SEMESTER S6

APPLIED EARTH SYSTEMS

Course Code	OECET616	CIE Marks	40
Teaching Hours/Week (L: T:P: R)	3:0:0:0	ESE Marks	60
Credits	3	Exam Hours	2 Hrs. 30 Min.
Prerequisites (if any)	None	Course Type	Theory

Course Objectives:

1. Appreciation of earth as a system of interrelated components
2. Understanding mechanisms that give rise to oceanographic and atmospheric phenomena
3. Comprehension of processes that result in characteristic land features in different climatic regimes

SYLLABUS

Module No.	Syllabus Description	Contact Hours
1	Fundamental concepts of equilibrium. Geomorphic agents and processes. Basic concept of Earth as a system and its component sub systems. Climate Change vis-a-vis the interrelationships of the subsystems- Green House Effect and Global warming, basic ideas about their causes and effects.	9
2	Weathering- relevance, influence of and on earth systems, types and controlling factors. Soil- formation and controls, soil profile, soil erosion and conservation methods. Fluvial processes-hydrological cycle, fluvial erosion, transportation and deposition, fluvial landforms. Stages of stream development; Drainage patterns.	9
3	Wagner's ideas of continental drift, Plate Tectonics- seafloor spreading. Plate boundaries and their features, mechanisms of plate movements Basics of oceanography: coastal upwelling and downwelling. Outlines of ocean floor topography, basic outlines of origin and circulation of deep sea surface currents (Atlantic and Pacific Oceans)	9

KTU SPECIAL

4	Basics of atmosphere and atmospheric processes: Structure and composition of the atmosphere. Heat budget, factors affecting solar radiation. Fundamental concepts of precipitation, global wind patterns. General weather systems of India, - Monsoon system, cyclone and jet stream	**9**

Course Assessment Method

(CIE: 40 marks, ESE: 60 marks)

Continuous Internal Evaluation Marks (CIE):

Attendance	Assignment/ Microproject	Internal Examination-1 (Written)	Internal Examination- 2 (Written)	Total
5	**15**	**10**	**10**	**40**

KTU SPECIAL

End Semester Examination Marks (ESE)

In Part A, all questions need to be answered and in Part B, each student can choose any one full question out of two questions

Part A	Part B	Total
• 2 Questions from each module. • Total of 8 Questions, each carrying 3 marks **(8x3 =24marks)**	• Each question carries 9 marks. • Two questions will be given from each module, out of which 1 question should be answered. • Each question can have a maximum of 3 sub divisions. **(4x9 = 36 marks)**	**60**

Course Outcomes (COs)

At the end of the course students should be able to:

Course Outcome		Bloom's Knowledge Level (KL)
CO1	Explain the concept of earth as a system of interrelated components and associated exogenic/endogenic processes.	**K2**
CO2	Appraise geological agents and their respective erosion, transportation and deposition regimes and landforms formed.	**K5**
CO3	Evaluate/investigate the significance of Plate tectonics theory to explain the geodynamic features and processes of earth's surface.	**K5**
CO4	Develop an understanding of oceanographic and atmospheric regimes and their sway on other subsystems and process thereof.	**K6**
CO5	Understand implications of human interaction with the Earth system.	**K2**

Note*: K1- Remember, K2- Understand, K3- Apply, K4- Analyse, K5- Evaluate, K6- Create*

KTU SPECIAL

CO-PO Mapping Table (Mapping of Course Outcomes to Program Outcomes)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	**3**	**2**	**-**	**2**	**-**	**3**	**3**	**2**	**-**	**-**	**-**	**3**
CO2	**3**	**3**	**-**	**3**	**-**	**3**	**3**	**-**	**1**	**-**	**-**	**3**
CO3	**3**	**3**	**-**	**3**	**-**	**3**	**3**	**-**	**-**	**-**	**-**	**3**
CO4	**3**	**3**	**2**	**3**	**-**	**3**	**3**	**-**	**-**	**-**	**-**	**3**
CO5	**3**	**3**	**-**	**3**	**-**	**3**	**3**	**3**	**-**	**-**	**-**	**3**

Note: *1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), -: No Correlation*

Text Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	General Climatology	Critchfield H. J.	Prentice Hall, New Delhi	1983
2	Applied Hydrogeology	Fetter C. W.	CBS New Delhi	1990
3	Physical geology: Earth Revealed	Carlson D.H., Plummer C. C. and Mc Greary D.	McGraw Hill, New York,	2006
4	Oceanography–An Introduction to the Planet Oceanus	Pinet P R	West Publishing Co.,	1992
5	Environmental Geology: Ecology, Resource and Hazard Management	Valdiya K. S.	McGraw-Hill Education (India) Private Limited, New Delhi	2013

Reference Books				
Sl. No	**Title of the Book**	**Name of the Author/s**	**Name of the Publisher**	**Edition and Year**
1	Climatology and oceanography	D. S. Lal	Allahabad Sharda Pustak Bhawan	2001

KTU SPECIAL

Video Links (NPTEL, SWAYAM…)	
Module No.	**Link ID**
1	https://onlinecourses.nptel.ac.in/noc20_ce33/preview
2	https://onlinecourses.nptel.ac.in/noc20_ce33/preview
3	https://onlinecourses.nptel.ac.in/noc20_ce33/preview
4	https://onlinecourses.nptel.ac.in/noc20_ce33/preview