Programme: M. Sc. (Marine Sciences)
Course Code: MSC 164Title of the Course: Marine Geology I
Number of Credits: 03
Effective from AY: June, 2018-19

Prerequisites for the course:	Degree of Bachelor of Science of this University or an examination of any other University recognized as equivalent.
Objective:	This course introduces concepts of Marine Geology andhelps to understand ocean basins – their dimensions, tectonics and evolution; sediment components and processes with special reference to near-shore and beach dynamics; ocean mineral resources –application of fossils in paleoclimate and monsoon.

Content:	The earth and the solar system-origin and age of the earth - internal structure -Geological time scale – Size and shape of the ocean basins: Pacific, Atlantic and Indian – Morphology and structure of continental margins, mid oceanic ridges and deep sea floor – Origin of ocean basins – Continental drift, sea floor spreading and plate tectonics – Evolution of the Indian ocean. Sediment, sediment grade scale and analysis – Classification, composition, distribution and source of sediments with emphasis on near shore areas – Surveying, sampling and laboratory techniques for the study of coastal and estuarine sediments – Analysis of sedimentological data and interpretation – Instruments used in marine geology. Beach and beach profile, variations in beach morphology and its significance – Near shore geological processes: erosion, transportation and deposition. Sea bed minerals with emphasis on Indian ocean – Polymetallic nodules, phosphorites, carbonates, placer deposits and petroleum resources, gas hydrates – Fossilization process – Types of microfossils and classification, technique for paleoclimate reconstruction with respect to oxygen isotope studies, role of microfossils in paleo – oceanography, paleoclimate, marine archaeology, petroleum exploration and monitoring marine pollution.	12 hours 12 hours 12 hours
Pedagogy:	Lectures / Assignments / Seminars / Discussion	
References/ Readings	1. Introductory oceanography (5th ed), 1988 Thurman, H.V., Columbus Mercill Publ. Co, Ohio. 2. Oceanography (5th ed), 1990 Grant Gross, M., Englewood Cliffs, N.J. Prentice Hall. 3. Coastal and estuarine sediment dynamics, 1986 Dyer, K. R., John Wiley & Sons, Wiley, Chichester. 4. Earth resources, 1969 Skinner, B. J., Englewood Cliffs, N.J., Prentice Hall. 5. Marine Geology and Oceanography of the Arabian Sea and coastal Pakistan, 1984 Haq. B. U. and Milliman, J. D., Van Norstrand Reinhold Co. 6. Beach processes and sedimentation, 1976 Komar, P. D., Englewood Cliffs, NJ Prentice Hall. 7. Beaches and Coasts (2nd ed), 1972 King, C. A. M., Edward Arnold, London. 8. Introduction to marine micropaleontology, 1978 Haq, B.U. and Boersma, A. (Eds.), Elsevier Publ. 9. Marine minerals: advances in research and resource assessment, 1987 Teleki, P.G. et al., D. ReidelDordrechart. 10. The micropaleontology of oceans, 1971 Funnell, B. M. and Reidel, W. R., Cambridge Univ. Press., U.K. 11. Marine geology and oceanography of the Arabian Sea and coastal Pakistan, 1984 Haq. B.U. and Milliman, J. D., Van Norstrand Reinhold Co. 12. Marine Geology, 1982 James P. Kennet., Prentice Hall INC Englewood, Cliffs, N. J. 07632.	
Learning Outcomes	1. Understanding earth processes, evolution and mineral resources associated with ocean basins. 2. Ability to reconstruct paleoclimate and paleomonsoon	