

# Frame Work for B.Sc. Program in Mining Engineering

Duration: 4 years

Number of Semesters: 8

Number of weeks per semester: 18 (16 for teaching and 2 for examinations)

Number of credit hours per semester: 14 – 19

Total number of credit hours: 136

Non-Engineering Courses: 13 Courses, 39 Cr Hrs, 28.7% of total

Engineering Courses: 30 Courses, 97 Cr Hrs, 71.3 % of total

<b>Non-Engineering Domain</b>							
<b>Knowledge Areas</b>	<b>Subject Areas</b>	<b>Name of Course</b>	<b>Lec CH</b>	<b>Lab CH</b>	<b>Total CH</b>	<b>Total Courses</b>	<b>Total Credits</b>
Humanities	English	Communication Skills	0	1	1	2	4
		Technical Writing & Presentation Skills	3	0	3		
	Culture	Islamic & Pakistan Studies-I	3	0	3	2	6
		Islamic & Pakistan Studies-II	3	0	3		
Management Sciences		Project Management	3	0	3	2	6
		Engineering Economics	3	0	3		
Natural Science	Mathematics	Calculus & Analytic Geometry	3	0	3	3	9
		Differential Equations	3	0	3		
		Linear Algebra	3	0	3		
	Physics	Applied Physics	2	1	3	4	14
	Elective	Applied Geology	3	1	4		
		Physical and Industrial Chemistry	3	1	4		
Stratigraphy & Structural Geology		2	1	3			

Total						13	39
Engineering Domain							
Knowledge Areas	Subject Areas	Name of Course	Lec CH	Lab CH	Total CH	Total Courses	Total Credits
Computing	Fundamentals	Computing Fundamentals	2	1	3	3	9
	Programming	Numerical Analysis	2	1	3		
		Engineering Statistics	3	0	3		
Engineering Foundations	Engineering Foundations	Mining Engineering Fundamentals	3	0	3	7	24
		Engineering Mechanics	2	1	3		
		Engineering Drawing	0	2	2		
		Applied Thermodynamics	3	1	4		
		Fluid Mechanics-I	3	1	4		
		Mechanics of Materials	3	1	4		
		Basic Electrical and Electronics Engineering	3	1	4		
Major Based Core (Breadth)	Major Based Core (Breadth)	Rock Mechanics	3	1	4	6	23
		Underground Mine Design	3	0	3		
		Surface Mine Design	3	0	3		
		Mineral Processing	3	1	4		
		Surveying	3	2	5		
		Explosives Engineering	3	1	4		
Major Based Core (Depth)	Major Based Core (Depth)	Mine Hazards & Safety	3	1	4	10	30
		Ground Control Engineering	3	0	3		
		Coal Technology	3	1	4		
		Tunneling and Excavation Engineering	3	1	4		
		Mine Ventilation	3	1	4		
		Mine Power, Drainage & Materials Handling	3	1	4		
		Mineral Exploration	3	1	4		
		Solution Mining	2	0	2		
		Environmental	1	0	1		

		Controls in Mining					
		Mining Law	1	0	1		

Knowledge Areas	Subject Areas	Name of Course	Lec CH	Lab CH	Total CH	Total Courses	Total Credits
Inter-Disciplinary Engineering Breadth (Electives)	Inter-Disciplinary Engineering Breadth	Introduction to GIS and Remote Sensing	2	1	3	2	4
		Workshop Practice	0	1	1		
Senior Design Project		Senior Design Project-I	0	3	3	2	6
		Senior Design Project-II	0	3	3		
Total						30	97
Industrial Training		First-Aid Training, Internships, Field Survey Camp, Instructional Tours	0	0	0		
Grand Total						43	136

## **B.Sc. Mining Engineering – Sessions 2015 and Onwards**

Semester	S/No	Course code	Course Title	Cr. Hrs		Knowledge Area	Pre-Requisites
				Th	Lab		
<b>1.</b>	1	MA-113	Calculus & Analytic Geometry	3	0	Natural Sciences	None
	2	ME-122L	Engineering Drawing	0	2	Engineering Foundation	None
	3	Min-E-110	Applied Geology	3	1	Natural Sciences	None
	4	CY-143	Physical and Industrial Chemistry	3	1	Natural Sciences	None
	5	ME-100L	Workshop Practice	0	1	Interdisciplinary Engineering Breadth	None
	6	IS-101	Islamic & Pakistan Studies-I	3	0	Humanities	None
			<b>Sub total</b>	<b>12</b>	<b>5</b>		
<b>2.</b>	1	CS-101	Computing Fundamentals	2	1	Computing	None
	2	EE-199	Basic Electrical and Electronics Engineering	3	1	Engineering Foundation	None

	3	Phy-116	Applied Physics	2	1	Natural Sciences	None
	4	HU-111	Communication Skills	0	1	Humanities	None
	5	Min-E-120	Stratigraphy and Structural Geology	2	1	Natural Sciences	None
	6	Min-E-121	Mining Engineering Fundamentals	3	0	Engineering Foundation	None
			<b>Sub total</b>	<b>12</b>	<b>5</b>		
3.	1	MA-228	Differential Equations	3	0	Natural Sciences	None
	2	MA-234	Linear Algebra	3	0	Natural Sciences	None
	3	MA-235	Engineering Mechanics	2	1	Engineering Foundation	None
	4	ME-210	Applied Thermodynamics	3	1	Engineering Foundation	None
	5	HU-221	Technical Writing and Presentation Skills	3	0	Humanities	None
	6	IS-201	Islamic & Pakistan Studies-II	3	0	Humanities	None
			<b>Sub total</b>	<b>17</b>	<b>2</b>		
4.	1	MA-242	Engineering Statistics	3	0	Computing	None
	2	MA-240	Numerical Analysis	2	1	Computing	None
	3	ME-220	Mechanics of Materials	3	1	Engineering Foundation	None
	4	CE-231	Fluid Mechanics-I	3	1	Engineering Foundation	None
	5	Min-E-240	Surveying	3	2	Major Based Core (Breadth)	ME-122L
			<b>Sub total</b>	<b>14</b>	<b>5</b>		
5.	1	Min-E-350	Rock Mechanics	3		Major Based Core (Breadth)	ME-220
	2	Min-E-351	Mineral Exploration	3	1	Major Based Core (Depth)	None
	3	Min-E-352	Mine Power Drainage & Material Handling	3	1	Major Based Core (Depth)	Min-E-121
	4	Min-E-353	Mine Ventilation	3	1	Major Based Core (Depth)	ME-210
	5	Geo-E-353	Introduction to GIS and Remote Sensing	2	1	Interdisciplinary Engineering Breadth	None
			<b>Sub total</b>	<b>14</b>	<b>5</b>		
6.	1	IME-355	Engineering Economics	3	0	Management	None
	2	Min-E-360	Ground Control Engineering	3	0	Major Based Core (Depth)	None
	3	Min-E-361	Underground Mine Design	3	0	Major Based Core (Breadth)	Min-E-121
	4	Min-E-	Surface Mine Design	3	0	Major Based Core (Breadth)	Min-E-121

		362					
	5	Min-E-363	Explosives Engineering	1	1	Major Based Core (Breadth)	Cy-143
			<b>Sub total</b>	<b>15</b>	<b>1</b>		
7.	1	MGT-408	Project Management	3	0	Management	None
	2	Min-E-470	Tunneling and Excavation Engineering	3	1	Major Based Core (Depth)	Min-E-350
	3	Min-E-471	Environmental Aspects of Mining	1	0	Major Based Core (Depth)	None
	4	Min-E-472	Mineral Processing	3	1	Major Based Core (Breadth)	MIN-121
	5	Min-E-475	Senior Design Project-I	0	3	Senior Design Project	None
			<b>Sub total</b>	<b>10</b>	<b>5</b>		
8.	1	Min-E-480	Mine Hazards and Safety	3	1	Major Based Core (Depth)	None
	2	Min-E-481	Coal Technology	3	1	Major Based Core (Depth)	CY-143
	3	Min-E-482	Solution Mining	2	0	Major Based Core (Depth)	None
	4	Min-E-483	Mining Law	1	0	Major Based Core (Depth)	None
	5	Min-E-485	Senior Design Project-II	0	3	Senior Design Project	Min-E-475
			<b>Sub total</b>	<b>9</b>	<b>5</b>		

**Total Credit Hours: 136**

## **B.Sc. Mining Engineering Curriculum - 2015**

Course No.	Courses	Credit Hrs (Th + Lab)
<b>1<sup>st</sup> Semester</b>		
MA-113	Calculus & Analytic Geometry	3+0
ME-122L	Engineering Drawing	0+2
Min-E-110	Applied Geology	3+1
CY-143	Physical and Industrial Chemistry	3+1
ME-100L	Workshop Practice	0+1
IS-101	Islamic & Pakistan Studies-I	3+0

		Total Credits	12+5=17
<b>2<sup>nd</sup> Semester</b>			
CS-101	Computing Fundamentals		2+1
EE-199	Basic Electrical and Electronics Engineering		3+1
Phy-116	Applied Physics		2+1
HU-111	Communication Skills		0+1
Min-E-120	Stratigraphy and Structural Geology		2+1
Min-E-121	Mining Engineering Fundamentals		3+0
		Total Credits	12+5=17
<b>3<sup>rd</sup> Semester</b>			
MA-228	Differential Equations		3+0
MA-234	Linear Algebra		3+0
MA-235	Engineering Mechanics		2+1
ME-210	Applied Thermodynamics		3+1
HU-221	Technical Writing and Presentation Skills		3+0
IS-201	Islamic & Pakistan Studies-II		3+0
		Total Credits	17+2=19
<b>4<sup>th</sup> Semester</b>			
MA-242	Engineering Statistics		3+0
MA-240	Numerical Analysis		2+1
ME-220	Mechanics of Materials		3+1
CE-231	Fluid Mechanics-I		3+1
Min-E-240	Surveying		3+2
		Total Credits	14+5=19

<b>5<sup>th</sup> Semester</b>			
Min-E-350	Rock Mechanics		3+1
Min-E-351	Mineral Exploration		3+1
Min-E-352	Mine Power Drainage & Material Handling		3+1
Min-E-353	Mine Ventilation		3+1
Geo-E-353	Introduction to GIS and Remote Sensing		2+1
		Total Credits	14+5=19
<b>6<sup>th</sup> Semester</b>			
IME-355	Engineering Economics		3+0
Min-E-360	Ground Control Engineering		3+0
Min-E-361	Underground Mine Design		3+0
Min-E-362	Surface Mine Design		3+0
Min-E-363	Explosives Engineering		3+1
		Total Credits	15+1=16
<b>7<sup>th</sup> Semester</b>			
MGT-408	Project Management		3+0
Min-E-470	Tunneling and Excavation Engineering		3+1
Min-E-471	Environmental Aspects of Mining		1+0
Min-E-472	Mineral Processing		3+1
Min-E-475	Senior Design Project-I		0+3
		Total Credits	10+5=15

<b>8<sup>th</sup> Semester</b>		
Min-E-480	Mine Hazards and Safety	3+1
Min-E-481	Coal Technology	3+1
Min-E-482	Solution Mining	2+0
Min-E-483	Mining Law	1+0
Min-E-485	Senior Design Project-II	0+3
Total Credits		9+5=14
<b>Grand Total Credits</b>		<b>136</b>

NOTE First Aid Training and Field Survey Camp are mandatory.