

# B N M Institute of Technology

An Autonomous Institution under VTU. Approved by AICTE

**Department: Electronics and Communication Engineering**

**Scheme of Teaching and Examination - Autonomous Effective from Academic year 2024-25**

**I Semester M. Tech (VLSI Design and Embedded Systems)**

| Sl. No. | Course Type | Course Code | Course Title                                 |                         | Teaching Department | Teaching Hours /Week |   |   |   | Hours/ Week | Examination |           |           |             |
|---------|-------------|-------------|----------------------------------------------|-------------------------|---------------------|----------------------|---|---|---|-------------|-------------|-----------|-----------|-------------|
|         |             |             |                                              |                         |                     | L                    | T | P | J |             | Credits     | CIA Marks | SEA Marks | Total Marks |
| 1       | PCC         | 24VDE211    | ASIC Design                                  |                         | ECE                 | 4                    | - | - | - | 4           | 4           | 50        | 50        | 100         |
| 2       | PCI         | 24VDE212    | Real Time Embedded Systems                   |                         | ECE                 | 3                    | - | 2 | - | 5           | 4           | 50        | 50        | 100         |
| 3       | PCI         | 24VDE213    | CMOS Circuit Design                          |                         | ECE                 | 3                    | - | 2 | - | 5           | 4           | 50        | 50        | 100         |
| 4       | PBL         | 24VDE214    | Advanced Digital System Design using Verilog |                         | ECE                 | 2                    | - | 2 | 2 | 6           | 4           | 50        | 50        | 100         |
| 5       | PEC         | 24VDEP215X  | 24VDEP2151                                   | Advances in VLSI Design | ECE                 | 3                    | - | 2 | - | 3           | 4           | 50        | 50        | 100         |
|         | 24VDEP2152  |             | Nano Technology                              |                         |                     |                      |   |   |   |             |             |           |           |             |
|         | 24VDEP2153  |             | Internet of Things and its Applications      |                         |                     |                      |   |   |   |             |             |           |           |             |
| 6       | PCC         | 24VDE216    | Research Methodology & IPR                   |                         | ECE                 | 2                    | - | - | - | 2           | 2           | 50        | 50        | 100         |
| TOTAL   |             |             |                                              |                         |                     | 17                   | 0 | 8 | 2 | 25          | 22          | 300       | 300       | 600         |

**L**-Theory lecture, **T** – Tutorial, **P** – Practical, **J** – Project **NCMC**- Non-Credit Mandatory Course

**CIA**: Continuous Internal Assessment, **SEA**: Semester End Assessment

**Note:** **PCC**: Professional Core Course, **HSS**: Humanity and Social Science & Management Courses, **PCI**: Professional Core Integrated

**PBL**: Project Based Learning **AEC**: Ability Enhancement Courses, **PEC**: Professional Elective, **INT**: Summer Internship, **PRJ**: Project Work

**Credit definition:** 1 hour Lecture (L) per week = 1 Credit

2 hours Tutorial (T) per week = 1 Credit

2 hours Practical /Drawing (P) per week = 1 Credit

2 hours Project Component (J) per week = 1 Credit

(a) 4 Credit courses are to be designed for 50 hours Teaching – Learning process.

(b) 3 Credit courses are to be designed for 40 hours Teaching – Learning process.

(c) 2 Credit courses are to be designed for 25 hours Teaching – Learning process

(d) 1 Credit course are to be designed for 12-15 hours Teaching – Learning process

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## II Semester M. Tech (VLSI Design and Embedded Systems)

| Sl. No | Course Type | Course Code | Course Title                                  |                          | Teaching Department | Teaching Hours /Week |   |   |   | Hours/ Week | Examination |           |           |             |
|--------|-------------|-------------|-----------------------------------------------|--------------------------|---------------------|----------------------|---|---|---|-------------|-------------|-----------|-----------|-------------|
|        |             |             |                                               |                          |                     | L                    | T | P | J |             | Credits     | CIA Marks | SEA Marks | Total Marks |
| 1      | PCC         | 24VDE221    | VLSI Testing and Testability                  |                          | ECE                 | 4                    | - | - | - | 4           | 4           | 50        | 50        | 100         |
| 2      | PCI         | 24VDE222    | Low Power VLSI Design                         |                          | ECE                 | 3                    | - | 2 | - | 5           | 4           | 50        | 50        | 100         |
| 3      | PCI         | 24VDE223    | Design of Analog and Mixed Mode VLSI Circuits |                          | ECE                 | 3                    | - | 2 | - | 5           | 4           | 50        | 50        | 100         |
| 4      | PBL         | 24VDE224    | System Verilog for Verification               |                          | ECE                 | 2                    | - | 2 | 2 | 6           | 4           | 50        | 50        | 100         |
| 5      | PEC         | 24VDEP225X  | 24VDEP2251                                    | Reconfigurable Computing | ECE                 | 3                    | - | - | - | 3           | 3           | 50        | 50        | 100         |
|        | 24VDEP2252  |             | Static Timing Analysis                        |                          |                     |                      |   |   |   |             |             |           |           |             |
|        | 24VDEP2253  |             | Wearable Technology                           |                          |                     |                      |   |   |   |             |             |           |           |             |
| 6      | PCC         | 24VDE226    | Project Management and Finance                |                          | ECE                 | 3                    | - | - | - | 3           | 3           | 50        | 50        | 100         |
| TOTAL  |             |             |                                               |                          |                     | 18                   | 0 | 6 | 2 | 26          | 22          | 300       | 300       | 600         |

**Summer Internship to be carried out during the vacation between II & III Semester**

**Summer Internship - I (24VDEI235):** All the students registered to II year of MTech shall have to undergo mandatory internship of 4 weeks during II semester or III semester vacation. Semester End Assessment will be conducted in III 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. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequent examination after satisfying the internship requirements. (The faculty coordinator or mentor has to monitor the students' internship progress and interact to guide them for the successful completion of the internship.)

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#### III Semester M. Tech (VLSI Design and Embedded Systems)

| Sl. No | Course Type | Course Code | Course Title                                   |                                             | Teaching Department | Teaching Hours /Week |   |   |    |             | Examination |           |           |             |
|--------|-------------|-------------|------------------------------------------------|---------------------------------------------|---------------------|----------------------|---|---|----|-------------|-------------|-----------|-----------|-------------|
|        |             |             |                                                |                                             |                     | L                    | T | P | J  | Hours /Week | Credits     | CIA Marks | SEA Marks | Total Marks |
| 1      | PCC         | 24VDE231    | CMOS RF Circuits Design                        |                                             | ECE                 | 3                    | - | - | -  | 3           | 3           | 50        | 50        | 100         |
| 2      | PCC         | 24VDE232    | CAD for Digital Systems                        |                                             | ECE                 | 3                    | - | - | -  | 3           | 3           | 50        | 50        | 100         |
| 3      | PEC         | 24VDEP233X  | 24VDEP2331                                     | VLSI Design for Signal Processing           | ECE                 | 3                    | - | - | -  | 3           | 3           | 50        | 50        | 100         |
|        | 24VDPE2332  |             | Machine Learning using Python                  | -                                           |                     |                      | - | - |    |             |             |           |           |             |
|        | 24VDEP2333  |             | Synthesis and Optimisation of Digital Circuits | -                                           |                     |                      | - | - |    |             |             |           |           |             |
| 4      | PEC         | 24VDEP234X  | 24VDEP2341                                     | MOOC/NPTEL (Subjected to offering by NPTEL) | ECE                 | 3                    | - | - | -  | 3           | 3           | 50        | 50        | 100         |
| 5      | INT         | 24VDEI235   | Internship                                     |                                             |                     | -                    | - | 6 | -  | 6           | 3           | 50        | 50        | 100         |
| 6      | PRJ         | 24VDEJ236   | Project Work Phase-1                           |                                             |                     | -                    | - | - | 10 | 10          | 5           | 100       | -         | 100         |
| TOTAL  |             |             |                                                |                                             |                     | 12                   | - | 6 | 10 | 28          | 20          | 350       | 250       | 600         |

#### Summer Internship to be carried out during the vacation between II & III Semester

**Summer Internship - I (24VDEI235):** All the students registered to II year of M. Tech shall have to undergo mandatory internship of 6 weeks between II semester or III semester vacation. Semester End Assessment will be conducted in III 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. Those, who do not take up / complete the internship shall be declared fail and shall have to complete during subsequent examination after satisfying the internship requirements. (The faculty coordinator or mentor has to monitor the students' internship progress and interact to guide them for the successful completion of the internship.)

**Project work: Phase-1 (24VDEJ236):** 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. The progress of the project work will be evaluated continuously. There will be 2 seminars in 2 phases, evaluated by a panel of faculty members with HOD as the Chairperson.

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**IV Semester M. Tech (VLSI Design and Embedded Systems)**

| Sl. No | Course Type | Course Code | Course Title                                   | Teaching Department | Teaching Hours /Week |   |   |    |            | Examination |           |           |             |
|--------|-------------|-------------|------------------------------------------------|---------------------|----------------------|---|---|----|------------|-------------|-----------|-----------|-------------|
|        |             |             |                                                |                     | L                    | T | P | J  | Hours/Week | Credits     | CIA Marks | SEA Marks | Total Marks |
| 1      | PEC         | 24VDEP241X  | MOOC/NPTEL<br>(Subjected to offering by NPTEL) | Online              | 3                    | - | - | -  | 3          | 3           | 50        | 50        | 100         |
| 2      | PRJ         | 24VDEJ242   | Project Work Phase-2                           | ECE                 | -                    | - | - | 26 | 26         | 13          | 50        | 50        | 100         |
| TOTAL  |             |             |                                                |                     | 3                    | - | - | 26 | 29         | 16          | 100       | 100       | 200         |

**Project work:Phase-2 (24VDEJ242):** 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. The progress of the project work will be evaluated continuously. There will be 2 seminars in 2 phases and one final presentation with demonstration which are evaluated by a panel of faculty members with HOD as the Chairperson.