

Semester:	8		
Course Code:	ENCM 42883		
Course Name:	Climate Change, Mitigation and Adaptation		
Credit Value:	3		
Status:	Compulsory for BSc Honours in ENCM degree		
Pre-requisites:	ENCM 12752		
Co-requisites:	None		
Hourly Breakdown:	Theory	Practical	Independent Learning
	45	-	105
Intended Learning Outcomes:			
<p>After completion of this course unit, the student will be able to;</p> <ol style="list-style-type: none"> 1. explain the factors affecting climate system, 2. explain climatic change from the past to the future, 3. discuss climate change impacts on biodiversity and food security, 4. discuss climate change adaptation and mitigation strategies, and 5. evaluate national and international efforts to combat climate change. 			
Course Content:			
<p>Introduction to climate change: biophysical and socioeconomics. Determination of global climate and major climatic zones, causes for climate change: natural and anthropogenic causes, climate change from past to the present, climate change projections, climate change models and tools: Climate science, basics of climate modelling, General Circulation Models (GCM), climate change models and tools: NCAR-CCSM4 predictions, regional circulation models and downscaling, impacts of global warming, sea level rise and ocean acidification. Climate change impacts on human health, food security, biodiversity. Mitigation and adaptation for GHG, deforestation, desertification, climate change impacts and responses (local and global): economics and financing.</p> <p>Involvement of international legal and policy framework to address climate change: Kyoto Protocol, United Nation's Framework Convention on Climate Change (UNFCCC), Intergovernmental Panel on Climate Change (IPCC), Paris Agreement and other relevant efforts REDD+. National policy and institutional framework to combat climate change, misconceptions and climate skepticism</p>			
Teaching /Learning Methods:			
A combination of interactive teaching sessions, computer based learning, self-studies, field based assignments and small group discussions.			
Assessment Strategy:			
Continuous assessment and end of semester examination. Percentage given for each sub-component indicates the percent contribution to the final marks.			
Continuous Assessment 30 %		Final Assessment 70 %	
Details:		Theory	Practical
Assignments	20	70	-
Student seminar	10		Other
			-

Recommended Readings:

1. Mathez, E.A. and Smerdon, J.E. (2018), *Climate Change: The Science of Global Warming and our Energy Future*, Second Ed. Columbia University Press, New York.
2. IPCC, 2013: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY
3. CapNet, 2009. *IWRM as a Tool for Adaptation to Climate Change Training Manual and Facilitator's Guide*, CapNet.
<http://www.capnet.org/documents/2014/06/iwrm-cc-training-manual.pdf>
4. Dallas, N. (2008). *Climate Change Basics*. Mc Grow Hill.
5. Tomkiewicz, M. (2011). *Climate Change*, Mc Grow Hill.
6. IPCC, 2007. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O. F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press.