# Department of Mechanical Engineering (Mining Machinery Engineering)

## B. Tech. 1st Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | IDC1 | NMCI101 | Engineering Mathematics - I | 3-0-0 | Theory | 3 |
| 2 | IDC2 | NPHI101 | Engineering Physics | 3-0-0 | Theory | 3 |
| 3 | IDC3 | NPHI102 | Engineering Physics Lab | 0-0-2 | Practical | 1 |
| 4 | DSC1 | NMEC101 | Engineering Mechanics | 3-0-0 | Theory | 3 |
| 5 | DSC2 | NMEC102 | Engineering Mechanic Lab | 0-0-2 | Practical | 1 |
| 6 | ESC1 | NEEE101 | Electrical Devices and Circuits | 3-0-0 | Theory | 3 |
| 7 | AEC1 | NHSA101 | Communication Skills | 1-0-0 | Theory | 1 |
| 8 | AEC2 | NHSA102 | Communication Skills Lab | 0-0-2 | Practical | 1 |
| 9 | SEC1 | NCES101 | Engineering Graphics | 1-0-3 | Theory | 2.5 |
| 10 | VAC1 | NESV101 | Environmental Science | 3-0-0 | Theory | 3 |
| | | | | | | **21.5** |

## B. Tech. 2nd Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | IDC4 | NMCI102 | Engineering Mathematics - II | 3-0-0 | Theory | 3 |
| 2 | DSC3 | NMEC103 | Thermodynamics | 3-0-0 | Theory | 3 |
| 3 | DSC4 | NMEC104 | Thermodynamics Lab | 0-0-2 | Practical | 1 |
| 4 | ESC2 | NECE102 | Digital Electronics | 3-0-0 | Theory | 3 |
| 5 | AEC3 | NHSA103 | Understanding Human Behaviour | 2-1-0 | Theory | 3 |
| 6 | SEC2 | NMES101 | Manufacturing Process | 2-0-3 | Theory | 3.5 |
| 7 | VAC2 | NCSV101 | Computer Programming | 3-0-0 | Theory | 3 |
| 8 | VAC3 | NCSV102 | Computer Programming Lab | 0-0-2 | Practical | 1 |
| | | | | | | **20.5** |

## B. Tech. 3rd Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | DC3 | NMMC201 | Strength of Materials | 3-1-0 | Theory | 4 |
| 2 | DC4 | NMMC202 | Mechanics of Fluids | 3-1-0 | Theory | 4 |
| 3 | DC5 | NMMC203 | Theory of Machines | 3-1-0 | Theory | 4 |
| 4 | DP3 | NMMC204 | Strength of Materials and Theory of Machines Laboratory | 0-0-2 | Practical | 1 |
| 5 | DP4 | NMMC205 | Fluid Mechanics and Machines Laboratory | 0-0-2 | Practical | 1 |
| 6 | ESC3 | NMEE201 | Engineering Materials | 3-0-0 | Theory | 3 |
| 7 | AEC4 | NMEA201 | Introduction to MATLAB and SIMULINK | 3-0-0 | Theory | 3 |
| | | | | | | **20** |

## B. Tech. 4th Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | DC6 | NMMC206 | Opencast Mining Equipment | 3-1-0 | Theory | 4 |
| 2 | DC7 | NMMC207 | Hydraulics and Pneumatics | 3-1-0 | Theory | 4 |
| 3 | DC8 | NMMC208 | Fundamentals of Internal Combustion Engines | 3-1-0 | Theory | 4 |
| 4 | DP5 | NMMC209 | Hydraulics and Pneumatics Laboratory | 0-0-2 | Practical | 1 |
| 5 | DP6 | NMMC210 | Mining Machinery Laboratory - I | 0-0-2 | Practical | 1 |
| 6 | ESC4 | NMEE202 | Computer Aided Engineering Design | 3-0-0 | Theory | 3 |
| 7 | SEC4 | NMES201 | Computer Aided Machine Drawing | 3-0-0 | Theory | 3 |
| | | | | | | **20** |

## B. Tech. 5th Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | DC9 | NMMC301 | Underground Mining Equipment | 3-1-0 | Theory | 4 |
| 2 | DC10 | NMMC302 | Design of Machine Elements | 3-1-0 | Theory | 4 |
| 3 | DE1 | | *To be chosen from the pool.* | 3-0-0 | Theory | 3 |
| 4 | DP7 | NMMC303 | Design of Machine Laboratory | 0-0-2 | Practical | 1 |
| 5 | DP8 | NMMC304 | Mining Machinery Laboratory - II | 0-0-2 | Practical | 1 |
| 6 | HSSE1 | | *To be chosen from the HSS pool. HSS department to contribute courses to the pool below.* | 3-0-0 | Theory | 3 |
| 7 | DC1 (Minor)/ DC1 (Hons) | | | 3-1-0 | Theory | 4 |
| 8 | SDC1 (Minor)/ DP1 (Hons) | | | 0-0-3 | Practical | 1.5 |
| | | | | | | **21.5** |

## B. Tech. 6th Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | DC11 | NMMC305 | Mine Electrical Technology | 3-1-0 | Theory | 4 |
| 2 | DC12 | NMMC306 | Mineral Processing and Handling Equipment | 3-1-0 | Theory | 4 |
| 3 | DE2 | | *To be chosen from the pool.* | 3-0-0 | Theory | 3 |
| 4 | DP9 | NMMC307 | Mine Electrical Technology Laboratory | 0-0-2 | Practical | 1 |
| 5 | HSSE2 | | *To be chosen from the HSS pool. HSS department to contribute courses to the pool below.* | 3-0-0 | Theory | 3 |
| 6 | DC2 (Minor)/ DC2 (Hons) | | | 3-1-0 | Theory | 4 |
| 7 | SDC2 (Minor)/ DP2 (Hons) | | | 0-0-3 | Practical | 1.5 |
| | | | | | | **20.5** |

## B. Tech. 7th Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | DE3 | | *To be chosen from the pool.* | 3-0-0 | Theory | 3 |
| 2 | DE4 | | *To be chosen from the pool.* | 3-0-0 | Theory | 3 |
| 3 | DC3 (Minor)/ DC3 (Hons) | | | 3-1-0 | Theory | 4 |
| 4 | SDC3 (Minor)/ DP3 (Hons) | | | 0-0-3 | Practical | 1.5 |
| 5 | Project | NMMC401 | Project - I | 8-0-0 | Project | 8 |
| 6 | Internship | NMMS401 | Internship | 0-0-0 | Internship | 4 |
| | | | | | | **23.5** |

## B. Tech. 8th Semester Course Structure

| Sl. | Course Type | Course Code | Course Name | L-T-P | Course Category | Credits |
|---|---|---|---|---|---|---|
| 1 | DC4 (Minor)/ DC4 (Hons) | | | 3-1-0 | Theory | 4 |
| 2 | DC5 (Minor)/ DC5 (Hons) | | | 3-1-0 | Theory | 4 |
| 3 | SDC4 (Minor)/ DP4 (Hons) | | | 0-0-3 | Practical | 1.5 |
| 4 | Project | NMMC402 | Project - II | 8-0-0 | Project | 8 |
| | | | | | | **17.5** |

# POOLS/TABLES

## MINOR TABLE

| Title of Minor | | | Mining Machinery Engineering | | | | |
|---|---|---|---|---|---|---|---|
| **Sl.** | **Course Type** | **Course Code** | **Course Name** | **L-T-P** | **Course Category** | **Credits** | **Semester** |
| 1 | DC1 (Minor) | NMMC301 | Underground Mining Equipment | 3-1-0 | Theory | 4 | 5 |
| 2 | SDC1 (Minor) | NMMM301 | Mining Equipment Laboratory - I | 0-0-3 | Practical | 1.5 | 5 |
| 3 | DC2 (Minor) | NMMC206 | Opencast Mining Equipment | 3-1-0 | Theory | 4 | 6 |
| 4 | SDC2 (Minor) | NMMM302 | Mining Equipment Laboratory - II | 0-0-3 | Practical | 1.5 | 6 |
| 5 | DC3 (Minor) | NMMC302 | Design of Machine Elements | 3-1-0 | Theory | 4 | 7 |
| 6 | SDC3 (Minor) | NMMM401 | Mining Equipment Laboratory - III | 0-0-3 | Practical | 1.5 | 7 |
| 7 | DC4 (Minor) | NMMC207 | Hydraulics and Pneumatics | 3-1-0 | Theory | 4 | 8 |
| 8 | DC5 (Minor) | NMMC306 | Mineral Processing and Handling Equipment | 3-1-0 | Theory | 4 | 8 |
| 9 | SDC4 (Minor) | NMMM402 | Mining Equipment Laboratory - IV | 0-0-3 | Practical | 1.5 | 8 |
| | | | | | | **26 - Minor** | |

## HONORS TABLE

| **Sl.** | **Course Type** | **Course Code** | **Course Name** | **L-T-P** | **Course Category** | **Credits** |
|---|---|---|---|---|---|---|
| 1 | DC1 (Hons) | NMMH301 | Hybrid Hydraulic Transmission Systems | 3-1-0 | Theory | 4 |
| 2 | DP1 (Hons) | NMMH302 | Hydraulic Systems Laboratory | 0-0-3 | Practical | 1.5 |
| 3 | DC2 (Hons) | NMMH303 | Condition Monitoring of Machines | 3-1-0 | Theory | 4 |
| 4 | DP2 (Hons) | NMMH304 | Condition Monitoring of Machines Laboratory | 0-0-3 | Practical | 1.5 |
| 5 | DC3 (Hons) | NMMH401 | Mine Automation | 3-1-0 | Theory | 4 |
| 6 | DP3 (Hons) | NMMH402 | Mine Automation Laboratory | 0-0-3 | Practical | 1.5 |
| 7 | DC4 (Hons) | NMMH403 | Design of Mine Equipment Components | 3-1-0 | Theory | 4 |
| 8 | DC5 (Hons) | NMMH404 | Advanced Material Handling Systems | 3-1-0 | Theory | 4 |
| 9 | DP4 (Hons) | NMMH405 | Material Handling Laboratory | 0-0-3 | Practical | 1.5 |
| | | | | | | **26 - Hons.** |

## POOL of ESC (except MS & HSS)

| **Sl.** | **Course Type** | **Course Code** | **Course Name** | **L-T-P** | **Course Category** | **Credits** | **Semester** |
|---|---|---|---|---|---|---|---|
| 1 | ESC3 | NMEE201 | Engineering Materials | 3-0-0 | Theory | 3 | 3 |
| 2 | ESC4 | NMME201 | Mining Machinery | 3-0-0 | Theory | 3 | 4 |

## POOL of AEC (except HSS)

| **Sl.** | **Course Type** | **Course Code** | **Course Name** | **L-T-P** | **Course Category** | **Credits** |
|---|---|---|---|---|---|---|
| 1 | AEC | NMEA201 | Introduction to MATLAB and SIMULINK | 3-0-0 | Theory | 3 |
| 2 | AEC | | | 3-0-0 | Theory | 3 |

## POOL of SEC (except HSS)

| **Sl.** | **Course Type** | **Course Code** | **Course Name** | **L-T-P** | **Course Category** | **Credits** | **Semester** |
|---|---|---|---|---|---|---|---|
| 1 | SEC | | | 3-0-0 | Theory | 3 | 3 |
| 2 | SEC | NMES201 | Computer Aided Machine Drawing | 3-0-0 | Theory | 3 | 4 |

## POOL of UG DE course

| **Sl.** | **Course Type** | **Course Code** | **Course Name** | **L-T-P** | **Course Category** | **Credits** | **Level of Course** |
|---|---|---|---|---|---|---|---|
| 1 | DE | NMED301 | Mechanical Measurements | 3-0-0 | Theory | 3 | **3** |
| 2 | DE | NMED302 | Refrigeration and Air-conditioning | 3-0-0 | Theory | 3 | **3** |
| 3 | DE | NMED303 | Optimization Theory | 3-0-0 | Theory | 3 | **3** |
| 4 | DE | NMED304 | Robotics and Automation | 3-0-0 | Theory | 3 | **3** |
| 5 | DE | NMED305 | Introduction to Viscous Flows | 3-0-0 | Theory | 3 | **3** |
| 6 | DE | NMMD301 | Automobile Engineering | 3-0-0 | Theory | 3 | **3** |
| 7 | DE | NMED401 | Energy Conversion Equipment | 3-0-0 | Theory | 3 | **4** |
| 8 | DE | NMED402 | Power Plant Engineering | 3-0-0 | Theory | 3 | **4** |
| 9 | DE | NMED403 | Digital Manufacturing | 3-0-0 | Theory | 3 | **4** |
| 10 | DE | NMED404 | Mechanics of Composite Material | 3-0-0 | Theory | 3 | **4** |
| 11 | DE | NMED405 | Introduction to Nonlinear Dynamics, bifurcation and chaos | 3-0-0 | Theory | 3 | **4** |
| 12 | DE | NMMD401 | Mine Pumps, Fans and Compressors | 3-0-0 | Theory | 3 | **4** |