B17PH171   | Engineering Physics Lab-I                        | 0            | 0 | 2     | 1       | 2           |
| 8                                                                | Engg Science   | 19B17CI171   | Programming for Problem Solving Lab-II           | 0            | 0 | 4     | 2       | 4           |
| 9                                                                | HSS            | 21B17HS171   | English Lab                                      | 0            | 0 | 2     | 1       | 2           |
| 10                                                               |                | 18B17GE172   | Mandatory Induction Program                      | -            | - | -     | -       | -           |
|                                                                  |                |              |                                                  |              |   | Total | 17.5    | 23          |
| B. TECH (INFORMATION TECHNOLOGY) 2 <sup>nd</sup> SEMESTER        |                |              |                                                  |              |   |       |         |             |
| S.No.                                                            | Category Code  | Subject Code | Name of the Subjects                             | Course Hours |   |       | Credits | Total Hours |
|                                                                  |                |              |                                                  | L            | T | P     |         |             |
| 1                                                                | Basic Sciences | 18B11MA211   | Engineering Mathematics -II                      | 3            | 1 | 0     | 4       | 4           |
| 2                                                                | Basic Sciences | 18B11PH211   | Engineering Physics-II                           | 3            | 0 | 0     | 3       | 3           |
| 3                                                                | Basic Sciences | 18B11PH271   | Engineering Physics Lab - II                     | 0            | 0 | 2     | 1       | 2           |
| 4                                                                | Engg Science   | 18B11EC211   | Electrical Sciences                              | 3            | 1 | 0     | 4       | 4           |
| 5                                                                | Engg Science   | 18B17EC271   | Electrical Sciences Lab                          | 0            | 0 | 2     | 1       | 2           |
| 6                                                                | Engg Science   | 18B17GE173   | Engineering Graphics OR                          | 0            | 0 | 3     | 1.5     | 3           |
| 7                                                                |                | 18B17GE171   | Workshop Practices                               | 0            | 0 | 3     |         | 3           |
| 8                                                                | Engg Science   | 18B11CI211   | Data Structures and Algorithms                   | 3            | 1 | 0     | 4       | 4           |
| 9                                                                | Engg Science   | 18B17CI271   | Data Structures and Algorithms Lab               | 0            | 0 | 4     | 2       | 4           |
| 10                                                               | HSS            | 23B11HS211   | Universal Human Values II: Understanding Harmony | 2            | 1 | 0     | 3       | 3           |
| 11                                                               | HSS            | 23B11HS212   | Professional Communication Practice              | 0            | 0 | 2     | Audit   | 2           |
|                                                                  |                |              |                                                  |              |   | Total | 23.5    | 34          |

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| COURSE CURRICULUM OF CSE&IT DEPARTMENT- 2023 Batch (165 CREDITS) |                   |              |                                             |              |   |       |         |             |
| B. TECH (INFORMATION TECHNOLOGY) 3 <sup>rd</sup> SEMESTER        |                   |              |                                             |              |   |       |         |             |
| S. No.                                                           | Category Code     | Subject Code | Name of the Subjects                        | Course Hours |   |       | Credits | Total Hours |
|                                                                  |                   |              |                                             | L            | T | P     |         |             |
| 1                                                                | Professional Core | 18B11CI315   | Python Programming with Raspberry Pi        | 3            | 0 | 0     | 3       | 3           |
| 2                                                                | Engg Science      | 18B11CI311   | Object Oriented Systems and Programming     | 3            | 0 | 0     | 3       | 3           |
| 3                                                                | Professional Core | 18B11CI313   | Database Management systems                 | 3            | 0 | 0     | 3       | 3           |
| 4                                                                | Basic Sciences    | 18B11MA313   | Probability & Statistics                    | 3            | 0 | 0     | 3       | 3           |
| 5                                                                | Professional Core | 18B17CI375   | Python programming with Raspberry Pi Lab    | 0            | 0 | 4     | 2       | 4           |
| 6                                                                | Engg Science      | 18B17CI371   | Object Oriented Systems and Programming Lab | 0            | 0 | 4     | 2       | 4           |
| 7                                                                | Professional Core | 18B17CI373   | Database Management Systems Lab             | 0            | 0 | 4     | 2       | 4           |
| 8                                                                | Engg Science      | 18B17CI372   | IT Workshop (SciLab/MATLAB) Lab             | 0            | 0 | 4     | 2       | 4           |
| 9                                                                | HSS               | 23B11HS311   | Life Skills and Interpersonal Dynamics      | 2            | 1 | 0     | 3       | 3           |
|                                                                  |                   |              |                                             |              |   | Total | 23      | 31          |
| B. TECH (INFORMATION TECHNOLOGY) 4 <sup>th</sup> SEMESTER        |                   |              |                                             |              |   |       |         |             |
| S. No.                                                           | Category Code     | Subject Code | Name of the Subjects                        | Course Hours |   |       | Credits | Total Hours |
|                                                                  |                   |              |                                             | L            | T | P     |         |             |
| 1                                                                | Professional Core | 18B11CI414   | Discrete Computational Mathematics          | 3            | 0 | 0     | 3       | 3           |
| 2                                                                | Professional Core | 18B11CI413   | Modeling and Simulation Techniques          | 2            | 0 | 0     | 2       | 2           |
| 3                                                                | Professional Core | 18B11CI411   | Operating Systems                           | 3            | 0 | 0     | 3       | 3           |
| 4                                                                | Professional Core | 19B11CI411   | Software Engineering Practices              | 3            | 0 | 0     | 3       | 3           |
| 5                                                                | Mandatory Course  | 23B11GE411   | Environmental Studies                       | 2            | 0 | 0     | 2       | 2           |
| 6                                                                | HSS               | 18B11HS411   | Finance & Accounts                          | 3            | 0 | 0     | 3       | 3           |
| 7                                                                | Professional Core | 18B17CI473   | Data Simulation Lab                         | 0            | 0 | 4     | 2       | 4           |
| 8                                                                | Professional Core | 18B17CI471   | Operating System Lab                        | 0            | 0 | 4     | 2       | 4           |
| 9                                                                | Professional Core | 19B17CI471   | Software Engineering Practices Lab          | 0            | 0 | 4     | 2       | 4           |
| 10                                                               | Professional Core | 18B17CI474   | Web Tech Lab                                | 0            | 0 | 4     | 2       | 4           |
|                                                                  |                   |              |                                             |              |   | Total | 24      | 32          |

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| COURSE CURRICULUM OF CSE&IT DEPARTMENT- 2023 Batch (165 CREDITS) |                       |              |                                            |              |   |       |         |             |
| B. TECH (INFORMATION TECHNOLOGY) 5 <sup>th</sup> SEMESTER        |                       |              |                                            |              |   |       |         |             |
| S. No.                                                           | Category Code         | Subject Code | Name of the Subjects                       | Course Hours |   |       | Credits | Total Hours |
|                                                                  |                       |              |                                            | L            | T | P     |         |             |
| 1                                                                | Professional Core     | 18B11CI512   | Information Systems                        | 3            | 0 | 0     | 3       | 3           |
| 2                                                                | Basic Sciences        |              | Science Elective                           | 3            | 0 | 0     | 3       | 3           |
| 3                                                                | Professional Core     | 18B11CI511   | Advanced Java                              | 3            | 0 | 0     | 3       | 3           |
| 4                                                                | Professional Core     | 18B11CI514   | Computer Organization and Architecture     | 3            | 0 | 0     | 3       | 3           |
| 5                                                                | HSS                   | 18B11HS511   | Project Management and Entrepreneurship    | 3            | 0 | 0     | 3       | 3           |
| 6                                                                | Professional Core     | 18B17CI572   | Information Systems Lab                    | 0            | 0 | 2     | 1       | 2           |
| 7                                                                | Professional Core     | 18B17CI574   | Computer Organization and Architecture Lab | 0            | 0 | 2     | 1       | 2           |
| 8                                                                | Professional Core     | 18B17CI571   | Advanced Java Lab                          | 0            | 0 | 4     | 2       | 4           |
| 9                                                                | Professional Elective |              | Elective -I                                | 2            | 0 | 0     | 2       | 2           |
| 10                                                               | Professional Elective |              | Elective -I Lab                            | 0            | 0 | 2     | 1       | 2           |
| 11                                                               | Mandatory             | 24B11HS513   | Logical and Quantitative Techniques-I      | 2            | 0 | 0     | 2       | 2           |
| 12                                                               | Mandatory             | 24B17CI571   | Programming Practices-I                    | 0            | 0 | 2     | 1       | 2           |
|                                                                  |                       |              |                                            |              |   | Total | 25      | 31          |
| B. TECH (INFORMATION TECHNOLOGY) 6 <sup>th</sup> SEMESTER        |                       |              |                                            |              |   |       |         |             |
| S. No.                                                           | Category Code         | Subject Code | Name of the Subjects                       | Course Hours |   |       | Credits | Total Hours |
|                                                                  |                       |              |                                            | L            | T | P     |         |             |
| 1                                                                | Professional Core     | 18B11CI613   | Data Mining                                | 3            | 0 | 0     | 3       | 3           |
| 2                                                                | Professional Core     | 18B11CI611   | Computer Networks                          | 3            | 0 | 0     | 3       | 3           |
| 3                                                                | Professional Core     | 18B17CI673   | Data Mining Lab                            | 0            | 0 | 4     | 2       | 4           |
| 4                                                                | Professional Core     | 18B17CI671   | Computer Networks lab                      | 0            | 0 | 4     | 2       | 4           |
| 5                                                                | Professional Elective |              | Elective II                                | 2            | 0 | 0     | 2       | 2           |
| 6                                                                | Professional Elective |              | Elective - II Lab                          | 0            | 0 | 2     | 1       | 2           |
| 7                                                                | Professional Elective |              | Elective III                               | 2            | 0 | 0     | 2       | 2           |
| 8                                                                | Professional Elective |              | Elective - III Lab                         | 0            | 0 | 2     | 1       | 2           |
| 9                                                                | Open Elective         |              | Open Elective -I (Humanities)              | 3            | 0 | 0     | 3       | 3           |
| 10                                                               | Project               | 18B19CI691   | Minor Project                              | 0            | 0 | 6     | 3       | 6           |
| 11                                                               | Mandatory             | 24B11HS612   | Logical and Quantitative Techniques-II     | 2            | 0 | 0     | 2       | 2           |
| 12                                                               | Mandatory             | 24B17CI671   | Programming Practices-II                   | 0            | 0 | 2     | 1       | 2           |
|                                                                  |                       |              |                                            |              |   | Total | 25      | 35          |

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| <b>COURSE CURRICULUM OF CSE&amp;IT DEPARTMENT- 2023 Batch (165 CREDITS)</b> |                       |              |                                  |              |   |       |         |             |
| <b>B. TECH (INFORMATION TECHNOLOGY) 7<sup>th</sup> SEMESTER</b>             |                       |              |                                  |              |   |       |         |             |
| S. No.                                                                      | Category Code         | Subject Code | Name of the Subjects             | Course Hours |   |       | Credits | Total Hours |
|                                                                             |                       |              |                                  | L            | T | P     |         |             |
| 1                                                                           | Professional Elective |              | Elective IV                      | 2            | 0 | 0     | 2       | 2           |
| 2                                                                           | Professional Elective |              | Elective IV Lab                  | 0            | 0 | 2     | 1       | 2           |
| 3                                                                           | Professional Elective |              | Elective V                       | 3            | 0 | 0     | 3       | 3           |
| 4                                                                           | Open Elective         |              | Open Elective II / MOOC Course*  | 3            | 0 | 0     | 3       | 3           |
| 5                                                                           | Open Elective         |              | Open Elective III / MOOC Course* | 3            | 1 | 0     | 3       | 3           |
| 6                                                                           | Mandatory Course      | 18B11HS711   | Indian Constitution              | 1            | - | -     | -       | 1           |
| 7                                                                           | Project               | 18B19CI791   | Major Project - I                | 0            | 0 | 12    | 6       | 12          |
|                                                                             |                       |              |                                  |              |   | Total | 18      | 26          |
| <b>B. TECH (INFORMATION TECHNOLOGY) 8<sup>th</sup> SEMESTER</b>             |                       |              |                                  |              |   |       |         |             |
| S. No.                                                                      | Category Code         | Subject Code | Name of the Subjects             | Course Hours |   |       | Credits | Total Hours |
|                                                                             |                       |              |                                  | L            | T | P     |         |             |
| 1                                                                           | Professional Elective |              | Elective VI                      | 3            | 0 | 0     | 3       | 3           |
| 2                                                                           | Open Elective         |              | Open Elective IV / MOOC Course*  | 3            | 0 | 0     | 3       | 3           |
| 3                                                                           | Open Elective         |              | Open Elective V / MOOC Course*   | 3            | 0 | 0     | 3       | 3           |
| 4                                                                           | Project               | 18B19CI891   | Major Project - II               | 0            | 0 | 12    | 6       | 12          |
|                                                                             |                       |              |                                  |              |   | Total | 15      | 21          |
|                                                                             |                       |              | <b>TOTAL CREDITS</b>             |              |   |       | 171     | 171         |
|                                                                             |                       |              | <b>TOTAL HOURS</b>               |              |   |       | 216     |             |
|                                                                             |                       |              | <b>HSS</b>                       |              |   |       | 15      |             |
|                                                                             |                       |              | <b>Basic Science</b>             |              |   |       | 23      |             |
|                                                                             |                       |              | <b>Engg Science</b>              |              |   |       | 27      |             |
|                                                                             |                       |              | <b>Professional Core</b>         |              |   |       | 52      |             |
|                                                                             |                       |              | <b>Professional Elective</b>     |              |   |       | 18      |             |
|                                                                             |                       |              | <b>OE</b>                        |              |   |       | 15      |             |
|                                                                             |                       |              | <b>PROJECT</b>                   |              |   |       | 15      |             |
|                                                                             |                       |              | <b>Mandatory</b>                 |              |   |       | 06      |             |

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| COURSE CURRICULUM OF CSE&IT DEPARTMENT- 2023 Batch (165 CREDIT) |                       |              |                                                          |              |   |   |        |             |
| B. TECH (LIST OF ELECTIVES- INFORMATION TECHNOLOGY)             |                       |              |                                                          |              |   |   |        |             |
| ELECTIVE-I                                                      |                       |              |                                                          |              |   |   |        |             |
| S. No.                                                          | Category Code         | Subject Code | Name of the Subjects                                     | Course Hours |   |   | Credit | Total Hours |
|                                                                 |                       |              |                                                          | L            | T | P |        |             |
| 1                                                               | Professional Elective | 18B1WCI532   | Data Compression                                         | 2            | 0 | 0 | 2      | 2           |
| 2                                                               | Professional Elective | 18B1WCI533   | Principal of Programming Languages                       | 2            | 0 | 0 | 2      | 2           |
| 3                                                               | Professional Elective | 20B1WCI733   | Computer Graphics and its Applications                   | 2            | 0 | 0 | 2      | 2           |
| 4                                                               | Professional Elective | 18B1WCI531   | Information Theory & Coding                              | 2            | 0 | 0 | 2      | 2           |
| 5                                                               | Professional Elective | 18B1WCI572   | Data Compression Lab                                     | 0            | 0 | 2 | 1      | 2           |
| 6                                                               | Professional Elective | 18B1WCI573   | Principal of Programming Languages                       | 0            | 0 | 2 | 1      | 2           |
| 7                                                               | Professional Elective | 20B1WCI773   | Computer Graphics and its Applications Lab               | 0            | 0 | 2 | 1      | 2           |
| 8                                                               | Professional Elective | 18B1WCI571   | Information Theory & Coding Lab                          | 0            | 0 | 2 | 1      | 2           |
| 9                                                               | Professional Elective | 20B1WCI531   | Foundation for Data Science and Visualization            | 2            | 0 | 0 | 2      | 2           |
| 10                                                              | Professional Elective | 20B1WCI571   | Data Science and Visualization Lab                       | 0            | 0 | 2 | 1      | 2           |
| 11                                                              | Professional Elective | 19B1WCI531   | Big Data using Hadoop                                    | 2            | 0 | 0 | 2      | 2           |
| 12                                                              | Professional Elective | 19B1WCI571   | Big Data using Hadoop Lab                                | 0            | 0 | 2 | 1      | 2           |
| 13                                                              | Professional Elective | 19B1WCI532   | Image Analysis and Pattern Recognition                   | 2            | 0 | 0 | 2      | 2           |
| 14                                                              | Professional Elective | 19B1WCI572   | Image Analysis and Pattern Recognition Lab               | 0            | 0 | 2 | 1      | 2           |
| 15                                                              | Professional Elective | 20B1WCI532   | Cloud Computing: Concepts, Technology & Architecture     | 2            | 0 | 0 | 2      | 2           |
| 16                                                              | Professional Elective | 20B1WCI572   | Cloud Computing: Concepts, Technology & Architecture Lab | 0            | 0 | 2 | 1      | 2           |
| 17                                                              | Professional Elective | 19B1WCI533   | Human-Computer Interaction                               | 2            | 0 | 0 | 2      | 2           |
| 18                                                              | Professional Elective | 19B1WCI573   | Human-Computer Interaction Lab                           | 0            | 0 | 2 | 1      | 2           |
| 19                                                              | Professional Elective | 19B1WCI534   | Social Media                                             | 2            | 0 | 0 | 2      | 2           |
| 20                                                              | Professional Elective | 19B1WCI574   | Social Media Lab (Node XL)                               | 0            | 0 | 2 | 1      | 2           |
| ELECTIVE-II                                                     |                       |              |                                                          |              |   |   |        |             |
| S.No.                                                           | Category Code         | Subject Code | Name of the Subjects                                     | Course Hours |   |   | Credit | Total Hours |
|                                                                 |                       |              |                                                          | L            | T | P |        |             |
| 1                                                               | Professional Elective | 18B1WCI633   | Software Testing Fundamentals                            | 2            | 0 | 0 | 2      | 2           |
| 2                                                               | Professional Elective | 18B1WCI634   | Machine Learning                                         | 2            | 0 | 0 | 2      | 2           |
| 3                                                               | Professional Elective | 18B1WCI637   | C# and VB.NET                                            | 2            | 0 | 0 | 2      | 2           |
| 4                                                               | Professional Elective | 18B1WCI631   | Data Structure and Software Design                       | 2            | 0 | 0 | 2      | 2           |
| 5                                                               | Professional Elective | 18B1WCI673   | Software Testing Fundamentals Lab                        | 0            | 0 | 2 | 1      | 2           |
| 6                                                               | Professional Elective | 18B1WCI674   | Machine Learning Lab                                     | 0            | 0 | 2 | 1      | 2           |
| 7                                                               | Professional Elective | 18B1WCI677   | C# and VB.NET Lab                                        | 0            | 0 | 2 | 1      | 2           |
| 8                                                               | Professional Elective | 18B1WCI671   | Data Structure and Software Design L                     | 0            | 0 | 2 | 1      | 2           |
| 9                                                               | Professional Elective | 19B1WCI631   | Digital Forensics                                        | 2            | 0 | 0 | 2      | 2           |
| 10                                                              | Professional Elective | 19B1WCI671   | Digital Forensics lab                                    | 0            | 0 | 2 | 1      | 2           |
| 11                                                              | Professional Elective | 19B1WCI633   | Computer Animation                                       | 2            | 0 | 0 | 2      | 2           |
| 12                                                              | Professional Elective | 19B1WCI673   | Computer Animation Lab                                   | 0            | 0 | 2 | 1      | 2           |
| 13                                                              | Professional Elective | 19B1WCI634   | Computer and Robot Vision                                | 2            | 0 | 0 | 2      | 2           |
| 14                                                              | Professional Elective | 19B1WCI674   | Computer and Robot Vision lab                            | 0            | 0 | 2 | 1      | 2           |
| 15                                                              | Professional Elective | 19B1WCI636   | Computability, Complexity & Algorithms                   | 2            | 0 | 0 | 2      | 2           |
| 16                                                              | Professional Elective | 19B1WCI676   | Computability, Complexity & Algorithms Lab               | 0            | 0 | 2 | 1      | 2           |
| 17                                                              | Professional Elective | 19B1WCI638   | Statistics and Data Science                              | 2            | 0 | 0 | 2      | 2           |
| 18                                                              | Professional Elective | 19B1WCI678   | Statistics and Data Science Lab                          | 0            | 0 | 2 | 1      | 2           |
| ELECTIVE-III                                                    |                       |              |                                                          |              |   |   |        |             |
| S. No.                                                          | Category Code         | Subject Code | Name of the Subjects                                     | Course Hours |   |   | Credit | Total Hours |
|                                                                 |                       |              |                                                          | L            | T | P |        |             |

Approved in Academic Council held on 28 June 2023

|    |                       |            |                                                 |   |   |   |   |   |
|----|-----------------------|------------|-------------------------------------------------|---|---|---|---|---|
| 1  | Professional Elective | 18B1WCI638 | Pattern Recognition                             | 2 | 0 | 0 | 2 | 2 |
| 2  | Professional Elective | 18B1WCI632 | Parallel and Distributed Algorithms             | 2 | 0 | 0 | 2 | 2 |
| 3  | Professional Elective | 18B1WCI636 | Digital Image processing                        | 2 | 0 | 0 | 2 | 2 |
| 4  | Professional Elective | 18B1WCI678 | Pattern Recognition Lab                         | 0 | 0 | 2 | 1 | 2 |
| 5  | Professional Elective | 18B1WCI672 | Parallel and Distributed Algorithms L           | 0 | 0 | 2 | 1 | 2 |
| 6  | Professional Elective | 18B1WCI676 | Digital Image Processing Lab                    | 0 | 0 | 2 | 1 | 2 |
| 7  | Professional Elective | 19B1WCI632 | Information Security                            | 2 | 0 | 0 | 2 | 2 |
| 8  | Professional Elective | 19B1WCI672 | Information Security Lab                        | 0 | 0 | 2 | 1 | 2 |
| 9  | Professional Elective | 20B1WCI732 | From Graph to Knowledge Graph                   | 2 | 0 | 0 | 2 | 2 |
| 10 | Professional Elective | 20B1WCI772 | From Graph to Knowledge Graph Lab               | 0 | 0 | 2 | 1 | 2 |
| 11 | Professional Elective | 18B1WCI635 | Data Mining & Data Warehousing                  | 2 | 0 | 0 | 2 | 2 |
| 12 | Professional Elective | 18B1WCI675 | Data Mining & Data Warehousing Lab              | 0 | 0 | 2 | 1 | 2 |
| 13 | Professional Elective | 19B1WCI635 | Architecting Distributed Cloud Applications     | 2 | 0 | 0 | 2 | 2 |
| 14 | Professional Elective | 19B1WCI675 | Architecting Distributed Cloud Applications Lab | 0 | 0 | 2 | 1 | 2 |
| 15 | Professional Elective | 19B1WCI637 | Statistics and Exploratory Data Analytics       | 2 | 0 | 0 | 2 | 2 |
| 16 | Professional Elective | 19B1WCI677 | Statistics and Exploratory Data Analytics Lab   | 0 | 0 | 2 | 1 | 2 |

#### ELECTIVE-IV

| S. No. | Category Code         | Subject Code | Name of the Subjects               | Course Hours |   |   | Credit | Total Hours |
|--------|-----------------------|--------------|------------------------------------|--------------|---|---|--------|-------------|
|        |                       |              |                                    | L            | T | P |        |             |
| 1      | Professional Elective | 18B1WCI734   | Cryptography& network security     | 2            | 0 | 0 | 2      | 2           |
| 2      | Professional Elective | 18B1WCI733   | Advanced Algorithms                | 2            | 0 | 0 | 2      | 2           |
| 3      | Professional Elective | 18B1WCI731   | R-Programming                      | 2            | 0 | 0 | 2      | 2           |
| 4      | Professional Elective | 18B1WCI742   | Artificial Intelligence            | 2            | 0 | 0 | 2      | 2           |
| 5      | Professional Elective | 18B1WCI774   | Cryptography& network security Lab | 0            | 0 | 2 | 1      | 2           |
| 6      | Professional Elective | 18B1WCI773   | Advanced Algorithms Lab            | 0            | 0 | 2 | 1      | 2           |
| 7      | Professional Elective | 18B1WCI771   | R-Programming Lab                  | 0            | 0 | 2 | 1      | 2           |
| 8      | Professional Elective | 20B1WCI771   | Artificial Intelligence Lab        | 0            | 0 | 2 | 1      | 2           |
| 9      | Professional Elective | 19B1WCI731   | Computational Data Analysis        | 2            | 0 | 0 | 2      | 2           |
| 10     | Professional Elective | 19B1WCI771   | Computational Data Analysis lab    | 0            | 0 | 2 | 1      | 2           |
| 11     | Professional Elective | 19B1WCI732   | Game Development and Design        | 2            | 0 | 0 | 2      | 2           |
| 12     | Professional Elective | 19B1WCI772   | Game Development Lab               | 0            | 0 | 2 | 1      | 2           |

#### ELECTIVE-V

| S. No. | Category Code         | Subject Code | Name of the Subjects                                 | Course Hours |   |   | Credit | Total Hours |
|--------|-----------------------|--------------|------------------------------------------------------|--------------|---|---|--------|-------------|
|        |                       |              |                                                      | L            | T | P |        |             |
| 1      | Professional Elective | 18B1WCI736   | Storage Networks                                     | 3            | 0 | 0 | 3      | 3           |
| 2      | Professional Elective | 18B1WCI738   | Internet of Things                                   | 3            | 0 | 0 | 3      | 3           |
| 3      | Professional Elective | 18B1WCI735   | Mobile Computing                                     | 3            | 0 | 0 | 3      | 3           |
| 4      | Professional Elective | 18B1WCI737   | Cloud Computing                                      | 3            | 0 | 0 | 3      | 3           |
| 5      | Professional Elective | 18B1WCI739   | Formal Languages & Automata                          | 3            | 0 | 0 | 3      | 3           |
| 6      | Professional Elective | 18B1WCI740   | Computational Techniques & Algorithms in Engineering | 3            | 0 | 0 | 3      | 3           |
| 7      | Professional Elective | 19B1WCI736   | Information Auditing & Risk Management               | 3            | 0 | 0 | 3      | 3           |
| 8      | Professional Elective | 19B1WCI737   | Optimization Methods in Business Analytics           | 3            | 0 | 0 | 3      | 3           |
| 9      | Professional Elective | 18B1WCI840   | Computer Vision                                      | 3            | 0 | 0 | 3      | 3           |
| 10     | Professional Elective | 19B1WCI738   | Introduction to Deep Learning                        | 3            | 0 | 0 | 3      | 3           |

#### ELECTIVE-VI

| S. No. | Category Code         | Subject Code | Name of the Subjects | Course Hours |   |   | Credit | Total Hours |
|--------|-----------------------|--------------|----------------------|--------------|---|---|--------|-------------|
|        |                       |              |                      | L            | T | P |        |             |
| 1      | Professional Elective | 18B1WCI831   | Data Analytics       | 3            | 0 | 0 | 3      | 3           |
| 2      | Professional Elective | 18B1WCI832   | Big Data             | 3            | 0 | 0 | 3      | 3           |
| 3      | Professional Elective | 18B1WCI834   | Network Management   | 3            | 0 | 0 | 3      | 3           |
| 4      | Professional Elective | 18B1WCI833   | Graph Theory         | 3            | 0 | 0 | 3      | 3           |
| 5      | Professional Elective | 18B1WCI835   | Deep Learning        | 3            | 0 | 0 | 3      | 3           |

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|    |                       |            |                                                     |   |   |   |   |   |
|----|-----------------------|------------|-----------------------------------------------------|---|---|---|---|---|
| 6  | Professional Elective | 19B1WCI831 | Ethics and Information Technology                   | 3 | 0 | 0 | 3 | 3 |
| 7  | Professional Elective | 18B1WCI832 | Social and Information Network Analysis             | 3 | 0 | 0 | 3 | 3 |
| 8  | Professional Elective | 19B1WCI832 | Probabilistic Graphical Models                      | 3 | 0 | 0 | 3 | 3 |
| 9  | Professional Elective | 19B1WCI833 | Information Modeling                                | 3 | 0 | 0 | 3 | 3 |
| 10 | Professional Elective | 19B1WCI834 | Information Visualization                           | 3 | 0 | 0 | 3 | 3 |
| 11 | Professional Elective | 19B1WCI835 | Cloud Computing Security                            | 3 | 0 | 0 | 3 | 3 |
| 12 | Professional Elective | 19B1WCI836 | Knowledge-Based AI: Cognitive Systems               | 3 | 0 | 0 | 3 | 3 |
| 13 | Professional Elective | 19B1WCI837 | Reinforcement Learning                              | 3 | 0 | 0 | 3 | 3 |
| 14 | Professional Elective | 21B1WCI833 | Machine Learning Engineering for Production Systems | 3 | 0 | 0 | 3 | 3 |

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, SOLAN**  
**COURSE CURRICULUM OF DEPARTMENT CSE&IT - 2023 Batch (165 CREDITS)**  
**LIST OF OPEN ELECTIVES**

| S. No.                                  | Category Code | Semester | Name of the Subjects                                                         | Course Hours |   |   | Credits | Total Hours |
|-----------------------------------------|---------------|----------|------------------------------------------------------------------------------|--------------|---|---|---------|-------------|
|                                         |               |          |                                                                              | L            | T | P |         |             |
| <b>OPEN ELECTIVE II (7th Semester)</b>  |               |          |                                                                              |              |   |   |         |             |
| 1                                       | 19B1WCI733    | 7        | Introduction to C++ Programming                                              | 2            | 0 | 0 | 2       | 2           |
| 2                                       | 19B1WCI734    | 7        | Object-Oriented Technologies using Java                                      | 2            | 0 | 0 | 2       | 2           |
| 3                                       | 19B1WCI735    | 7        | Software Testing Methodologies                                               | 2            | 0 | 0 | 2       | 2           |
| 4                                       | 19B1WCI773    | 7        | Introduction to C++ Programming Lab                                          | 0            | 0 | 2 | 1       | 2           |
| 5                                       | 19B1WCI774    | 7        | Object-Oriented Technologies using Java Lab                                  | 0            | 0 | 2 | 1       | 2           |
| 6                                       | 19B1WCI775    | 7        | Software Testing Methodologies Lab                                           | 0            | 0 | 2 | 1       | 2           |
| <b>OPEN ELECTIVE III (7th Semester)</b> |               |          |                                                                              |              |   |   |         |             |
| 1                                       | 13B1WCI731    | 7        | ARM based Embedded System Design                                             | 3            | 0 | 0 | 3       | 3           |
| 2                                       | 19B1WCI739    | 7        | Software Defined Network                                                     | 3            | 0 | 0 | 3       | 3           |
| 3                                       | 19B1WCI740    | 7        | Introduction to Statistical learning                                         | 3            | 0 | 0 | 3       | 3           |
| <b>OPEN ELECTIVE IV (8th Semester)</b>  |               |          |                                                                              |              |   |   |         |             |
| 1                                       | 19B1WCI838    | 8        | Principles of Distributed Database Systems                                   | 3            | 0 | 0 | 3       | 3           |
| 2                                       | 19B1WCI839    | 8        | Foundations of Blockchain                                                    | 3            | 0 | 0 | 3       | 3           |
| 3                                       | 19B1WCI840    | 8        | Computational Biology                                                        | 3            | 0 | 0 | 3       | 3           |
| 4                                       | 21B1WCI831    | 8        | Digital Twin – Fundamental Concepts of Application in Advanced Manufacturing | 3            | 0 | 0 | 3       | 3           |
| <b>OPEN ELECTIVE V (8th Semester)</b>   |               |          |                                                                              |              |   |   |         |             |
| 1                                       | 19B1WCI841    | 8        | Wireless Sensor Networks: Protocols and Applications                         | 3            | 0 | 0 | 3       | 3           |
| 2                                       | 19B1WCI842    | 8        | Service Oriented Architecture                                                | 3            | 0 | 0 | 3       | 3           |
| 3                                       | 19B1WCI843    | 8        | Multimedia Systems and Applications                                          | 3            | 0 | 0 | 3       | 3           |
| 4                                       | 21B1WCI832    | 8        | Affective Computing                                                          | 3            | 0 | 0 | 3       | 3           |

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