



**JSPM UNIVERSITY PUNE**

Recognized by UGC u/s 2 (f) of UGC Act 1956 and enacted by the  
State Government of Maharashtra - JSPM University Act, 2022 (Mah.IV of 2023)

**JSPM University Pune**  
**Faculty of Science and Technology**  
**School of Computational Sciences**



**NEP aligned Curriculum Structure**

**for**

**M. Tech (Data Science and Artificial Intelligence)**

**(Effective from AY: 2024-25)**



# JSPM University Pune

FACULTY OF SCIENCE AND TECHNOLOGY

SCHOOL OF COMPUTATIONAL SCIENCES

FIRST YEAR MASTER OF TECHNOLOGY  
(DATA SCIENCE AND ARTIFICIAL INTELLIGENCE)

COURSE STRUCTURE  
(NEP 2020 Aligned)

W. E. F

RELEASE DATE

REVISION NO.

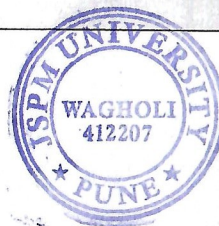
2024-2025

01/07/2024

0.0 (NEP)

## SEMESTER I (LEVEL 6.5)

| TYPE         | CODE         | COURSE NAME   | TEACHING SCHEME |          |          |          | EXAMINATION SCHEME AND MARKS                    |                  |                           |  |  |  |  |  |            |           | TOTAL | CREDITS |
|--------------|--------------|---|-----------------|----------|----------|----------|---|------------------|---------------------------|--|--|--|--|--|------------|-----------|-------|---------|
|              |              |   | Hours / Week    |          |          |          | THEORY<br>(Equal Weightage for CIE and ESE)     |                  |                           |  | PRACTICAL<br>(Equal Weightage for CIE and ESE) |  | ORAL<br>(Equal Weightage for CIE and ESE)      |  |            |           |       |         |
|              |              |   | L               | T        | P        | EL       | CONTINUOUS INSEMESTER EVALUATION<br>(100 Marks) |                  |                           | END SEMESTER EXAMINATION<br>(100 / 50 Marks) | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) | END SEMESTER EXAMINATION<br>(50 Marks) | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) | END SEMESTER EXAMINATION<br>(50 Marks) |            |           |       |         |
|              |              |   |                 |          |          |          | T1<br>(30 Marks)                                | T2<br>(30 Marks) | Assignments<br>(40 Marks) |  |  |  |  |  |            |           |       |         |
| PSMC         | 240GDSM01_01 | Mathematical Foundations for Data Science and Artificial Intelligence | 3               | -        | -        | -        | 30  | 30               | 40                        | 100  | -  | -                                      | -  | -                                      | 100        | 3         |       |         |
| PCC          | 240GCSM02_01 | Advanced Algorithms   | 2               | -        | -        | -        | 30  | 30               | 40                        | 50   | -  | -                                      | -  | -                                      | 50         | 2         |       |         |
| PCC          | 240GDSM02_01 | Artificial Intelligence: Techniques and Applications                  | 3               | -        | -        | -        | 30  | 30               | 40                        | 100  | -  | -                                      | -  | -                                      | 100        | 3         |       |         |
| PCC          | 240GCSM04_01 | Soft Computing and Optimization Techniques                            | 2               | -        | -        | 2        | 30  | 30               | 40                        | 100  | -  | -                                      | -  | -                                      | 100        | 2.5       |       |         |
| MMC          | ---          | Multidisciplinary Minor Course  | 1               | -        | 2        | -        | -   | -                | -                         | -  | 50   | 50                                     | 50   | 50                                     | 100        | 2         |       |         |
| SEC          | 240GCSM05_01 | Advanced Python Programming   | 2               | -        | 2        | -        | -   | -                | -                         | -  | 50   | 50                                     | 50   | 50                                     | 100        | 3         |       |         |
| VSC          | 230IDCB01_01 | Design Thinking and Creativity  | 1               | -        | -        | 2        | -   | -                | -                         | -  | -  | -                                      | 50   | 50                                     | 50         | 1.5       |       |         |
| AEC (HSMC)   | 230UENM01_01 | Communicative English for Professionals                               | 1               | -        | 2        | -        | 30  | 30               | 40                        | 50   | -  | -                                      | -  | -                                      | 50         | 2         |       |         |
| RMC          | 230IRMM01_01 | Research Methodology  | 2               | -        | -        | -        | 30  | 30               | 40                        | 50   | -  | -                                      | -  | -                                      | 50         | 2         |       |         |
| LC           | 240GCSM06_01 | Advanced Algorithms Lab   | -               | -        | 2        | -        | -   | -                | -                         | -  | 50   | 50                                     | -  | -                                      | 50         | 1         |       |         |
| <b>TOTAL</b> |              |   | <b>16</b>       | <b>-</b> | <b>8</b> | <b>4</b> |   |                  |                           |  |  |  |  |  | <b>50</b>  | <b>1</b>  |       |         |
|              |              |   |                 |          |          |          |   |                  |                           |  |  |  |  |  | <b>750</b> | <b>22</b> |       |         |



L-Lecture  
Format No.: JSPMUni/ACAD/001

T-Tutorial  
Rev. No.:1.0

P-Practical Session (Laboratory)  
Rev. Date:01/07/2024

EL-Experiential Learning  
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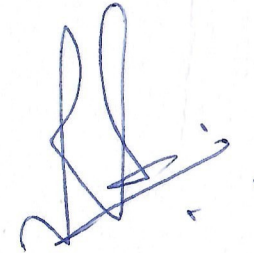
| Multidisciplinary Minor Course (MMC) |                             |                    |
|--------------------------------------|-----------------------------|--------------------|
| Course Code                          | 230GRAM24_01                | 230GETM17_01       |
| Course Name                          | Sensors and Automation      | Embedded System    |
| Course Code                          | 230GETM16_01                | 230VOSM26_01       |
| Course Name                          | IoT Basics and Applications | Project Management |



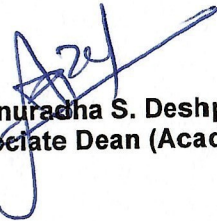
**Dr. Rahul R. Chakre**  
Programme Coordinator, MTech-DSAI



**Prof. G. A. Patil**  
Director, School of Computational Sciences



**Prof. R. S. Deshpande**  
Dean, Faculty of Science and Technology



**Dr. Anuradha S. Deshpande**  
Associate Dean (Academics)




**Prof. B. B. Ahuja**  
Vice Chancellor, JSPM University Pune  
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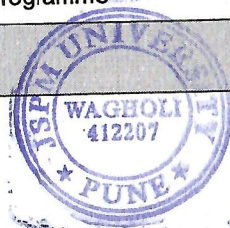
## COURSE STRUCTURE (NEP 2020 Aligned)

W. E. F  
RELEASE DATE  
REVISION NO.

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01/07/2024  
0.0 (NEP)

### SEMESTER II (LEVEL 6.5)

| COURSE      |              |   | TEACHING SCHEME |   |   |    | EXAMINATION SCHEME AND MARKS                         |                  |                           |  |  |   |  |  | TOTAL | CREDITS |   |
|-------------|--------------|---|-----------------|---|---|----|--|------------------|---------------------------|--|--|---|--|--|-------|---------|---|
| TYPE        | CODE         | COURSE NAME   | Hours / Week    |   |   |    | THEORY<br>(Equal Weightage for CIE and ESE)          |                  |                           | PRACTICAL<br>(Equal Weightage for CIE and ESE)   |  | ORAL<br>(Equal Weightage for CIE and ESE) |  |  |       |         |   |
|             |              |   | L               | T | P | EL | CONTINUOUS INSEMESTER EVALUATION<br>(100 / 25 Marks) |                  |                           | END SEMESTER EXAMINATION<br>(100 / 75/ 50 Marks) | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) | END SEMESTER EXAMINATION<br>(50 Marks)    | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) | END SEMESTER EXAMINATION<br>(50 Marks) |       |         |   |
|             |              |   |                 |   |   |    | T1<br>(30 Marks)                                     | T2<br>(30 Marks) | Assignments<br>(40 Marks) |  |  |   |  |  |       |         |   |
| PSMC        | 240GDSM04_02 | Applied Linear Algebra in AI and ML (MOOC)              | 3               | - | - | -  | 25   |                  |                           | 75   | -  | -   | -  | -                                      | 100   | 3       |   |
| PCC         | 240GDSM05_02 | Computational Data Science                              | 3               | - | - | -  | 30   | 30               | 40                        | 100  | -  | -   | -  | -                                      | 100   | 3       |   |
| PCC         | 240GDSM06_02 | Machine Intelligence and Data Analysis                  | 2               | - | - | 2  | 30   | 30               | 40                        | 100  | -  | -   | -  | -                                      | 100   | 2.5     |   |
| PCC         | 240GDSM07_02 | Advanced Neural Computing and Deep Learning             | 2               | - | - | -  | 30   | 30               | 40                        | 50   | -  | -   | -  | -                                      | 50    | 2       |   |
| MMC         | ---          | Multidisciplinary Minor Course                          | 1               | - | 2 | -  | -  | -                | -                         | -  | 50   | 50  | 50   | 50                                     | 100   | 2       |   |
| VSC         | 230IINB02_02 | Innovation  | 1               | - | - | 2  | -  | -                | -                         | -  | -  | -   | 50   | 50                                     | 50    | 1.5     |   |
| AEC (HSMC)  | 230UENM02_02 | Business Communication                                  | 1               | - | 2 | -  | 30   | 30               | 40                        | 50   | -  | -   | -  | -                                      | 50    | 2       |   |
| RMC         | 230IRMM02_02 | Research Design and Techniques                          | 2               | - | - | -  | 30   | 30               | 40                        | 50   | -  | -   | -  | -                                      | 50    | 1       |   |
| LC          | 240GDSM08_02 | Computational Data Science Lab                          | -               | - | 2 | -  | -  | -                | -                         | -  | 50   | 50  | -  | -                                      | 50    | 1       |   |
| LC          | 240GDSM09_02 | Advanced Neural Computing and Deep Learning Lab         | -               | - | 2 | -  | -  | -                | -                         | -  | 50   | 50  | -  | -                                      | 50    | 1       |   |
| IITP/FP/CEP | 230GDSM05_02 | Internship/Field Project/Community Engagement Programme | 4 to 6 weeks    |   |   |    | -  | -                | -                         | -  | -  | -   | -  | 50                                     | 50    | 50      | 2 |
| TOTAL       |              |   | 15              | - | 8 | 4  |  |                  |                           |  |  |   |  |  | 750   | 22      |   |



| Multidisciplinary Minor Course (MMC) |                          |                    |
|--------------------------------------|--------------------------|--------------------|
| Course Code                          | 230GRAM24_01             | 230GETM17_02       |
| Course Name                          | Sensors and Automation   | Embedded System    |
| Course Code                          | 230GETM28_02             | 230VOSM26_02       |
| Course Name                          | IoT and Embedded Systems | Project Management |

**Note:** A Postgraduate Diploma will be awarded if a student exits after first year.

For "Exit" at the end of "First Year" the student must complete a total of 8 additional credits.


- An internship / OJT of 8 - 10 weeks (4 credits) over and above semester 6 internship of minimum 4 weeks.
- Additional one Course of 4 credits (Course offered will be Vocational Skill Course (VSC) or Skill Enhancement Course (SEC) or a mini project).



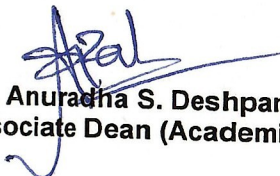
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W. E. F

2025-2026

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SECOND YEAR MASTER OF TECHNOLOGY  
(DATA SCIENCE AND ARTIFICIAL INTELLIGENCE)

REVISION NO.

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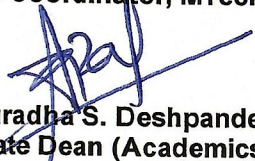
### SEMESTER III (LEVEL 7)

| COURSE        |              |                                    | TEACHING SCHEME |          |          |           | EXAMINATION SCHEME AND MARKS                    |                  |                           |  |  |  |  |  |     |   | TOTAL      | CREDITS   |
|---------------|--------------|------------------------------------|-----------------|----------|----------|-----------|---|------------------|---------------------------|--|--|--|--|--|-----|---|------------|-----------|
| TYPE          | CODE         | COURSE NAME                        | Hours / Week    |          |          |           | THEORY<br>(Equal Weightage for CIE and ESE)     |                  |                           |  | PRACTICAL<br>(Equal Weightage for CIE and ESE) |  | ORAL<br>(Equal Weightage for CIE and ESE)      |  |     |   |            |           |
|               |              |                                    | L               | T        | P        | EL        | CONTINUOUS INSEMESTER EVALUATION<br>(100 Marks) |                  |                           | END SEMESTER EXAMINATION<br>(100 / 50 Marks) | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) | END SEMESTER EXAMINATION<br>(50 Marks) | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) | END SEMESTER EXAMINATION<br>(50 Marks) |     |   |            |           |
|               |              |                                    |                 |          |          |           | T1<br>(30 Marks)                                | T2<br>(30 Marks) | Assignments<br>(40 Marks) |  |  |  |  |  |     |   |            |           |
| PEC           | ---          | Programme Elective Course - I      | 3               | -        | -        | -         | 30  | 30               | 40                        | 100  | -  | -                                      | -  | -                                      | 100 | 3 |            |           |
|               | ---          | Programme Elective Course - II     | 3               | -        | -        | -         | 30  | 30               | 40                        | 100  | -  | -                                      | -  | -                                      | 100 | 3 |            |           |
| VEC<br>(HSMC) | 230USYB01_03 | Behavioral Science and Ethics      | 2               | -        | -        | -         | 30  | 30               | 40                        | 50   | -  | -                                      | -  | -                                      | 50  | 2 |            |           |
| IOC           | ---          | Interdisciplinary Open Course - I  | 2               | -        | -        | -         | 30  | 30               | 40                        | 100  | -  | -                                      | -  | -                                      | 100 | 2 |            |           |
|               | ---          | Interdisciplinary Open Course - II | 2               | -        | -        | -         | 30  | 30               | 40                        | 100  | -  | -                                      | -  | -                                      | 100 | 2 |            |           |
| PROJ          | 240GCSM14_03 | Field Project                      | -               | -        | 4        | 8         | -   | -                | -                         | -  | -  | -                                      | 100  | 100                                    | 100 | 4 |            |           |
| SLC           | 231GDSM12_03 | Seminar                            | -               | -        | -        | 8         | -   | -                | -                         | -  | -  | -                                      | 50   | 50                                     | 50  | 2 |            |           |
| <b>TOTAL</b>  |              |                                    | <b>12</b>       | <b>-</b> | <b>4</b> | <b>16</b> |   |                  |                           |  |  |  |  |  |     |   | <b>600</b> | <b>18</b> |
| MLC#          | 240GCSM15_03 | Audit Course 1                     | 1               | -        | -        | -         | -   | -                | -                         | 50   | -  | -                                      | -  | -                                      | 50  | 1 |            |           |

| Program Elective Course (PEC) |                |                                  |  |  |                 |
|-------------------------------|----------------|----------------------------------|--|--|-----------------|
| Sem.                          | Specialization | Computer Science and Engineering | Data Science and Artificial Intelligence | Information Security                   | Cloud Computing |
| III<br>(PEC-I)                | Course Code    | 230GCSM09_03                     | 230GCSM18_03                             | 230GCSM14_03                           | 230GCSM40_03    |
|                               | Course Name    | Network Management               | Pattern Recognition                      | Blockchain Technology and Applications | Edge Computing  |
| III<br>(PEC-II)               | Course Code    | Real Time Operating Systems      | 240GDSM03_03                             | 230GISM10_03                           | 230GCSM41_03    |
|                               | Course Name    | 240GCSM13_03                     | Natural Language Processing              | Security Standards and Frameworks      | Fog Computing   |

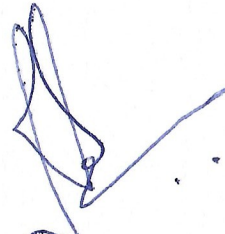
| Sem.            | Interdisciplinary Open Course (IOC) |                                    |                                      |                             |
|-----------------|-------------------------------------|------------------------------------|--------------------------------------|-----------------------------|
| III<br>(IOC-I)  | Course Code                         | 230HFGM25_03                       | 230VMSM05_03                         | 230GCEB31_03                |
|                 | Course Name                         | Intellectual Property              | Fundamentals of Financial Management | E-Waste Management          |
| III<br>(IOC-II) | Course Code                         | 230GRAM51_03                       | 230VBCB14_03                         | 230GCEB40_03                |
|                 | Course Name                         | Industrial Robotics and Automation | E-Commerce                           | Smart Transportation System |


  
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## SEMESTER IV (LEVEL 7)

| TYPE         | CODE         | COURSE NAME                         | TEACHING SCHEME |          |           |           | EXAMINATION SCHEME AND MARKS                         |                  |                           |   |  |   |  | TOTAL      | CREDITS    |  |           |
|--------------|--------------|-------------------------------------|-----------------|----------|-----------|-----------|--|------------------|---------------------------|---|--|---|--|------------|------------|--|-----------|
|              |              |                                     | Hours / Week    |          |           |           | THEORY<br>(Equal Weightage for CIE and ESE)          |                  |                           | PRACTICAL<br>(Equal Weightage for CIE and ESE)    |  | ORAL<br>(Equal Weightage for CIE and ESE) |  |            |            |  |           |
|              |              |                                     | L               | T        | P         | EL        | CONTINUOUS INSEMESTER EVALUATION<br>(100 / 25 Marks) |                  |                           | END SEMESTER EXAMINATION<br>(100 / 75 / 50 Marks) | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) | END SEMESTER EXAMINATION<br>(50 Marks)    | CONTINUOUS INSEMESTER EVALUATION<br>(50 Marks) |            |            | END SEMESTER EXAMINATION<br>(50 Marks) |           |
|              |              |                                     |                 |          |           |           | T1<br>(30 Marks)                                     | T2<br>(30 Marks) | Assignments<br>(40 Marks) |   |  |   |  |            |            |  |           |
| PEC          | ---          | Programme Elective Course - III     | 3               | -        | -         | -         | 25   |                  |                           | 75  | -  | -   | -  | -          | 100        | 3                                      |           |
| PEC          | ---          | Programme Elective Course - IV      | 3               | -        | -         | -         | 25   |                  |                           | 75  | -  | -   | -  | -          | 100        | 3                                      |           |
| PROJ         | 231GCSM25_04 | Project / Internship with Project   | -               | -        | 12        | 24        | -  | -                | -                         | -   | -  | -   | -  | 300        | 300        | 100                                    | 3         |
| <b>TOTAL</b> |              |                                     | <b>6</b>        | <b>-</b> | <b>12</b> | <b>24</b> |  |                  |                           |   |  |   |  | <b>300</b> | <b>300</b> | <b>300</b>                             | <b>12</b> |
| MLC#         | 230UPOB02_04 | Introduction to Indian Constitution | 1               | -        | -         | -         | -  | -                | -                         | 50  | -  | -   | -  | -          | -          | <b>500</b>                             | <b>18</b> |
|              |              |                                     |                 |          |           |           |  |                  |                           |   |  |   |  |            |            | <b>50</b>                              | <b>1</b>  |

| Sem.            | Specialization | Program Elective Course (PEC)                  |   |  |   |
|-----------------|----------------|--|---|--|---|
|                 |                | Computer Science and Engineering               | Data Science and Artificial Intelligence                  | Information Security                     | Cloud Computing                         |
| IV<br>(PEC-III) | Course Code    | 230GCSM08_04                                   | 230GAIB26_04  | 230GCSB99_04                             | 230GISM11_04                            |
|                 | Course Name    | Parallel Computer Architecture (NPTEL MOOC)    | Reinforcement Learning (NPTEL MOOC)                       | Cryptography and Network Security        | Cloud Computing (NPTEL MOOC)            |
| IV<br>(PEC-IV)  | Course Code    | 230GCSB56_04                                   | 230GDSM15_04  | 230GISM07_04                             | 230GCSM43_04                            |
|                 | Course Name    | Business Intelligence & Analytics (NPTEL MOOC) | Introduction to Large Language Models (LLMs) (NPTEL MOOC) | Foundations of Cryptography (NPTEL MOOC) | Secure Computation: Part I (NPTEL MOOC) |

*[Signature]*  
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