National Institute of Technology Raipur

Course of Study and Scheme of Examination								B. Tech. 1st Semester			Branch: MME	

S. No.	Subject Code	Subject Name	Periods per Week			TA	Examination Scheme				Total Marks	Credits
			L	T	P		MSE/MTR		ESE/ESVE			
							Theory	Prac.	Theory	Prac.		
1	MA10I001MA	Mathematics I	4	0	0	20	30	-	50	-	100	4
2	PH10I005PH	Physics I	3	0	0	20	30	-	50	-	100	3
3	CY10I007CY	Applied Chemistry	3	0	0	20	30	-	50	-	100	3
4	HS10I009HS	Communication Skills	3	0	0	20	30	-	50	-	100	3
5	ME10I024ME	Engineering Graphics	3	0	0	20	30	-	50	-	100	3
6	HS10I401HS	Value Education	0	0	2	40	-	20	-	40	100	1
7	CY10I402CY	Applied Chemistry Lab	0	0	2	40	-	20	-	40	100	1
8	HS10I403HS	Communication Skills Lab	0	0	2	40	-	20	-	40	100	1
9	ME10I404ME	Workshop	0	0	4	40	-	20	-	40	100	2
10	PH10I405PH	Physics I Lab	0	0	2	40	-	20	-	40	100	1
11	ME10I424ME	Engineering Graphics Lab	0	0	2	40	-	20	-	40	100	1
12	HS10I406HS	Yoga and Health	0	0	2	40	-	20	-	40	100	1
												24

National Institute of Technology Raipur

Course of Study and Scheme of Examination								B. Tech. 2nd Semester			Branch: MME	

S. No.	Subject Code	Subject Name	Periods per Week			TA	Examination Scheme				Total Marks	Credits
			L	T	P		MSE/MTR		ESE/ESVE			
							Theory	Prac.	Theory	Prac.		
1	MA10I001MA	Mathematics II	4	0	0	20	30	-	50	-	100	4
2	PH10I006PH	Physics II	3	0	0	20	30	-	50	-	100	3
3	CY10I008CY	Environment and Ecology	3	0	0	20	30	-	50	-	100	3
4	CS10I010CS	Computer programming	3	0	0	20	30	-	50	-	100	3
5	IT10I025IT	Data Structure	3	0	0	20	30	-	50	-	100	3
6	ME10I023ME	Engineering Mechanics	3	0	0	20	30	-	50	-	100	3
7	CS10I407CS	Computer programming Lab	0	0	2	40	-	20	-	40	100	1
8	PH10I408PH	Physics II Lab	0	0	2	40	-	20	-	40	100	1
9	CY10I409CY	Environment and Ecology Lab	0	0	2	40	-	20	-	40	100	1
10	IT10I425IT	Data Structure Lab	0	0	2	40	-	20	-	40	100	1
11	ME10I423ME	Engineering Mechanics Lab	0	0	2	40	-	20	-	40	100	1
12	HS10I410HS	NCC/NSS	0	0	2	-	-	-	-	-	-	0
												24

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National Institute of Technology Raipur

Course of Study and Scheme of Examination — B. Tech. 3rd Semester — Meta. & Matls Engg.

S. No.	Subject Code	Subject Name	L	T	P	TA	MSE/MTR Theory	MSE/MTR Prac.	ESE/ESVE Theory	ESE/ESVE Prac.	Total Marks	Credits
1	MM103101MM	Metallurgical Thermodynamics & Kinetics	3	1	0	20	30		50		100	4
2	MM103102MM	Minerals, Ore Beneficiation and Refractories	3	1	0	20	30		50		100	4
3	MM103103MM	Transport Phenomena in Metallurgical Processes	3	1	0	20	30		50		100	4
4	MM103104MM	Physical Metallurgy	3	1	0	20	30		50		100	4
5	MM103105MM	Casting and Solidification	3	1	0	20	30		50		100	4
6	MM103001MA	Mathematics-III	4	0	0	20	30		50		100	4
7	MM103401MM	Physical Metallurgy Laboratory	0	0	2	40		20		40	100	1
8	MM103402MM	Casting and Solidification Laboratory	0	0	2	40		20		40	100	1
												26

National Institute of Technology Raipur

Course of Study and Scheme of Examination — B. Tech. 4th Semester — Meta. & Matls Engg.

S. No.	Subject Code	Subject Name	L	T	P	TA	MSE/MTR Theory	MSE/MTR Prac.	ESE/ESVE Theory	ESE/ESVE Prac.	Total Marks	Credits
1	MM104101MM	Mechanical Behavior of Materials	3	1	0	20	30		50		100	4
2	MM104102MM	Heat Treatment and Phase Transformation	3	1	0	20	30		50		100	4
3	MM104103MM	Non Ferrous Metal Extraction	3	1	0	20	30		50		100	4
4	MM104104MM	Iron and Steel Making	3	1	0	20	30		50		100	4
5	MM104105MM	Testing of Materials	3	1	0	20	30		50		100	4
6	MM104001MA	Mathematics-IV	4	0	0	20	30		50		100	4
7	MM104401MM	Testing of Materials Laboratory	0	0	2	40		20		40	100	1
8	MM104402MM	Heat Treatment and Phase Transformation Laboratory	0	0	2	40		20		40	100	1
												26

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Courses for Semester V

	National Institute of Technology, Raipur										
	Course of Study and Scheme of Examination								B.Tech 5th Semester		Meta. & Matls. Engg

S. No.	Sub. Code	Name of Subject	Period/Week			TA	Examination Scheme				Total Marks	Credits
							MSE/ MTR		ESE/ ESVE			
			L	T	P		Theory	Prac.	Theroy	Prac.		
1	MM105101MM	Materials Characterization	3	1	0	20	30		50		100	4
2	MM105102MM	Metals Joining	3	1	0	20	30		50		100	4
3	MM105103MM	Physics of Materials	3	1	0	20	30		50		100	4
4	MM10520XMM	Program Elective (5.1)	3	0	0	20	30		50		100	3
5	MM10530XMM	Open Elective (5.1)	3	0	0	20	30		50		100	3
6	MM105401MM	Materials Characterization Laboratory	0	0	2	40		20		40	100	1
7	MM105402MM	Metal Joining Laboratory	0	0	2	40		20		40	100	1
8	MM105701MM	Summer Internship - I										1
	Total Credits											21

Electives	Code	Subject Codes	Course
Program Electives 5.1	PE 5.1.1	MM105201MM	Special steels and Alloys
	PE 5.1.2	MM105202MM	Light Metals and Alloy
Open Electives 5.1	OE 5.1.1	MM105301MM	Non Destructive Testing
	OE 5.1.2	MM105302MM	Powder Metallurgy

Courses for Semester VI

S. No.	Sub. Code	Name of Subject	L	T	P	TA	MSE/ MTR Theory	MSE/ MTR Prac.	ESE/ ESVE Theroy	ESE/ ESVE Prac.	Total Marks	Credits
National Institute of Technology, Raipur												

| | | | |

National Institute of Technology, Raipur

Course of Study and Scheme of Examination	B.Tech 6th Semester	Meta. &Matls. Engg

| S. No. | Sub. Code | Name of Subject | \multicolumn{3}{c}{Period/Week} | | \multicolumn{4}{c}{Examination Scheme} | Total Marks | Credits |
			L	T	P	TA	MSE/ MTR Theory	MSE/ MTR Prac.	ESE/ ESVE Theroy	ESE/ ESVE Prac.		
1	MM106101MM	Corrosion Engineering	3	1	0	20	30		50		100	4
2	MM106102MM	Polymer, Ceramic and Composite Materials	3	1	0	20	30		50		100	4
3	MM106103MM	Metal Forming Processes	3	1	0	20	30		50		100	4
4	MM10620XMM	Program Elective – (6.1)	3	0	0	20	30		50		100	3
5	MM10630XMM	Open Elective –(6.1)	3	0	0	20	30		50		100	3
6	MM106401MM	Corrosion Engineering Laboratory	0	0	2	40		20		40	100	1
7	MM106601MM	Academic Writing and Seminar	0	0	2							1
\multicolumn{12}{c}{Total Credits}											20

Electives	Code	Subject Codes	Course
Program Electives 6.1	PE 6.1.1	MM106201MM	Artificial Intelligence in Materials Engineering
	PE 6.1.2	MM106202MM	Liquid Metal Engineering
Open Electives 6.1	OE 6.1.1	MM106301MM	Fracture Mechanics and Failure Analysis
	OE 6.1.2	MM106302MM	Tribology of Materials

Courses for Semester VII

National Institute of Technology, Raipur										

| Course of Study and Scheme of Examination | | | | | | | | B.Tech 7th Semester | Meta. &Matls. Engg | |

S. No.	Sub. Code	Name of Subject	Period/Week			TA	Examination Scheme				Total Marks	Credits
							MSE/ MTR		ESE/ ESVE			
			L	T	P		Theory	Prac.	Theroy	Prac.		
7.1	MM107101MM	Materials Data Science and Informatics	3	1	0	20	30		50		100	4
7.2	MM10720XMM	Program Elective – 7.2	3	0	0	20	30		50		100	3
7.3	MM10720XMM	Program Elective –7.3	3	0	0	20	30		50		100	3
7.4	MM10730XMM	Open Elective –7.4	3	0	0	20	30		50		100	3
7.5	MM107401MM	Materials Data Science and Informatics Lab	0	0	2	40		20		40	100	1
7.6	MM107501MM	Project work	0	0	8							4
7.7	MM107701MM	Summer Internship - II										2
Total Credits												20

Electives	Codes	Subject Codes	Course
Program Electives 7.2	PE 7.2.1	MM107201MM	Introduction to Electrical, Magnetic and Optical Materials
	PE 7.2.2	MM107202MM	Energy Materials and Technologies
Program Electives 7.3	PE 7.3.1	MM107203MM	Additive Manufacturing of Materials
	PE 7.3.2	MM107204MM	Biomaterials
Open Electives 7.4	OE 7.4.1	MM107301MM	X-Ray Diffraction and Electron Microscopy
	OE 7.4.2	MM107302MM	Materials Selection in Mechanical Design

Courses for Semester VIII

National Institute of Technology, Raipur													

Course of Study and Scheme of Examination										B.Tech 8th Semester	Meta. &Matls. Engg	

S. No.	Sub. Code	Name of Subject	Period/Week			TA	Examination Scheme				Total Marks	Credits
							MSE/ MTR		ESE/ ESVE			
			L	T	P		Theory	Prac.	Theroy	Prac.		
1	MM10820XMM	Program Elective 8.1	3	0	0	20	30		50		100	3
2	MM108102MM	Program Elective 8.2	3	0	0	20	30		50		100	3
3	MM108103MM	Open Elective 8.3	3	0	0	20	30		50		100	3
4	MM108201MM	Open Elective 8.4	3	0	0	20	30		50		100	3
Total Credits												12

Electives	Codes	Subject Codes	Course
Program Electives 8.1	PE 8.1.1	MM108201MM	Materials Modeling and Simulation
	PE 8.1.2	MM108202MM	Nuclear Materials
	PE 8.1.3	MM108203MM	Grain Boundary Engineering
Program Electives 8.2	PE 8.2.1	MM108204MM	High Temperature Materials
	PE 8.2.2	MM108205MM	Metallurgical Waste Management
	PE 8.2.3	MM108206MM	Furnace Technology
Open Electives 8.3	OE 8.3.1	MM108301MM	Advanced Materials
	OE 8.3.2	MM108302MM	Science and Technology of Nano Materials
Open Electives 8.4	OE 8.4.1	MM108303MM	Automotive Engineering
	OE 8.4.2	MM108304MM	Engineering Economics

Scheme (Eighth Semester for Students undergoing Major Internship)

Sl. No.	Course Title	L	T	P	Credits
1.	Open Elective (0XX4)	3	0	0	3
2.	Open Elective (0XX5)	3	0	0	3
3.	Major Internship				6 (4^+2^^)
	Total Credits				12

^*Mid-semester evaluation report and field evaluation report to be submitted by industry*

^^*Report submission and presentation in the department*

Subject coding

Programme
```
0 - Certificate Course
1 - B. Tech.
2 - B. Arch.
3 - M. Tech.
4 - M.C.A.
5 - M. Tech. (Integrated)
6 - M.B.A.
7 - Ph.D.
8 - Ph.D. (Integrated)
9 - M.Sc.
A - M.Arch.
B - M. Plan.          ...
```

Semester
```
1 - First
2 - Second
3 - Third
4 - Fourth
5 - Fifth
6 - Sixth
7 - Seventh
8 - Eighth
9 - Ninth(B.Arch.)
0 - Tenth(B.Arch.)
X - PhD semesters
(post-comprehensive)
```

Serial no.
```
01, 02, 03...
Categorywise
serial no of
subject appearing
in scheme.
```

The serial no. of subjects in a scheme is explained as follows:
If, in a particular semester, there are two cores, two PEs, one OE and two labs then the serial number of: core subjects : 01 and 02.
        PEs : 01, 02, 03...as many offered.
        OEs: 01, 02, 03...as many offered.
        Labs: 01, 02.
Similar numbers are to be alloted for different categories listed under **Fifth Block.**
For new courses offered in PhD, the course syllabus, along with the requisite code needs to be recommended by the DGC, DRC Chairman and submitted to Dean Academics for approval. Only then will the subject made available in the MIS for course registration. This exercise should be carried out by the supervisor/s within the given time limit for course registration.

XX X X X X XX XX

Department

```
       Applied Geology - AG
          Architecture - AR
      Bio Medical Engg. - BM
       Bio Technology - BT
         Chemical Engg. - CH
              Chemistry - CY
             Civil Engg. - CV
  Computer Applications - CA
Computer Science and Engg. - CS
Electronics and Communication Engg. - EC
         Electrical Engg. - EL
Humanities and Social Sciences - HS
 Information Technology - IT
            Mathematics - MA
        Mechanical Engg. - ME
Metallurgical and Materials Engg. - MM
           Mining Engg. - MI
               Physics - PH
```

Specialization
```
0 - none in PG, UG
1 - as per Dept.
2 - as per Dept...
```

Category
```
0 - EPR
1 - Core
2 - Program Elective
3 - Open Elective
4 - Laboratory
5 - Thesis, Project
6 - Seminar
7 - Internship
8 - Training
9 - Comprehensive
X - Extra Acad. Act.
```

DAC/BoS
```
AG - Applied Geology
AR - Architecture
BM - Bio Medical Engg.
BT - Bio Technology
CH - Chemical Engg.
CY - Chemistry
CV - Civil Engg.
CA - Computer Applications
CS - Computer Science and Engg.
EC - Electronics and Communication Engg.
EL - Electrical Engg.
HS - Humanities and Social Sciences
IT - Information Technology
MA - Mathematics
ME - Mechanical Engg.
MM - Metallurgical and Materials Engg.
MI - Mining Engg.
PH - Physics
```