

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY  
BELAGAVI**

**BE/B. Tech Scheme of Teaching and Examinations  
Choice Based Credit System (CBCS) and Outcome Based Education (OBE)  
(Effective from the academic year 2018 – 19)**

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**Scheme of Teaching and Examination 2018 – 19**  
**Choice Based Credit System (CBCS) and Outcome Based Education(OBE)**  
**(Effective from the academic year 2018 – 19)**

**III SEMESTER**

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	BSC	18MAT31	Transform Calculus, Fourier Series and Numerical Techniques (Common to all Branches)	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18MN32	Elements of Mining Engineering	MN	3	2	--	03	40	60	100	4
3	PCC	18MN33	Mine Surveying – I	MN	3	0	--	03	40	60	100	3
4	PCC	18MN34	Mechanics of Materials	ME/MN	3	0	--	03	40	60	100	3
5	PCC	18MN35	Drilling and Blasting	MN	3	0	--	03	40	60	100	3
6	PCC	18MN36	Mineralogy, Petrology and Stratigraphy	MN	3	0	--	03	40	60	100	3
7	PCC	18MNL37	Mine Surveying – I Laboratory	MN	--	2	2	03	40	60	100	2
8	PCC	18MNL38	Mineralogy and Petrology Laboratory	MN	--	2	2	03	40	60	100	2
9	HSMC	18KVK28/39/49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK28/39/49	Aadalitha Kannada (Kannada for Administration)									
		<b>OR</b>										
		18CPC39/49	Constitution of India, Professional Ethics and Cyber Law		1	--	--	02	40	60		
<b>TOTAL</b>					<b>17</b>	<b>08</b>		<b>24</b>	<b>420</b>	<b>480</b>		
					<b>OR</b>	<b>OR</b>	<b>04</b>	<b>OR</b>	<b>OR</b>	<b>OR</b>	<b>900</b>	<b>24</b>
					<b>18</b>	<b>10</b>		<b>26</b>	<b>360</b>	<b>540</b>		

**Note:** BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.

18KVK39Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

**Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs**

10	NCMC	18MATDIP31	Additional Mathematics - I	Mathematics	02	01	--	03	40	60	100	0
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(a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. In case, any student fails to register for the said course/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have secured F grade. In such a case, the students have to fulfill the requirements during subsequent semester/s to appear for SEE.

(b)These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

**Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs**

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

**AICTE Activity Points to be earned by students admitted to BE/B. Tech/B. Plan 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 Universities to fifth semester are required to earn 50 Activity Points from the year of entry to VTU. 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, minimum hours' requirement should be fulfilled. Activity Points (non-credit) have no effect on 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 degree only after the release of the Eighth semester Grade Card.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**Scheme of Teaching and Examination 2018 – 19**  
**Choice Based Credit System (CBCS) and Outcome Based Education(OBE)**  
**(Effective from the academic year 2018 – 19)**

IVSEMESTER												
Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	BSC	18MAT41	Mathematics (Title as per the decision of BoS in Sciences)	Mathematics	2	2	--	03	40	60	100	3
2	PCC	18MN42	Underground Metal Mining	MN	3	2	--	03	40	60	100	4
3	PCC	18MN43	Mine Surveying-II	MN	3	0	--	03	40	60	100	3
4	PCC	18MN44	Mining Machinery	MN	3	0	--	03	40	60	100	3
5	PCC	18MN45	Geology for Mining Engineers	MN	3	0	--	03	40	60	100	3
6	PCC	18MN46	Thermodynamics & Fluid Mechanics	ME/MN	3	0	--	03	40	60	100	3
7	PCC	18MNL47	Mine Surveying – II Laboratory	MN	--	2	2	03	40	60	100	2
8	PCC	18MNL48	Geology for Mining Engineers Laboratory	MN	--	2	2	03	40	60	100	2
9	HSMC	18KVK39/49	Vyavaharika Kannada (Kannada for communication)/	HSMC	--	2	--	--	100	--	100	1
		18KAK39/49	Aadalitha Kannada (Kannada for Administration)									
		<b>OR</b>										
		18CPC49	Constitution of India, Professional Ethics and Cyber Law									
<b>TOTAL</b>					<b>17</b>	<b>08</b>	<b>04</b>	<b>24</b>	<b>420</b>	<b>480</b>	<b>900</b>	<b>24</b>
					<b>OR</b>	<b>OR</b>		<b>OR</b>	<b>OR</b>	<b>OR</b>		
					<b>18</b>	<b>10</b>		<b>26</b>	<b>360</b>	<b>540</b>		

**Note:** BSC: Basic Science, PCC: Professional Core, HSMC: Humanity and Social Science, NCMC: Non-credit mandatory course.

18KVK39/49Vyavaharika Kannada (Kannada for communication) is for non-Kannada speaking, reading and writing students and 18KAK39/49 Aadalitha Kannada (Kannada for Administration) is for students who speak, read and write Kannada.

**Course prescribed to lateral entry Diploma holders admitted to III semester of Engineering programs**

10	NCMC	18MATDIP41	Additional Mathematics - II	Mathematics	02	01	--	03	40	60	100	0
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((a)The mandatory non – credit courses Additional Mathematics I and II prescribed for III and IV semesters respectively, to the lateral entry Diploma holders admitted to III semester of BE/B. Tech programs, shall attend the classes during the respective semesters to complete all the formalities of the course and appear for the University examination. In case, any student fails to register for the said course/fails to secure the minimum 40 % of the prescribed CIE marks, he/she shall be deemed to have secured F grade. In such a case, the student have to fulfill the requirements during subsequent semester/s to appear for SEE.

(b)These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

**Courses prescribed to lateral entry B. Sc degree holders admitted to III semester of Engineering programs**

Lateral entrant students from B.Sc. Stream, shall clear the non-credit courses Engineering Graphics and Elements of Civil Engineering and Mechanics of the First Year Engineering Programme. These Courses shall not be considered for vertical progression, but completion of the courses shall be mandatory for the award of degree.

**AICTE activity Points:** 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 degree only after the release of the Eighth semester Grade Card.

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**V SEMESTER**

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	PCC	18MN51	Mine Management	MN	2	2	--	03	40	60	100	3
2	PCC	18MN52	Underground Coal Mining	MN	3	2	--	03	40	60	100	4
3	PCC	18MN53	Surface Mining	MN	3	2	--	03	40	60	100	4
4	PCC	18MN54	Mine Ventilation	MN	3	--	--	03	40	60	100	3
5	PCC	18MN55	Rock Mechanics	MN	3	--	--	03	40	60	100	3
6	PCC	18MN56	Mine Electrical Engineering	EEE	3	--	--	03	40	60	100	3
7	PCC	18MNL57	Rock Mechanics Laboratory	MN	--	2	2	03	40	60	100	2
8	PCC	18MNL58	Mine Electrical Engineering Laboratory	EEE	--	2	2	03	40	60	100	2
9	HSMC	18CIV59	Environmental Studies	Civil/ Environmental	1	--	--	02	40	60	100	1
				[Paper setting: Civil Engineering Board]								
<b>TOTAL</b>					<b>18</b>	<b>10</b>	<b>04</b>	<b>26</b>	<b>360</b>	<b>540</b>	<b>900</b>	<b>25</b>

**Note:** PCC: Professional Core, HSMC: Humanity and Social Science.

**AICTE activity Points:** 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 degree only after the release of the Eighth semester Grade Card.

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**VI SEMESTER**

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	PCC	18MN61	Ground Control	MN	3	2	--	03	40	60	100	4
2	PCC	18MN62	Mine Environmental Engineering	MN	3	2	--	03	40	60	100	4
3	PCC	18MN63	Mineral Processing and Fuel Technology	MN	3	2	--	03	40	60	100	4
4	PEC	18MN64X	Professional Elective -1	MN	3	--	--	03	40	60	100	3
5	OEC	18MN65X	Open Elective –A	MN	3	--	--	03	40	60	100	3
6	PCC	18MNL66	Mine Ventilation and Environmental Engineering Laboratory	MN	--	2	2	03	40	60	100	2
7	PCC	18MNL67	Mineral Processing Laboratory	MN	--	2	2	03	40	60	100	2
8	MP	18MNMP68	Mini-project	MN	--	--	2	03	40	60	100	2
9	Internship	--	Internship	To be carried out during the vacation/s of VI and VII semesters and /or VII and VIII semesters.								
<b>TOTAL</b>					<b>15</b>	<b>10</b>	<b>06</b>	<b>24</b>	<b>320</b>	<b>480</b>	<b>800</b>	<b>24</b>

**Note: PCC: Professional core, PEC: Professional Elective, OE: Open Elective, MP: Mini-project.**

**Professional Elective -1**

Course code under 18MN64X	Course Title
18MN641	Underground Mine Planning and Design
18MN642	Surface Mine Planning and Design
18MN643	Environmental Management in Surface Mines

**Open Elective -A**

Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (Please refer to the list of open electives under 18XX65X).

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

**Mini-project work:**

Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary Mini-project can be assigned to an individual student or to a group having not more than 4 students.

**CIE procedure for Mini-project:**

**(i) Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the Mini-project work, shall be based on the evaluation of project report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

**(ii) Interdisciplinary:** Continuous Internal Evaluation shall be group wise at the college level with the participation of all the guides of the college.

The CIE marks awarded for the Mini-project, shall be based on the evaluation of project report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

**SEE for Mini-project:**

**(i) Single discipline:** Contribution to the Mini-project and the performance of each group member shall be assessed individually in the semester end examination (SEE) conducted at the department.

**(ii) Interdisciplinary:** Contribution to the Mini-project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to.

**Internship:** All the students admitted to III year of BE/B. Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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 University examination after satisfying the internship requirements.

**AICTE activity Points:** 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 degree only after the release of the Eighth semester Grade Card.

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**VII SEMESTER**

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination			Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks		Total Marks
					L	T	P					
1	PCC	18MN71	Mine System Engineering	MN	3	--	--	03	40	60	100	3
2	PCC	18MN72	Computer Application in Mining	MN	3	--	--	03	40	60	100	3
3	PEC	18MN73X	Professional Elective - 2	MN	3	--	--	03	40	60	100	3
4	PEC	18MN74X	Professional Elective - 3	MN	3	--	--	03	40	60	100	3
5	OEC	18MN75X	Open Elective -B	MN	3	--	--	03	40	60	100	3
6	PCC	18MNL76	Computer Application in Mining Laboratory	MN	--	2	2	03	40	60	100	2
	PCC	18MNL77	Mine Optimization Laboratory	MN	--	2	2	03	40	60	100	2
7	Project	18MNP78	Project Work Phase - 1	MN	--	--	2	--	100	--	100	1
8	Internship	--	Internship	(If not completed during the vacation of VI and VII semesters, it shall be carried out during the vacation of VII and VIII semesters )								
<b>TOTAL</b>					<b>15</b>	<b>04</b>	<b>06</b>	<b>18</b>	<b>340</b>	<b>360</b>	<b>700</b>	<b>20</b>

**Note:** PCC: Professional core, PEC: Professional Elective.

**Professional Elective - 2**

Course code under 18MN73X	Course Title
18MN731	Open Pit Slope Analysis and Design
18MN732	Numerical Modelling and Instrumentation in Rock Mechanics
18MN733	Mine Transportation System

**Professional Electives - 3**

Course code under 18MN74X	Course Title
18MN741	Mineral Economics
18MN742	Occupational Health and General Safety
18MN743	

**Open Elective -B**

Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (Please refer to the list of open electives under 18XX75X).

Selection of an open elective shall not be allowed if,

- The candidate has studied the same course during the previous semesters of the programme.
- The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.
- A similar course, under any category, is prescribed in the higher semesters of the programme.

Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.

**Project work:**

Based on the ability/abilities of the student/s 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.

**CIE procedure for Project Work Phase - 1:**

(i) **Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the project work phase -1, shall be based on the evaluation of the project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the Project report shall be the same for all the batch mates.

(ii) **Interdisciplinary:** Continuous Internal Evaluation shall be group wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable.

The CIE marks awarded for the project work phase -1, shall be based on the evaluation of project work phase -1 Report (covering Literature Survey, Problem identification, Objectives and Methodology), project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

**Internship:** All the students admitted to III year of BE/B. Tech shall have to undergo mandatory internship of 4 weeks during the vacation of VI and VII semesters and /or VII and VIII semesters. A University examination shall be conducted during VIII semester and the prescribed credit shall be included in VIII semester. 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 University examination after satisfying the internship requirements.

**AICTE activity Points:** 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 degree only after the release of the Eighth semester Grade Card.

**VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI**  
**Scheme of Teaching and Examination 2018 – 19**  
**Choice Based Credit System (CBCS) and Outcome Based Education(OBE)**  
**(Effective from the academic year 2018 – 19)**

**VIII SEMESTER**

Sl. No	Course and Course code		Course Title	Teaching Department	Teaching Hours /Week			Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P					
1	PCC	18MN81	Mine Legislation	MN	3	--	--	03	40	60	100	3
2	PEC	18MN82X	Professional Elective - 4	MN	3	--	--	03	40	60	100	3
3	Project	18MNP83	Project Work Phase - 2	MN	--	--	2	03	40	60	100	8
4	Seminar	18MNS84	Technical Seminar	MN	--	--	2	03	100	--	100	1
5	Internship	18MNI85	Internship	Completed during the vacation/s of VI and VII semesters and /or VII and VIII semesters.)				03	40	60	100	3
<b>TOTAL</b>					<b>06</b>	<b>--</b>	<b>04</b>	<b>15</b>	<b>260</b>	<b>240</b>	<b>500</b>	<b>18</b>

**Note:** PCC: Professional Core, PEC: Professional Elective.

**Professional Electives - 4**

Course code under 18MN82X	Course Title
18MN821	Mine Geo-statistics
18MN822	Dimensional Stone Mining
18MN823	Coal Bed Methane

**Project Work****CIE procedure for Project Work Phase - 2:**

**(i) Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the project work phase -2, shall be based on the evaluation of project work phase -2 Report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

**(ii) Interdisciplinary:** Continuous Internal Evaluation shall be group wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable.

The CIE marks awarded for the project work phase -2, shall be based on the evaluation of project work phase -2 Report, project presentation skill and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

**SEE for Project Work Phase - 2:**

**(i) Single discipline:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted at the department.

**(ii) Interdisciplinary:** Contribution to the project and the performance of each group member shall be assessed individually in semester end examination (SEE) conducted separately at the departments to which the student/s belong to.

**Internship:** Those, who have not pursued /completed the internship shall be declared as fail and have to complete during subsequent University examination after satisfying the internship requirements.

**AICTE activity Points:** 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 degree only after the release of the Eighth semester Grade Card.

Activity points of the students who have earned the prescribed AICTE activity Points shall be sent the University along with the CIE marks of 8th semester. In case of students who have not satisfied the AICTE activity Points at the end of eighth semester, the column under activity Points shall be marked NSAP (Not Satisfied Activity Points).

<b>B. E. MINING ENGINEERING</b>					
<b>Outcome Based Education (OBE) and Choice Based Credit System (CBCS)</b>					
<b>SEMESTER - VI</b>					
<b>OPEN ELECTIVE - A</b>					
Course Code	18MN65X		CIE Marks	40	
Teaching Hours/Week (L:T:P)	(3:0:0)		SEE Marks	60	
Credits	03		Exam Hours	03	
Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (For syllabus, please refer to the concerned Programme syllabus book or VTU website vtu.ac.in may be visited.).					
Selection of an open elective shall not be allowed if,					
<ul style="list-style-type: none"> <li>The candidate has studied the same course during the previous semesters of the programme.</li> <li>The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.</li> <li>A similar course, under any category, is prescribed in the higher semesters of the programme.</li> </ul>					
Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.					
SI NO	Board and the Department offering the Electives		Course		Course Title
			SI No	code under 18MN65X	
1	Mechanical Board – MINING ENGINEERING Department		1	18MN651	Tunneling Engineering
			2	18MN652	Underground Space Technology

<b>B. E. MINING ENGINEERING</b>					
<b>Outcome Based Education (OBE) and Choice Based Credit System (CBCS)</b>					
<b>SEMESTER - VII</b>					
<b>OPEN ELECTIVE - B</b>					
Course Code	18MN75X		CIE Marks	40	
Teaching Hours/Week (L:T:P)	(3:0:0)		SEE Marks	60	
Credits	03		Exam Hours	03	
Students can select any one of the open electives offered by other Departments except those that are offered by the parent Department (For syllabus, please refer to the concerned Programme syllabus book or VTU website vtu.ac.in may be visited.).					
Selection of an open elective shall not be allowed if,					
<ul style="list-style-type: none"> <li>The candidate has studied the same course during the previous semesters of the programme.</li> <li>The syllabus content of open elective is similar to that of the Departmental core courses or professional electives.</li> <li>A similar course, under any category, is prescribed in the higher semesters of the programme.</li> </ul>					
Registration to electives shall be documented under the guidance of Programme Coordinator/ Advisor/Mentor.					
SI NO	Board and the Department offering the Electives		Course		Course Title
			SI No	code under 18MN75X	
1	Mechanical Board – MINING ENGINEERING Department		1	18MN751	Industrial Safety Engineering
			2	18MN752	Project Management
			3	18MN753	

