# Mahatma Gandhi University Kottayam

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| **Programme** | | | | | | |
| **Course Name** | **UNDERSTAND THE EARTH** | | | | | |
| **Type of Course** | **MDC** | | | | | |
| **Course Code** | **MG1MDCGEO100** | | | | | |
| **Course Level** | **100-199** | | | | | |
| **Course Summary** | The course offers an overview of the origin and structure of the Earth; and the materials and processes with which the dynamic Earth is constituted. Also, the course deals with the relevance of Geology in the fields of exploration, Geotectonics, disaster management, engineering, geoinformatics, environmental and groundwater studies, for the development of humanity. | | | | | |
| **Semester** | **1** | credits | | | **3** | Total Hours |
| **Course Details** | Learning Approach | Lecture | Tutorial | Practical | Others | |
| | | 2 | 0 | 1 | 0 | **60** |
| **Pre-requisites, if any** | Basic knowledge of Earth as a planet, and Geography | | | | | |



**COURSE OUTCOMES (CO)**

| CO No. | Expected Course Outcome | Learning Domains * | PO No |
|---|---|---|---|
| 1 | Understand the origin, age, dimension, internal structure, and spheres of the Earth | U | PO 1<br>PO 2<br>PO 10 |
| 2 | Recognize minerals & rocks on Earth, and various branches of the Geology | U | PO 1<br>PO 2 |
| 3 | Understand the endogenous and exogenous processes, and natural resources of the Earth | U | PO 1<br>PO 2<br>PO 10 |
| 4 | Realize the natural disasters, disaster management, and National & State level policies | U | PO 2<br>PO 3 |

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| | | | PO 6 |
| 5 | Understand the elements of toposheets to interpret SOI Toposheets, and identify the minerals based on their distinguishing properties. | A | PO 2<br>PO 3 |
| ***Remember (K), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C), Skill (S), Interest (I) and Appreciation (Ap)*** | | | |

**COURSE CONTENT**

**Content for Classroom transactions (Units)**

| Module | Units | Course description | Hrs (60) | CO No. |
|---|---|---|---|---|
| 1 | 1.1 | Origin of Earth: Big Bang theory and Nebular hypothesis | 2 | CO 1 |
| | 1.2 | Dimension of the earth: size, shape, volume and density;<br>Age, rotation and revolution of the Earth | 1 | CO 1 |
| | 1.3 | Internal Structure of the Earth: Crust, Mantle, Asthenosphere and Core; | 1 | CO 1 |
| | 1.4 | Introduction to Lithosphere, Biosphere, Hydrosphere and Cryosphere | 1 | CO 1 |
| | 1.5 | Introduction to Geology, and its various branches: Petrology, Exploration Geology, Environmental Geology, Mining Geology, Hydrogeology, Engineering Geology, Petroleum Geology, Geotectonics, and Geoinformatics | 2 | CO 2 |
| | 1.6 | Introduction to Minerals: rock-forming, ore minerals and industrial minerals; and their distinguishing properties (only); | 2 | CO2 |
| | 1.7 | Rocks: basics of igneous, metamorphic and sedimentary | 2 | CO2 |
| | 1.8 | Introduction to fossil fuels: Coal, Petroleum and Natural gas; Basic concepts of their origin | 2 | CO3 |
| 2 | 2.1 | Introduction to Earth processes: Exogenous processes | 3 | CO 3 |
| | 2.2 | Introduction to Earth processes: Endogenous processes | 3 | CO3 |
| | 2.3 | Plate tectonics, and its major evidences | 3 | CO 3 |
| | 2.4 | Hydrological cycle, and introduction to groundwater and hydrogeology | 3 | CO3 |
| | 2.5 | Introduction to natural disasters: Volcanism, Earthquake, and landslide | 4 | CO 4 |
| | 2.6 | Types of landslides; major causes of landslides, and methods of mitigation of its impacts | 4 | CO 4 |

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| | 2.7 | Disaster Management Cycle; Institutional framework, and policies to manage disasters in national and state level | 2 | CO4 |
| Practical Content **3** | 3.1 | Map reading using Survey of India Toposheets: elements of toposheets | 15 | CO 5 |
| | 3.2 | Identification of minerals based on their distinguishing physical properties | 15 | CO5 |
| **4** | Teacher specific content | | | |

**CLASSROOM PROCEDURE**

Lectures, demonstrations, assignments, class tests and practical training

**MODE OF ASSESSMENT**

**A. Continuous Comprehensive Assessment (CCA)**

**Theory: 15 Marks**

Assignments, Viva/Seminar, Class Tests

**Practical: 15 Marks**

Lab Report, Viva, Lab involvement

**B. End Semester Evaluation (ESE) Theory: 35 Marks**

Short Answer in 60 words (7 out of 8): 7x2=14

Short Notes in 230 words ( 3 out of 5): 3x7 = 21

**Practical: 35 Marks**

Examination: 25, Viva:10

**References**


- Thornbury, W. D. Principles of Geomorphology. Wiley. 2004.
- Mahapatra, S. Basics of Geology. Anmol Publications Pvt Ltd, New Delhi, 2017.
- Hyndman, Donald, and David Hyndman. Natural Hazards and Disasters. 3rd ed., Brooks Cole, 2011.
- Carlson, Plummer, & McGeary. Physical Geology – Earth Revealed. McGraw-Hill., 2006.
- Mathur, S. M. Elements of Geology. PHI New Delhi, 2008.
- Berry, L. G., Mason, B., & Dietrich, R. V. Mineralogy. CBS Publishers and Distributors Pvt. Ltd, 2004.
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- Gribble, C. D. Rutley's Elements of Mineralogy. 27th ed., CBS New Delhi, 2005.