Marine Biogeochemical Cycling (L-T-P: 3-0-0)

Instructor: Prof. Parthasarathi Chakraborty, Associate Professor, CORAL.
Course meets: Two times a week (3 hrs.)

Sr. No.	TOPICS	Time
1	Origin of elements, Earth and life	6hrs
2	Introduction to the ocean	
3	Categories of trace elements	
4	Introduction to biogeochemical cycling of elements in ocean	3hrs
5	Biogeochemical cycling of carbon, nitrogen in marine environment	3hrs
6	Carbonate systems in oceans	3hrs
7	Impact of climate change on biogeochemical cycling of carbon and nitrogen in marine system	3hrs
8	Introduction to trace metal biogeochemistry Metal speciation and controlling factors	3hrs
9	Analytical methods for chemical speciation of trace metals in marine environment	3hrs
10	Marine biogeochemical cycling of Fe/Co/Zn and Hg	3hrs
11	Stable isotope systems applied to study biogeochemical cycling in marine environments	3hrs
12	Human influences on ecosystem	6hrs
13	Environmental issues such as eutrophication, global warming, ocean acidification and toxic metal biogeochemical cycling	
14	Environmental issues such as eutrophication, global warming, ocean acidification and toxic metal biogeochemical cycling	

Suggested Texts:

1. Emerson, S. and Hedges, J., 2008. Chemical oceanography and the marine carbon cycle. Cambridge University Press.
2. Libes, S., 2011. *Introduction to marine biogeochemistry*. Academic Press.
3. Chester, R.I.L.E.Y. and Riley, J.P., 1971. *Introduction to marine chemistry*. Acad. Press.
4. Hansell, D.A. and Carlson, C.A. eds., 2014. *Biogeochemistry of marine dissolved organic matter*. Academic Press.
5. Jacobson, M., Charlson, R.J., Rodhe, H. and Orians, G.H., 2000. *Earth System Science: from biogeochemical cycles to global changes* (Vol. 72). Academic Press.

And class notes