

## **AG-103: MINERALOGY-I**

**(03 Credit hrs)**

**Prerequisite:** F.Sc. or Equivalent

### **Learning Outcomes**

This course is designed to acquire the knowledge about the physical and optical properties of various rock forming minerals and related phase diagrams. This will help the students in learning how various silicate and non-silicate minerals can be identified and how these are formed during different P-T conditions.

### **Course Contents**

- Introduction: Definition and significance of minerals.
- Crystallography: Crystallization, Internal order in crystals, Crystal Symmetry, Crystallographic notations, Crystal Forms, Crystal systems and crystal classes. Structural complexities and defects in crystals.
- Physical Properties of Minerals
- Crystal Chemistry: Bonding forces in crystals, Crystal with more than one bond types. Some common structure types. Phase equilibrium studies Compositional variation in minerals, Recalculation of Chemical Analysis, Graphic representation of Mineral Composition.

### **Lab.**

Study of crystal models and natural crystals, their illustrations and drawings. Megascopic identification of common minerals.

### **TEACHING – LEARNING STRATEGIES**

- Lecture based examination
- Presentation/seminars
- Class discussion
- Quizzes

### **ASSIGNMENTS – TYPE AND NUMBER WITH CALENDAR**

It is continuous assessment. The weightage of Assignments will be 25% before and after midterm assessment. It includes:

- classroom participation,
- attendance, assignments and presentation,
- homework
- attitude and behavior,
- hands-on-activities,
- short tests, quizzes etc.

## ASSESSMENT AND EXAMINATIONS

Sr. No.	Elements	Weightage	Details
1.	Mid Term Assessment	35%	It takes place at the mid-point of the semester
2.	Formative Assessment	25%	It is continuous assessment. It includes: classroom participation, attendance, assignments and presentation, homework, attitude and behavior, hands-on-activities, short tests, quizzes etc.
3.	Final Assessment	40%	It takes place at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.

### Books Recommended

1. Rutley's Elements of Mineralogy (1981) By H. H. Read, 26<sup>th</sup> Edition, Thomas Murby & Co.
2. Manual of Mineralogy (1999) by Cornelis Klein & Cornelius S. Hurlbut, Jr. after J. D. Dana. John Wiley & Sons, Inc.
3. Principles of Mineralogy by William, H.B., 1990, Oxford University Press.
4. Elements of Mineralogy by. Mason B & Berry, L. G. 1968, W. H Freeman and Company.
5. Mineralogy by Perkins, D., 2002, Prentice Hall
6. Minerals and Rocks by Klien, C., 1989, John Wiley & Sons.
7. An Introduction to Rock Forming Minerals by Deer, W.A. Howie, R.A. & Zussman, J., 1992, Longman.