

For Internal Communication

**Department of Artificial Intelligence and Machine Learning**  
**Scheme of Teaching for 2022-26 batch- Choice Based Credit System (CBCS) Total Credits – 120**

**III Semester B.E. Curriculum**

| Sl. No       | Type of Course | Course Code | Course Title                                                | Teaching Department | Hours per week |              |               |             | Subject Contact Hours | Credits   | Examination |            |            |
|--------------|----------------|-------------|-------------------------------------------------------------|---------------------|----------------|--------------|---------------|-------------|-----------------------|-----------|-------------|------------|------------|
|              |                |             |                                                             |                     | Lecture (L)    | Tutorial (T) | Practical (P) | Project (J) |                       |           | CIA         | SEA        | Total      |
| 1            | BSC            | 22MAI131    | Fourier Transform, Fundamentals of logic and Linear Algebra | Mathematics         | 2              | 2            | -             | -           | 4                     | 3         | 50          | 50         | 100        |
| 2            | PCC            | 22AML132    | Computer Organization and Architecture                      | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 3            | PCI            | 22AML133    | Artificial Intelligence                                     | AIML                | 1              | 2            | 2             | -           | 5                     | 3         | 50          | 50         | 100        |
| 4            | PCI            | 22AML134    | Data Structures & Applications                              | AIML                | 3              | -            | 2             | -           | 5                     | 4         | 50          | 50         | 100        |
| 5            | PCI            | 22AML135    | Microcontroller and Embedded Systems                        | AIML                | 3              | -            | 2             | -           | 5                     | 4         | 50          | 50         | 100        |
| 6            | PBL            | 22AML136    | Object Oriented Programming using Java                      | AIML                | -              | -            | 2             | 2           | 4                     | 2         | 50          | 50         | 100        |
| 7            | PBL            | 22AML137    | Innovative Project Lab (Social Concern)                     | AIML                | -              | -            | -             | 2           | 2                     | 1         | 100         | -          | 100        |
| 8            | AEC            | 22SFT138    | Soft Skill - 1                                              | HSS                 | -              | -            | 2             | -           | 2                     | 1         | 100         | -          | 100        |
| <b>Total</b> |                |             |                                                             |                     | <b>12</b>      | <b>4</b>     | <b>10</b>     | <b>4</b>    | <b>30</b>             | <b>21</b> | <b>500</b>  | <b>300</b> | <b>800</b> |

BSC - Basic Science Course  
PCL – Professional Core Laboratory  
PBL - Project Based Learning  
AEC - Ability Enhancement Course  
Activity

PCC- Professional Core Course  
PCE - Professional Core Elective  
INT - Internship  
UHV - Universal Human Values

PCI-Professional Core Integrated  
POE- Professional Open Elective  
PRJ – Project Work  
HSS - Humanity and Social Science

CIA: Continuous Internal Assessment  
SEA: Semester End Assessment

AICTE Activity Points to be earned by students admitted to BE day college programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines): Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other institutions and Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to BNMIT. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

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**Department of Artificial Intelligence and Machine Learning**  
**Scheme of Teaching for 2022-26 batch- Choice Based Credit System (CBCS) Total Credits – 120**  
**IV Semester B.E. Curriculum**

| Sl. No.      | Type of Course | Course Code | Course Title                                  | Teaching Department | Hours per week |              |               |             | Subject Contact Hours | Credits   | Examination |            |            |
|--------------|----------------|-------------|-----------------------------------------------|---------------------|----------------|--------------|---------------|-------------|-----------------------|-----------|-------------|------------|------------|
|              |                |             |                                               |                     | Lecture (L)    | Tutorial (T) | Practical (P) | Project (J) |                       |           | CIA         | SEA        | Total      |
| 1            | BSC            | 22MAI141    | Statistics, Probability and Graph theory      | Mathematics         | 2              | 2            | -             | -           | 4                     | 3         | 50          | 50         | 100        |
| 2            | PCC            | 22AML142    | Operating System                              | AIML                | 2              | 1            | 1             | -           | 4                     | 3         | 50          | 50         | 100        |
| 3            | PCI            | 22AML143    | Database Management System                    | AIML                | 3              | -            | 1             | 1           | 5                     | 3         | 50          | 50         | 100        |
| 4            | PCI            | 22AML144    | Design and Analysis of Algorithms             | AIML                | 3              | -            | 2             | -           | 5                     | 4         | 50          | 50         | 100        |
| 5            | PCI            | 22AML145    | Machine Learning                              | AIML                | 1              | 2            | 2             | -           | 5                     | 3         | 50          | 50         | 100        |
| 6            | PBL            | 22AML146    | Python Programming and Applications           | AIML                | -              | -            | 2             | 2           | 4                     | 2         | 50          | 50         | 100        |
| 7            | AEC            | 22CIP147    | Constitution of India and Professional Ethics | HSS                 | -              | 2            | -             | -           | 2                     | 1         | 100         | -          | 100        |
| 8            | AEC            | 22SFT148    | Soft Skill-II                                 | HSS                 | -              | 2            | -             | -           | 2                     | 1         | 100         | -          | 100        |
| 9            | INT            | 22AML149    | Internship – I/ IPL (Social Concern)          | AIML                | -              | -            | 2             | 2           | 4                     | 2         | 100         | -          | 100        |
| <b>Total</b> |                |             |                                               |                     | <b>11</b>      | <b>9</b>     | <b>10</b>     | <b>5</b>    | <b>35</b>             | <b>22</b> | <b>600</b>  | <b>300</b> | <b>900</b> |

**Internship-I:** All the students registered to III year of BE shall have to undergo mandatory internal internship of 3 weeks during II semester or III semester vacation. Semester End Assessment will be conducted in IV semester and the prescribed credit will be included. Internship shall be considered as a head of passing and shall be considered for the award of degree.

**Activity**

AICTE Activity Points to be earned by students admitted to BE day college programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines): Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other institutions and Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to BNMIT. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

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**Department of Artificial Intelligence and Machine Learning**  
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**V Semester B.E. Curriculum**

| Sl. No       | Type of Course | Course Code | Course Title                                         | Teaching Department | Hours per week |              |               |             | Subject Contact Hours | Credits   | Examination |            |            |
|--------------|----------------|-------------|------------------------------------------------------|---------------------|----------------|--------------|---------------|-------------|-----------------------|-----------|-------------|------------|------------|
|              |                |             |                                                      |                     | Lecture (L)    | Tutorial (T) | Practical (P) | Project (J) |                       |           | CIA         | SEA        | Total      |
| 1            | PCC            | 22AML151    | Software Engineering, Project Management and Finance | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 2            | PCC            | 22AML152    | Automata Theory and Computations                     | AIML                | 2              | 1            | 1             | -           | 4                     | 3         | 50          | 50         | 100        |
| 3            | PCI            | 22AML153    | Computer Networks & Security                         | AIML                | 3              | -            | 2             | -           | 5                     | 4         | 50          | 50         | 100        |
| 4            | PCI            | 22AML154    | Advanced Machine Learning                            | AIML                | 3              | -            | 1             | 1           | 5                     | 4         | 50          | 50         | 100        |
| 5            | PBL            | 22AML155    | Virtual Reality and Augmented Reality                | AIML                | -              | -            | 2             | 2           | 4                     | 2         | 50          | 50         | 100        |
| 6            | POE            | 22AML156x   | Open Elective - I                                    | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 7            | AEC            | 22AML157    | Employability Skills - I                             | T & P               | -              | 2            | -             | -           | 2                     | 1         | 100         | -          | 100        |
| 8            | INT            | 22AML158    | Internship-II/ IPL                                   | AIML                | -              | -            | 2             | 2           | 2                     | 2         | 100         | -          | 100        |
| <b>Total</b> |                |             |                                                      |                     | <b>14</b>      | <b>3</b>     | <b>8</b>      | <b>5</b>    | <b>28</b>             | <b>22</b> | <b>500</b>  | <b>300</b> | <b>800</b> |

**OPEN ELECTIVES:**

|                     |                           |                           |                                    |                               |
|---------------------|---------------------------|---------------------------|------------------------------------|-------------------------------|
| <b>Course Code</b>  | <b>22AML1561</b>          | <b>22AML1562</b>          | <b>22AML1563</b>                   | <b>22AML1564</b>              |
| <b>Course Title</b> | <b>Introduction to ML</b> | <b>Introduction to AI</b> | <b>Data Driven Decision Making</b> | <b>Sensors &amp; Robotics</b> |

**Internship-II:** All the students registered to III year of BE shall have to undergo mandatory internship of 3 to 4 weeks during IV semester vacation. Semester End Assessment will be conducted in V semester and the prescribed credit will be included. Internship shall be considered as a head of passing and shall be considered for the award of degree.

**Activity**

AICTE Activity Points to be earned by students admitted to BE day college programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines): Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other institutions and Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to BNMIT. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

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**Department of Artificial Intelligence and Machine Learning**  
**Scheme of Teaching for 2022-26 batch- Choice Based Credit System (CBCS) Total Credits – 120**  
**VI Semester B.E. Curriculum**

| Sl. No.      | Type of course | Course Code | Course Title                         | Teaching Department | Hours per week |              |               |             | Subject Contact Hours | Credits   | Examination |            |            |
|--------------|----------------|-------------|--------------------------------------|---------------------|----------------|--------------|---------------|-------------|-----------------------|-----------|-------------|------------|------------|
|              |                |             |                                      |                     | Lecture (L)    | Tutorial (T) | Practical (P) | Project (J) |                       |           | CIA         | SEA        | Total      |
| 1            | PCI            | 22AML161    | Deep Learning                        | AIML                | 2              | -            | 2             | -           | 4                     | 3         | 50          | 50         | 100        |
| 2            | PCI            | 22AML162    | Natural Language Processing          | AIML                | 2              | -            | 2             | -           | 4                     | 3         | 50          | 50         | 100        |
| 3            | PCI            | 22AML163    | Image Processing and Computer Vision | AIML                | 3              | -            | 1             | 1           | 5                     | 4         | 50          | 50         | 100        |
| 4            | PBL            | 22AML164    | Big Data Analytics                   | AIML                | -              | -            | 2             | 2           | 4                     | 2         | 50          | 50         | 100        |
| 5            | PCE            | 22AML165x   | Professional Elective – I            | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 6            | PCE            | 22AML166x   | Professional Elective – II (MOOC)    | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 7            | POE            | 22AML167x   | Open Elective - II                   | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 8            | AEC            | 22AML168    | Employability Skills - II            | T & P               | -              | -            | 2             | -           | 2                     | 1         | 100         |            | 100        |
| <b>Total</b> |                |             |                                      |                     | <b>16</b>      | <b>-</b>     | <b>9</b>      | <b>3</b>    | <b>28</b>             | <b>22</b> | <b>450</b>  | <b>350</b> | <b>800</b> |

**OPEN ELECTIVES:**

|                     |                                                  |                                    |                        |                                                |
|---------------------|--------------------------------------------------|------------------------------------|------------------------|------------------------------------------------|
| <b>Course Code</b>  | <b>22AML1671</b>                                 | <b>22AML1672</b>                   | <b>22AML1673</b>       | <b>22AML1674</b>                               |
| <b>Course Title</b> | <b>Big Data Analytics and Data Visualization</b> | <b>Natural Language Processing</b> | <b>Computer Vision</b> | <b>Virtual Reality &amp; Augmented Reality</b> |

**Activity**

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**Professional Elective MOOC:** Tentative, changes based on courses offered during the semester.

For Internal Communication

**Department of Artificial Intelligence and Machine Learning****Scheme of Teaching for 2022-26 batch- Choice Based Credit System (CBCS) Total Credits – 120****VII Semester B.E. Curriculum**

| Sl. No       | Type of course | Course Code | Course Title                                          | Teaching Department | Hours per week |              |               |             | Subject Contact Hours | Credits   | Examination |            |            |
|--------------|----------------|-------------|-------------------------------------------------------|---------------------|----------------|--------------|---------------|-------------|-----------------------|-----------|-------------|------------|------------|
|              |                |             |                                                       |                     | Lecture (L)    | Tutorial (T) | Practical (P) | Project (J) |                       |           | CIA         | SEA        | Total      |
| 1            | PCI            | 22AML171    | Generative Artificial Intelligence                    | AIML                | 2              | -            | 2             | -           | 4                     | 3         | 50          | 50         | 100        |
| 2            | PCE            | 22AML172x   | Professional Elective – III                           | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 3            | PCE            | 22AML173x   | Professional Elective – IV (MOOC)                     | AIML                | 3              | -            | -             | -           | 3                     | 3         | 50          | 50         | 100        |
| 4            | AEC            | 22AML174    | Research Methodology and Intellectual Property Rights | AIML                | 2              | -            | -             | -           | 2                     | 2         | 100         |            | 100        |
| 5            | PRJ            | 22AML175    | Project Work Phase – I                                | AIML                | -              | -            | -             | 10          | 10                    | 5         | 100         |            | 100        |
| <b>Total</b> |                |             |                                                       |                     | <b>10</b>      | <b>-</b>     | <b>2</b>      | <b>10</b>   | <b>22</b>             | <b>16</b> | <b>350</b>  | <b>150</b> | <b>500</b> |

**Project Work Phase - 1:** Based on the abilities of the students and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

**Activity**

AICTE Activity Points to be earned by students admitted to BE day college programme (For more details refer to Chapter 6, AICTE Activity Point Programme, Model Internship Guidelines): Over and above the academic grades, every Day College regular student admitted to the 4 years Degree programme and every student entering 4 years Degree programme through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Programme. Students transferred from other institutions and Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to BNMIT. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, anytime during the semester weekends and holidays, as per the liking and convenience of the student from the year of entry to the programme. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity Points, Eighth semester Grade Card shall be issued only after earning the required activity Points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

**Professional Elective MOOC:** Tentative, changes based on courses offered during the semester.

For Internal Communication

**Department of Artificial Intelligence and Machine Learning****Scheme of Teaching for 2021-25 batch- Choice Based Credit System (CBCS) Total Credits – 120****VIII Semester B.E. Curriculum**

| Sl. No. | Type of course | Course Code | Course Title                     | Teaching Department | Hours per week |              |               |             | Subject Contact Hours | Credits | Examination |     |       |
|---------|----------------|-------------|----------------------------------|---------------------|----------------|--------------|---------------|-------------|-----------------------|---------|-------------|-----|-------|
|         |                |             |                                  |                     | Lecture (L)    | Tutorial (T) | Practical (P) | Project (J) |                       |         | CIA         | SEA | Total |
| 1       | PCE            | 22AML181x   | Professional Elective – V (MOOC) | AIML                | 3              | -            | -             | -           | 3                     | 3       | 50          | 50  | 100   |
| 2       | INT            | 22AML182    | Internship-III                   | AIML                | -              | -            | 8             | -           | 8                     | 4       | 50          | 50  | 100   |
| 3       | PRJ            | 22AML183    | Project Work Phase-II            | AIML                | -              | -            | -             | 20          | 20                    | 10      | 50          | 50  | 100   |
| Total   |                |             |                                  |                     | 3              | -            | 8             | 20          | 31                    | 17      | 150         | 150 | 300   |

**Project Work Phase - II:** Based on the abilities of the students and recommendations of the mentor, a single discipline or a multidisciplinary project can be assigned to an individual student or to a group having not more than 4 students. In extraordinary cases, like the funded projects requiring students from different disciplines, the project student strength can be 5 or 6.

**Internship - III:** All the students admitted to III year of BE shall have to undergo mandatory internship of 6 months during the vacation of VI semester and during VII semester. End Assessment will be conducted in VIII semester and the prescribed credit shall be included. Internship shall be considered as a head of passing and shall be considered for the award of degree.

**Activity**

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**Professional Elective MOOC:** Tentative, changes based on courses offered during the semester.

# *B.N.M. Institute of Technology*

An Autonomous Institution under VTU

For Internal Communication

| PROFESSIONAL ELECTIVE COURSES |                                            |                                  |                                    |                           |                                                     |                                          |
|-------------------------------|--------------------------------------------|----------------------------------|------------------------------------|---------------------------|-----------------------------------------------------|------------------------------------------|
|                               |                                            | 6 <sup>th</sup> Semester         |                                    | 7 <sup>th</sup> Semester  |                                                     | 8 <sup>th</sup> Semester                 |
| Sl. No.                       | Clusters                                   | Elective – I                     | Elective – II (MOOC)               | Elective – III            | Elective – IV (MOOC)                                | Elective – V (MOOC)                      |
| 1                             | <u>Intelligent Systems</u>                 | Recommender Systems              | Responsible AI                     | Reinforcement Learning    | Quantum ML                                          | MLops                                    |
| 2                             | <u>Robotics</u>                            | Embedded Systems                 | Robotic Process Automation         | Digital Twinning          | Robotics & Control: Theory & Practice               | Computer Integrated Manufacturing System |
| 3                             | <u>Gamification</u>                        | Computer Graphics & Applications | Game Theory and Programming        | 3D Graphics and Animation | Multimedia Tools & Applications                     | Game Design and Development              |
| 4                             | <u>Cryptography &amp; Network Security</u> | Cryptography                     | Cyber Security & Privacy           | Blockchain Technology     | Ethical Hacking                                     | Malware Analysis                         |
| 5                             | <u>Data Science</u>                        | Data Warehousing & Data Mining   | Data Science                       | Predictive Analytics      | R Programming                                       | Graph Neural Network                     |
| 6                             | <u>General</u>                             | Mobile Application Development   | Devops on AWS specialization       | Operations Research       | Machine Learning Operations for Productions (MLOPs) | High Performance Computing               |
| 7                             | <u>Management</u>                          | Strategic Management             | Accounting & Finance for Engineers | Knowledge Management      | Digital Marketing                                   | Business Intelligence                    |