D.B.F. Dayanand College of Arts and Science, Solapur

Department of Geology

B.Sc. II

Subject	**Mineralogy**
Paper No. and Title	**Paper – III Optical mineralogy**
Module (Flipped classroom) Title	**OPT.MIN**
Module Tag	**DAYA.GEO.VMD2**

Name – Dr. V.M. Dikshit

Department - Geology

D. B. F. Dayanand College of Arts and Science, Solapur

2020-2021

Module No. 1

Title – Mineralogy

- **Prerequisites –**

Optical Mineralogy deals with the study of optical properties of minerals in thin sections and grains under a special type of microscope, called **Petrological Microscope**, which differs from an ordinary microscope in having a set of additional fittings. An ordinary microscope makes use of ordinary light, which travels with rapid forward and backward movements, called vibrations taking place irregularly in different directions. Such an ordinary light is not suitable for the determination of optical properties. Light, suitable for the determination of optical properties, should have its vibrations taking place in one definite plane. Such a light is called **"polarized" light**, Therefore, ordinary light has to be converted into polarized light, before it can be used for the determination of optical properties. A fitting to a microscope that can convert ordinary light into polarized light is called the **'polarizing prism'** and petrological microscope is fitted with two such polarizing prisms and thus differs from an ordinary microscope, which does not have any such fitting. Therefore, a petrological microscope is often called a polarizing microscope

- **Objectives of the Module**
  Students should learn about the details of the Optical Mineralogy

Content	**Objectives** **(Learner should be able to)**	**Cognitive Level**
Petrological microscope Properties of light and polarised light Double refraction, nicol prism and polaroids in microscopes.	Differentiate between simple and petrological microscope.	Remembering
	Double refraction and nicol prism	Remembering
	Parts and working of nicol prism and polaroids	Remembering
	Visualization method	Applying
	Proper thought process	Understanding
	Asking question and some simple concept	Evaluating

Detailed Plan of Out-of-class and In-class activities

Sub Unit 1 -

Objectives –

- Understanding the difference between non-polarised and polarised light.
- Understanding single and double refraction.
- Working of polaroids

Resources Needed –

→Title and Nature of Resources –

Syllabus of B. Sc. II Geology

https://drive.google.com/file/d/1nk-PsoQVXelCRmUnulndpIxIsZRywJTy/view?usp=sharing

→Material OER/URL/Instructor-made/Copywrited/Text Book etc.

1) Text Books / Notes

https://drive.google.com/file/d/1TllnQJwbAsgbVVMO3WH_DYx61fDobksL/view?usp=sharing

https://drive.google.com/file/d/1SDYb18v30gAu8TXzAtLbN3VyjR_IfBc1/view?usp=sharing

2) Instructor-made -

PPT -

https://drive.google.com/file/d/191CRzNm71-4cvQUmkIdK9Trk-Wq3xtc-/view?usp=sharing

3) Instructor-made -

Video -

https://www.youtube.com/watch?v=_ooSuUHGiiw&t=176s

Units	Out-of-class activity Details of Activity	In-class activity Details of Activity	Assessment
1.1	Students should read out the topic from a book Students study the ppt.	Discussion on the topic Check the level of understanding through Question – answer session	Question – answer session
1.2	Students should read out the topic from a book Students should watch video on given links	Discussion on the topic Visualising the nicol prism and polaroids. Help students to apply definition to various natural objects	Question to write in detail On-line quiz

Sub Unit 2 -

Content	Objectives (Learner should be able to)	Cognitive Level
Petrological microscope Chemical composition of minerals.	Differentiate between biological and petrological microscopes	Remembering
	Parts and working of petrological microscope	Remembering
	Passage of polarised light through microscope	Remembering
	Visualization and operation of petrological microscope	Applying
	Proper thought process	Understanding
	Asking question and some simple concept	Evaluating

Objectives –

- Working of petrological microscope.
- Working of various parts of microscope
- Application of microscope to view minerals/rock slides.

Resources Needed –

→ Title and Nature of Resources –

Syllabus of B. Sc. II Geology

https://drive.google.com/file/d/1nk-PsoQVXelCRmUnulndpIxIsZRywJTy/view?usp=sharing

→ Material OER/URL/Instructor-made/Copywrited/Text Book etc.

2) Text Books / Notes

3) https://drive.google.com/file/d/1TllnQJwbAsgbVVMO3WH_DYx61fDobksL/view?usp=sharing

4) https://drive.google.com/file/d/1SDYb18v30gAu8TXzAtLbN3VyjR_IfBc1/view?usp=sharing

3) Instructor-made -
PPT -

https://drive.google.com/file/d/191CRzNm71-4cvQUmkIdK9Trk-Wq3xtc-/view?usp=sharing

4) Video

Units	**Out-of-class activity** **Details of Activity**	**In-class activity** **Details of Activity**	**Assessment**
1.1	Students should read out the topic from a book Students should listen to the recordings	Discussion on the topic Check the level of understanding through Question – answer session	Question – answer session
1.2	Students should read out the topic from a book Students should watch video on given links	Discussion on the topic Visualizing parts of petrological microscope. Application of tools to identify minerals	Question to write in detail On-line quiz