

**DEPARTMENT OF EARTH SCIENCES  
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX M.Sc. (Applied Geology)**  
 Department : **Department of Earth Sciences**  
 Year : **I**  
 Model : **1-A**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
<b>Semester-I (Autumn)</b>									
1.	ESC-501	Mineralogy	PCC	4	3	0	2	3	0
2.	ESC-503	Geochemistry	PCC	4	3	0	2	3	0
3.	ESC-505	Igneous Petrology	PCC	4	3	0	2	3	0
4.	ESC-507	Structural Geology	PCC	4	3	0	2	3	0
5.		Social Science Course	SSC	2	-	-	-	-	-
<b>Total</b>				<b>18</b>					
<b>Semester-II (Spring)</b>									
1.	ESC-502	Field Training-I	PPI	2	-	-	-	-	-
2.	ESC-504	Applied Paleontology	PPI	3	2	0	2	3	0
3.	ESC-506	Metamorphic Petrology	PPI	3	2	0	2	3	0
4.	ESC-508	Geomorphology	PPI	3	2	1	0	3	0
5.	ESC-510	Economic and Ore Geology	PPI	3	2	0	2	3	0
6.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
7.	ESC-700	Seminar	SEM	2	-	-	-	-	-
<b>Total</b>				<b>19</b>					

**DEPARTMENT OF EARTH SCIENCES  
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Program Code : **XXX M.Sc. (Applied Geology)**  
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 Year : **II**  
 Model : **1-A**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
<b>Semester-I (Autumn)</b>									
1.	ESC-691	Internship Social Activity	ISA	3	-	-	-	-	-
2.	ESC-511	Sedimentology and Stratigraphy	PPI	4	3	0	2	3	0
3.	ESC-513	Geophysical Prospecting	PPI	3	2	0	2	3	0
4.		Program Elective-I	PPI	3	2	1	0	3	0
5.		Program Elective-II	PPI	3	2	1	0	3	0
6.		Program Elective-III	PPI	3	2	1	0	3	0
		<b>Total</b>		<b>19</b>					
<b>Semester-II (Spring)</b>									
1.	ESC-601	Project	PROJECT	8	-	-	-	-	-
2.	ESC-602	Field Training-II	PROJECT	2	-	-	-	-	-
3.		Program Elective-IV	PEC	4	3	1	0	3	-
4.		Program Elective-V	PEC	4	3	1	0	3	-
		<b>Total</b>		<b>18</b>					

<b>Summary</b>				
Semester	1	2	3	4
<b>Semester-wise Total Credits</b>	18	19	19	18
<b>Total Credits</b>	<b>74</b>			

**M.Sc. (Applied Geology)**

**Program Elective Courses**

1.	ESL-501	Himalayan Geodynamics	PEC	3	2	1	0	3	0
2.	ESL-502	Computational Thermodynamic Modelling	PEC	3	2	1	0	3	0
3.	ESL-503	Shear Zone Processes	PEC	3	2	1	0	3	0
4.	ESL-504	Plate Tectonics	PEC	3	2	1	0	3	0
5.	ESL-505	Paleoecology	PEC	3	2	1	0	3	0
6.	ESL-506	Geohydrology	PEC	3	2	1	0	3	0
7.	ESL-507	Contaminant Hydrology	PEC	3	2	1	0	3	0
8.	ESL-508	Mineral Exploration and Mining Exploration	PEC	3	2	1	0	3	0
9.	ESL-509	Petroleum Geology	PEC	3	2	1	0	3	0
10.	ESL-510	Well Logging	PEC	3	2	1	0	3	0
11.	ESL-511	Oceanography	PEC	3	2	1	0	3	0
12.	ESL-512	Carbonate Sequence Stratigraphy	PEC	3	2	1	0	3	0
13.	ESL-513	Basin Analysis	PEC	4	3	1	0	3	0
14.	ESL-514	Remote Sensing	PEC	4	3	1	0	3	0
15.	ESL-515	Isotope Geochemistry	PEC	4	3	1	0	3	0
16.	ESL-516	Engineering Geology	PEC	4	3	1	0	3	0
17.	ESL-517	Principles of GIS	PEC	4	3	1	0	3	0
18.	ESL-518	Coal Petrology	PEC	4	3	1	0	3	0
19.	ESL-519	Reservoir Geomechanics	PEC	4	3	1	0	3	0
20.	ESL-520	Analytical Techniques in Geosciences	PEC	4	3	1	0	3	0

**Science, Technology, and Advanced Research-tools Basket**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	EST-501	Computer Programming and Numerical Techniques in Geosciences	STAR	3	2	1	0	3	0
2.	EST-502	Fundamentals of ML in Geosciences	STAR	3	2	1	0	3	0