Mangalore University
Accredited by the NAAC
Department of Marine Geology
Mangalagangothri-574199

Revision of the Syllabus for MSc course in Marine Geology

Preamble

The recently approved syllabus during the last year has been revised by keeping in view of the main objectives (*skills, employability and entrepreneurship*) of the New Education Policy 2020. Nevertheless, this syllabus retains the major part of the Choice Based Credit System introduced in 2016, revised with minor changes in 2018 and revamped during the special BoS Meeting on 28th January 2020 with the expertise opinion from Dr. N. Maran, Deputy Director-General, Geological Survey of India (GSI), and HOD, MCSD, Mangalore and Dr. A.C. Dinesh, Director, MCSD, GSI, Mangalore. Similarly, the expertise opinions were sought from the external BoS members. This syllabus not only enriches knowledge to students, but also aimed for uplifting societal conditions, but also underscores (a) the latest developments in different branches of the subject, (b) increases students teacher interactions, (c) encouraged to undergo internships after the regular offline classes as well as during the vacation, (d) motivate students develop the confidence and expertise on the subject, (e) internships during vacation and carry out the IV Semester dissertation/project work (at national research instructions and multi-national companies), (f) perform better in competitive examinations, interviews to get employment, research positions and (g) overseas fellowships/employment.

Program learning outcomes

Marine Geology is one of the interdisciplinary branches of Earth Science that deals with the origin and evolution of ocean basins, including paleoclimate and paleoceanography, and natural resources exploration. Nevertheless, the course includes also the earth, atmospheric (meteorology and climatology) and ocean sciences including remote sensing and geographic information system (GIS), and global positioning system (GPS) in three semesters followed by intense fieldwork, visit to R & D labs./institutes related to the curriculum prescribed and carry out dissertation/project work in the IV semester. The outcomes of the programme of MSc in Marine Geology are given below:

PO01 Acquiring of sustainable knowledge in different fields of earth, atmosphere and ocean sciences to take up any work related to the earth science.

PO02 Skills development to learn, monitor and understand the spatio-temporal variability of vast data/big data pertaining not only to the earth system science but also those collected by satellites by using advanced remote sensing and processing data in geographic information systemtechniques.

PO03 Dissertation/project work either in the parent university or outside R & D labs, MNCs in any one of the aspects of the curriculum in order to help students to take up independent work after the course. This will help them in research / managerial positions in their employment career.

PO04 Experience gained during fieldwork, visiting R & D labs and visiting Oceanographic Research Vessels / Ships will motivate students to choose the career after the M.Sc. course.

PO05 Water, next to air is an important requirement for the sustenance of life. Skills developed during the course will help students to take up the work related to water harvesting methods and different exploration techniques to tap water and mineral resources, and

PO06 Due to population explosion and advancement of civilization, the earth'senvironments are under stress. The knowledge gained from subjects like environmental geology, geochemistry, and meteorology / climatology is useful to work on impact assessment and offer suggestions for mitigation.

Program specific outcomes

The syllabus of MSc, Marine Geology is quite unique as compared to other courses related to earth science, geology, geophysics, meteorology and oceanography, as it covers most of the syllabus prescribed for the NET and the UPSC geologist's examination. The successful students are able to get employment either in government (universities, undergraduate colleges, engineering institutes) and private companies including MNCs, research position in universities/research institutes. Based on the knowledge acquired over two years, students can start consultancies/take up an independent project as well as chances to get overseas research fellowships and employment.

Programme structure along with the percentage of Hard Core, Soft Core and Elective Paper:

Hard Core	Soft Core	Open Elective	Total credits
56 (60.87%)	30 (32.61%)	6 (6.52 %)	92(100 %)

Mangalore University

Department of Marine Geology

M.Sc. Marine Geology Syllabus (Choice Based Credit System)

Structure of the Course

Semester	Paper (Theory and Laboratory)	Instruction hrs/Week Lectures / Practicals	Duration of Exam (hrs)	Marks			Credits
				IA	Exam	Total	
First Semester: Five Hard Cores and One Soft Core							
MGH 401	Mineralogy and Geochemistry	4	3	30	70	100	4
MGH 402	Petrology	4	3	30	70	100	4
MGH 403	Stratigraphy and Palaeontology	4	3	30	70	100	4
MGP 404	Mineralogy and Geochemistry (Lab, hard core)	8	4	30	70	100	4
MGP 405	Petrology (Lab, hard core)	8	4	30	70	100	4
MGS 406	Geomorphology and Geodynamics	3	3	30	70	100	3
				Semester Total		**600**	**23**
Second Semester: Two Hard Cores, Four Soft Cores and One Open Elective							
MGH 451	Structural Geology and Hydrogeology	4	3	30	70	100	4
MGP 452	Structural Geology and Palaeontology (Lab, hard core)	8	4	30	70	100	4
MGS 453	Environmental Geology	3	3	30	70	100	3
MGS 454	Meteorology and Climatology	3	3	30	70	100	3
MGS 455	RS and Photogrammetry	3	3	30	70	100	3
MGP 456	Hydrogeology and Geostatistics and Comp. Appl. (Lab, soft core)	6	3	30	70	100	3
MGE 457	Geo-sciences (Open Elective)	3	3	30	70	100	3
				Semester Total		**700**	**20 + 3**
Third Semester: Two Hard Cores, Five Soft Cores and One Open Elective							

MGH 501	Oceanography - I (Physical and Chemical)	4	3	30	70	100	4
MGH 502	Oceanography - II (Geol and Biological)	4	3	30	70	100	4
MGS 503	Exploration and Engineering Geology	3	3	30	70	100	3
MGS 504	Economic Geology and Mining Geology	3	3	30	70	100	3
MGS 505	GIS and GPS	3	3	30	70	100	3
MGP 506	Remote Sensing and GIS (Lab.)	6	3	30	70	100	3
MGP 507	Physical Oceanography and Surveying (Lab, soft core)	6	3	30	70	100	3
MGE 508	Ocean and Atmospheric Science (Open Elective)	3	3	30	70	100	3
					Semester Total	**800**	**23 + 3**
Fourth Semester:							
MGP 551	Project Work - Dissertation					300	12
	Viva - Voce					100	4
	Field Work and Field Report					100	4
					Semester Total	**500**	**20**
					Grand Total	**2600**	**86+6***

Note: MG - Marine Geology, H - Hard core, S - Soft core, P - Practical / Project Work, and E - Elective.

Course / Credit Pattern:

Semester Credits	Hard Core (H)	Soft Core (S)	Elective (E)	Practical / Project Work (P)	Total Credits
First	12	3	--	8 (H)	23
Second	4	9	3	4 (H), 3 (S)	20 + 3
Third	8	9	3	--, 6 (S)	23 + 3
Fourth	--	--	--	20 (H)	20
Total	24	21	6*	32 + 9	86 + 6*

Total Credits from all the Four Semesters = 23 + 23 + 26 + 20 = 92

Total Hard Core Credits = 24 (T) + 12 (P) + 20 (Project) = 56= 60.87%

Total Soft Core Credits = 21 (T) + 9 (P) = 30= 32.61%,

*Open Elective Credits = 6 = 6.52%(**Not to be considered for CGPA calculation**)