

DEPARTMENT OF APPLIED GEOLOGY
INDIAN SCHOOL OF MINES UNIVERSITY,
DHANBAD



Course Structure

FOR

5-YEAR INTEGRATED M. SC. (TECH.),
3-YEAR M. SC. (TECH.) & 2-YEAR M. SC.

IN

APPLIED GEOLOGY

2006-2007

Course structure for Five-year Integrated M. Sc. (Tech.) (Applied Geology)
(Effective from 2006-2007)

Sem.	Course No.	Courses	L T P	Credit Hr.
I	Theory			
	HSC-11101	English for Science & Technology	3 – 1 – 0	07
	AMC-11101	Mathematics-I	3 – 1 – 0	07
	APC-11101	Physics-I	4 – 0 – 0	08
	ACC-11151	Chemistry-I	4 – 0 – 0	08
	FMD-11101	Engineering Materials (Section A)	2 – 0 – 0	04
	ACD-11102	Engineering Materials (Section B)	1 – 0 – 0	02
	MMC-11101	Engineering Graphics	1 – 6 – 0	08
	CMC-11301	Environmental Studies	3 – 0 – 0	06
	Practical/Project/Seminar/Dissertation/Viva-voce			
	MMC-11301	Workshop Practice	0 – 0 – 2	02
	ACC-11251	Chemistry-I	0 – 0 – 2/2	01
	APC-11201	Physics-I	0 – 0 – 2/2	01
		Total	21 – 8 – 4	54

Sem.	Course No.	Courses	L T P	Credit Hr.
II	Theory			
	AMC-12101	Mathematics-II	3 – 1 – 0	07
	APC-12101	Physics-II	3 – 0 – 0	06
	AMD-12102	Computer Programming &	3 – 0 – 0	06
	CSD-12101	Information Technology	1 – 1 – 0	03
	MMC-12101	Electrical Technology	3 – 0 – 0	06
	EIC-12101	Electronics & Instrumentation	3 – 0 – 0	06
	MMC-12102	Engineering Mechanics	3 – 0 – 0	06
	HSC-12305	Value Education, HR and Environment	1 – 1 – 0	03
	Practical/Project/Seminar/Dissertation/Viva-voce			
	AMC-12202	Computer Programming	0 – 0 – 2/2	01
	MMC-12301	Workshop Practice II	0 – 0 – 2	02
	APC-12201	Physics-II	0 – 0 – 2/2	01
	MMC-12202	Electrical Technology	0 – 0 – 2/2	01
	MMC-12202	Engineering Mechanics	0 – 0 – 2/2	01
	EIC-12301	Electronics & Instrumentation	0 – 0 – 2/2	01
	SWC-12701	Co-Curricular Activity	0 – 0 – 0	03
		Total	20 – 3 – 7	53

Sem.	Course No.	Courses	L T P	Credit Hr.
III	Theory			
	ACC-13120	Inorganic Chemistry	3 – 1 – 0	07
	ACC-13125	Physical Chemistry	3 – 1 – 0	07
	GLC-13101	Physical Geology and Introduction to Oceanography	3 – 1 – 0	07
	GLC-13102	Crystallography & Optical Mineralogy	3 – 0 – 0	06
	GLC-13103	Paleontology	3 – 0 – 0	06
	MSC-13351	Managerial Economics	3 – 0 – 0	06
	Practical/Project/Seminar/Dissertation/Viva-voce			
	ACC-13220	Inorganic Chemistry	0 – 0 – 2	02
	GLC-13202	Crystallography & Optical Mineralogy	0 – 0 – 2	02
	GLC-13203	Paleontology	0 – 0 – 2	02
		Total	18 – 3 – 6	45

Sem.	Course No.	Courses	L T P	Credit Hr.
IV	Theory			
	GLC-14101	Structural Geology	3 – 0 – 0	06
	GLC-14102	Mineralogy	3 – 0 – 0	06
	GLC-14103	Igneous and Metamorphic Petrology	3 – 0 – 0	06
	GLC-14104	Introduction to Geochemistry	3 – 0 – 0	06
	AMC-14101	Numerical and Statistical Methods	4 – 0 – 0	08
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC-14201	Structural Geology	0 – 0 – 2	02
	GLC-14202	Mineralogy	0 – 0 – 2	02
	GLC-14203	Igneous and Metamorphic Petrology	0 – 0 – 2	02
	AMC-14201	Numerical and Statistical Methods	0 – 0 – 2	02
	GLC-14904	Geological Field work* (2 weeks)	0 – 0 – 0	02
	GLC-14505	Viva-voce	0 – 0 – 0	02
	SWC-14701	Co-Curricular Activity	0 – 0 – 0	03
		Total	16- 0 - 8	47

* Geological Fieldwork during winter vacation with credit in IVth Semester.

Sem.	Course No.	Courses	L T P	Credit Hr.
V	Theory			
	Core Courses			
	GLC-15101	Sedimentary Geology	3 – 0 – 0	06
	GLC-15103	Stratigraphy	3 – 0 – 0	06
	CSC-51101	Data structures and Algorithms	3 – 1 – 0	07
	ACC-31134	Analytical Chemistry	3 – 1 – 0	07
	MSC-15151	Industrial Psychology & Industrial Relation	3 – 0 – 0	06
	Elective (Courses – Any one of the two)			
	MSE-15152	Operation Research	2 – 1 – 0	05
	HSE-15144	Professional Communication	2 – 1 – 0	05
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC-15201	Sedimentary Geology	0 – 0 – 2	02
	ACC-31234	Analytical Chemistry (Lab 1)	0 – 0 – 2	02
	CSC -51201	Data structures and Algorithms	0 – 0 – 2	02
	Total			17 – 3 – 6

Sem.	Course No.	Courses	L T P	Credit Hr.	
VI	Theory				
	Core Courses				
	GPC-16101	General Geophysics	3 – 0 – 0	06	
	GLC-16101	Exploration Geology	3 – 0 – 0	06	
	GLC-16102	Economic Geology and Indian Mineral Deposits	3 – 1 – 0	07	
	GLC-16103	Elementary Engineering Geology & Hydrogeology	3 – 1 – 0	07	
	GLC-16104	Fossil fuels and Energy Resources	3 – 0 – 0	06	
	Practical/Project/Seminar/Dissertation/Viva-voce				
	GLC-16201	Exploration Geology	0 – 0 – 2	02	
	GLC-16202	Economic Geology and Indian Mineral Deposits	0 – 0 – 2	02	
	GLC-16903	Geological Field studies* (2 weeks)	0 – 0 – 0	02	
	GLC-16504	Viva-voce	0 – 0 – 0	02	
	SWC-16701	Extra Curricular Activities	0 – 0 – 0	03	
	Total			15 – 2 – 4	43

* Geological Field studies during winter vacation with credit in VIth Semester.

Sem.	Course No.	Courses	L T P	Credit Hr.	
VII	Theory				
	Core Courses				
	GLC-17101	Advanced Mineralogy and Geochemical Techniques	3 0 0	06	
	GLC-17102	Advanced Structural Geology	3 0 0	06	
	GLC-17103	Advanced Igneous Petrology	3 0 0	06	
	GLC-17104	Sedimentology	3 0 0	06	
	GLC-17105	Advanced Stratigraphy	4 0 0	08	
	GLC-17106	Geostatistics	3 1 0	07	
	Practical/Project/Seminar/Dissertation/Viva-voce				
	GLC-17201	Geochemical Analysis	0 0 2	02	
	GLC-17202	Advanced Structural Geology	0 0 2	02	
	GLC-17203	Advanced Igneous Petrology	0 0 2	02	
	GLC-17204	Sedimentology	0 0 2	02	
	GLC-17206	Geostatistics	0 0 2	02	
	Total			19 1 10	49

Sem.	Course No.	Courses	L T P	Credit Hr.
VIII	Theory			
	Core Courses			
	GPD-18101	Remote Sensing,	2 0 0	08
	GLD-18101	Geomorphology & GIS	2 0 0	
	GLC-18102	Advanced Metamorphic Petrology	3 0 0	06
	GLC-18103	Ore Geology	3 0 0	06
	GLC-18104	Micropaleontology & Vertebrate Paleontology	3 0 0	06
	GLC-18105	Geochemistry & Isotope Geology	3 0 0	06
	GLC-18106	Geotectonics	3 0 0	06
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GPD-18201	Remote Sensing &	0 0 2/2	02
	GLD-18201	Geomorphology	0 0 2/2	
	GLC-18202	Advanced Metamorphic Petrology	0 0 2	02
	GLC-18203	Ore Geology	0 0 2	02
	GLC-18204	Micropaleontology & Vertebrate Paleontology	0 0 2	02
	GLC-18501	Viva-Voce	0 0 0	02
	GLC-18903	Geological Mapping Training*	0 0 0	04
SWC-18701	Co-curricular Activity	0 0 0	03	
Total			19 0 8	55

*Geological Mapping Training camps in soft and hard rock areas. Each of 15 days duration during winter vacation with credit in VIIIth Semester.

Sem.	Course No.	Courses	L T P	Credit Hr.	
IX	Theory				
	Core Courses				
	GLC-19101	Hydrogeology	3 0 0	06	
	PEC-19151	Introduction to Reservoir Engineering and Development Technology	3 0 0	06	
	GLC-19102	Petroleum Geology	3 0 0	06	
	GLC-19103	Coal Geology & Nanotechnology in Geosciences	3 1 0	07	
	MEC-19151	Rock Mechanics	3 0 0	06	
	GPC-19101	Geophysical Exploration Methods	3 0 0	06	
	Practical/Project/Seminar/Dissertation/Viva-voce				
	GLC-19201	Hydrogeology	0 0 2	02	
	GLC-19202	Petroleum Geology	0 0 2	02	
	GLC-19203	Coal Geology	0 0 2	02	
	MEC-19251	Rock Mechanics	0 0 2	02	
	GPC-19201	Geophysical Exploration Methods	0 0 2	02	
	Total			18 1 10	47

Sem.	Course No.	Courses	L T P	Credit Hr.
X	Theory			
	Core Courses			
	GLC-10101	Engineering Geology	3 0 0	06
	GLC-10102	Advanced Exploration Geology & Mineral Economics	3 1 0	07
	MEC-10151	Mining Methods & Surveying	4 0 0	08
	FMC-10151	Mineral Beneficiation	3 0 0	06
	GLE-10111	Elective (Any one of the following)	3 0 0	06
	GLE-10111- GLE-10118	(11) Applied Sedimentology, (12) Environmental Geochemistry, (13) Geotechnical Engineering, (14) Organic Geochemistry in Hydrocarbon Exploration, (15) Nuclear Geology, (16) Precambrian Geology, (17) Thermodynamics in Geological Systems, (18) Urban Geology.		
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC-10201	Engineering Geology	0 0 2	02
	GLC-10202	Advanced Exploration Geology & Mineral Economics	0 0 2	02
	MEC-10251	Mining Methods & Surveying	0 0 2	02
	FMC-10251	Mineral Beneficiation	0 0 2	02
	GLC-10601	Economic Geology Excursion (2 weeks)	0 0 0	02
	GLC-10802	Dissertation (Field work, Lab work and Seminar)*	0 0 4	08
	GLC-10503	Composite Viva-voce	0 0 0	02
	SWC-10701	Co-curricular Activity	0 0 0	03
Total			16 1 12	56

* Economic Geology Excursion and dissertation fieldwork of 15 days duration each during winter vacation with credit in Xth Semester.

Course structure for Three-year M. Sc. Tech (Applied Geology)

(Effective from 2006-2007)

Sem.	Course No.	Courses	L T P	Credit Hr.	
I	Theory				
	Core Courses				
	GLC 21101	Advanced Mineralogy and Geochemical Techniques	3 0 0	06	
	GLC 21102	Advanced Structural Geology	3 0 0	06	
	GLC 21103	Advanced Igneous Petrology	3 0 0	06	
	GLC 21104	Sedimentology	3 0 0	06	
	GLC 21105	Advanced Stratigraphy	4 0 0	08	
	GLC 21106	Geostatistics	3 1 0	07	
	Practical/Project/Seminar/Dissertation/Viva-voce				
	GLC 21201	Geochemical Analysis	0 0 2	02	
	GLC 21202	Advanced Structural Geology	0 0 2	02	
	GLC 21203	Advanced Igneous Petrology	0 0 2	02	
	GLC 21204	Sedimentology	0 0 2	02	
	GLC 21206	Geostatistics	0 0 2	02	
	Total			19 1 10	49

Sem.	Course No.	Courses	L T P	Credit Hr.
II	Theory			
	Core Courses			
	GPD 22101	Remote Sensing,	2 0 0	08
	GLD 22101	Geomorphology & GIS	2 0 0	
	GLC22102	Advanced Metamorphic Petrology	3 0 0	06
	GLC22103	Ore Geology	3 0 0	06
	GLC22104	Micropaleontology & Vertebrate Paleontology	3 0 0	06
	GLC22105	Geochemistry & Isotope Geology	3 0 0	06
	GLC22106	Geotectonics	3 0 0	06
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GPD 22201	Remote Sensing &	0 0 2/2	02
	GLD 22201	Geomorphology	0 0 2/2	
	GLC22202	Advanced Metamorphic Petrology	0 0 2	02
	GLC22203	Ore Geology	0 0 2	02
	GLC22204	Micropaleontology & Vertebrate Paleontology	0 0 2	02
	GLC22501	Viva-Voce	0 0 0	02
GLC22903	Geological Mapping Training*	0 0 0	04	
SWC22701	Co-curricular Activity	0 0 0	03	
Total			19 0 8	55

*Geological Mapping Training camps in soft and hard rock areas. Each of 15 days duration during winter vacation with credit in IInd Semester.

Sem.	Course No.	Courses	L T P	Credit Hr.	
III	Theory				
	Core Courses				
	GLC23101	Hydrogeology	3 0 0	06	
	PEC23151	Introduction to Reservoir Engineering and Development Technology	3 0 0	06	
	GLC23102	Petroleum Geology	3 0 0	06	
	GLC23103	Coal Geology & Nanotechnology in Geosciences	3 1 0	07	
	MEC 23151	Rock Mechanics	3 0 0	06	
	GPC23101	Geophysical Exploration Methods	3 0 0	06	
	Practical/Project/Seminar/Dissertation/Viva-voce				
	GLC23201	Hydrogeology	0 0 2	02	
	GLC23202	Petroleum Geology	0 0 2	02	
	GLC23203	Coal Geology	0 0 2	02	
	MEC 23251	Rock Mechanics	0 0 2	02	
	GPC23201	Geophysical Exploration Methods	0 0 2	02	
	Total			18 1 10	47

Sem.	Course No.	Courses	L T P	Credit Hr.
IV	Theory			
	Core Courses			
	GLC24101	Engineering Geology	3 0 0	06
	GLC24102	Advanced Exploration Geology & Mineral Economics	3 1 0	07
	MEC24151	Mining methods & Surveying	4 0 0	08
	FMC24151	Mineral Beneficiation	3 0 0	06
	GLE24111	Elective (Any one of the following)	3 0 0	06
	GLE24111- GLE24118	(11) Applied Sedimentology, (12) Environmental Geochemistry, (13) Geotechnical Engineering, (14) Organic Geochemistry in Hydrocarbon Exploration, (15) Nuclear Geology, (16) Precambrian Geology, (17) Thermodynamics in Geological Systems, (18) Urban Geology.		
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC24201	Engineering Geology	0 0 2	02
	GLC24202	Advanced Exploration Geology & Mineral Economics	0 0 2	02
	MEC24251	Mining methods & Surveying	0 0 2	02
	FMC24251	Mineral Beneficiation	0 0 2	02
	GLC24601	Economic Geology Excursion (2 weeks)	0 0 0	02
	GLC24802	Dissertation (Field work, Lab work and Seminar)*	0 0 4	08
	GLC24503	Composite Viva-voce	0 0 0	02
	SWC24701	Co-curricular Activity	0 0 0	03
Total			16 1 12	56

* Economic Geology Excursion and dissertation fieldwork of 15 days duration each during winter vacation with credit in IVth Semester.

Sem.	Course No.	Courses	L T P	Credit Hr.
V	Theory			
	Core Courses			
	GLC25101	Structural Methods in Exploration	3 0 0	6
	GLC25102	Computer Applications in Geology	3 0 0	6
	GLC 25103	Environmental Geology	3 0 0	6
	MMC25156	Elements of Drilling	3 0 0	6
	MSC25151	Industrial Management	3 0 0	6
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC25201	Structural Methods in Exploration	0 0 2	2
	GLC25202	Computer Applications in Geology	0 0 4	6
	GLC25801	Lab work / Dissertation	0 0 0	10
		Total	15 0 6	46

Sem.	Course No.	Courses	L T P	Credit Hr.
VI	Theory			
	Core Courses			
	GLC26101	Sequence Stratigraphy and Basin analysis	3 0 0	6
	GLC26102	Coal Bed methane and Gas hydrate Exploration	3 0 0	6
	GLC26103	Contaminant Hydrogeology	3 0 0	6
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC26401	Seminar (on Special Topic)	0 0 0	2
	GLC26802	Dissertation (Field work, Lab work & Thesis)*	0 0 0	20
	GLC26803	Dissertation Seminar	0 0 0	2
	GLC26504	Grand Viva Voce	0 0 0	5
	SWC26701	Co-curricular Activity	0 0 0	03
		Total	9 0 0	50

* Dissertation fieldwork/Labwork of 6 weeks duration during winter vacation with credit in 6th Semester.

Course structure for Two-year M. Sc. (Applied Geology)

(Effective from 2006-2007)

(Subject to review in 2008)

Sem.	Course No.	Courses	L T P	Credit Hr.
I	Theory			
	Core Courses			
	GLC 31101	Advanced Mineralogy and Geochemical Techniques	3 0 0	06
	GLC 31102	Advanced Structural Geology	3 0 0	06
	GLC 31103	Advanced Igneous Petrology	3 0 0	06
	GLC 31104	Sedimentology	3 0 0	06
	GLC 31105	Advanced Stratigraphy	4 0 0	08
	GLC 31106	Geostatistics	3 1 0	07
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC 31201	Geochemical Analysis	0 0 2	02
	GLC 31202	Advanced Structural Geology	0 0 2	02
	GLC 31203	Advanced Igneous Petrology	0 0 2	02
	GLC 31204	Sedimentology	0 0 2	02
	GLC 31206	Geostatistics	0 0 2	02
	Total			19 1 10

Sem.	Course No.	Courses	L T P	Credit Hr.
II	Theory			
	Core Courses			
	GPD 32101	Remote Sensing,	2 0 0	08
	GLD 32101	Geomorphology & GIS	2 0 0	
	GLC32102	Advanced Metamorphic Petrology	3 0 0	06
	GLC32103	Ore Geology	3 0 0	06
	GLC32104	Micropaleontology & Vertebrate Paleontology	3 0 0	06
	GLC32105	Geochemistry & Isotope Geology	3 0 0	06
	GLC32106	Geotectonics	3 0 0	06
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GPD 32201	Remote Sensing, &	0 0 2/2	02
	GLD32201	Geomorphology	0 0 2/2	
	GLC32202	Advanced Metamorphic Petrology	0 0 2	02
	GLC32203	Ore Geology	0 0 2	02
	GLC32204	Micropaleontology & Vertebrate Paleontology	0 0 2	02
	GLC32501	Viva-Voce	0 0 0	02
	GLC32903	Geological Mapping Training*	0 0 0	04
SWC32701	Co-curricular Activity	0 0 0	03	
Total			19 0 8	55

*Geological Mapping Training camps in soft and hard rock areas. Each of 15 days duration during winter vacation with credit in IInd Semester.

Sem.	Course No.	Courses	L T P	Credit Hr.
III	Theory			
	Core Courses			
	GLC33101	Hydrogeology	3 0 0	06
	PEC33151	Introduction to Reservoir Engineering & Development Technology	3 0 0	06
	GLC33102	Petroleum Geology	3 0 0	06
	GLC33103	Coal Geology & Nanotechnology in Geosciences	3 1 0	07
	MEC 25151	Rock Mechanics	3 0 0	06
	GPC 33101	Geophysical Exploration Methods	3 0 0	06
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC33201	Hydrogeology	0 0 2	02
	GLC33203	Petroleum Geology	0 0 2	02
	GLC33204	Coal Geology	0 0 2	02
	MEC33251	Rock Mechanics	0 0 2	02
	GPC33201	Geophysical Exploration Methods	0 0 2	02
		Total	18 1 10	47

Sem.	Course No.	Courses	L T P	Credit Hr.
IV	Theory			
	Core Courses			
	GLC34101	Engineering Geology	3 0 0	06
	GLC34102	Advanced Exploration Geology & Mineral Economics	3 1 0	07
	MEC34151	Mining methods & Surveying	4 0 0	08
	FMC34151	Mineral Beneficiation	3 0 0	06
	GLC34111	Elective (Any one of the following)	3 0 0	06
	GLE34111- GLE34118	(11) Applied Sedimentology, (12) Environmental Geochemistry, (13) Geotechnical Engineering, (14) Organic Geochemistry in Hydrocarbon Exploration, (15) Nuclear Geology, (16) Precambrian Geology, (17) Thermodynamics in Geological Systems, (18) Urban Geology.		
	Practical/Project/Seminar/Dissertation/Viva-voce			
	GLC34201	Engineering Geology	0 0 2	02
	GLC34202	Advanced Exploration Geology & Mineral Economics	0 0 2	02
	MEC34251	Mining methods & Surveying	0 0 2	02
	FMC34251	Mineral Beneficiation	0 0 2	02
	GLC34601	Economic Geology Excursion (2 weeks)	0 0 0	02
	GLC34802	Dissertation (Field work, Lab work and Seminar)*	0 0 4	08
	GLC34503	Composite Viva-voce	0 0 0	02
SWC34701	Co-curricular Activity	0 0 0	03	
	Total	16 1 12	56	

* Economic Geology Excursion and dissertation fieldwork of 15 days duration each during winter vacation with credit in Xth Semester.