

LESSON PLAN (PERIOD -WISE)

SUBJECT: BIOLOGY

GRADE: XII

Chapter Number and Title of Chapter	CHAPTER 2 : SEXUAL REPRODUCTION IN FLOWERING PLANTS (STRUCTURE OF FLOWER AND MALE REPRODUCTIVE UNIT)
Period Number	(approx. 40 min each) One period
Learning Objectives	Given the content (chapter) the learners will be able to • Identify the parts of a flower • Understand the arrangements of these components in a flower. • Gain knowledge of the structure of the male reproductive unit of a plant and study its formation
Teaching Aids / Resources	Videos (Teaching and Explanation video will be shown to the students) PPT (A presentation on the topic will also be included as a part of the discussion in the class room).
Previous Knowledge/ Curiosity Questions	The students should have the knowledge of various parts of an angiospermic plant. Their knowledge will be tested by asking them oral questions on the above mentioned topics. 1. What is the reproductive part of an angiosperm called? 2. How are seeds and fruits formed in a plant?
Announcement of topic	The facilitator announces to the class “Let us begin our discussion by first studying the structure of a flower and then studying the male reproductive unit of a plant in detail”.
Teaching Methodology/ Strategy	Transaction would proceed in the following manner- Suggestive Methodologies: Brain Storming / Curiosity Questioning Anticipatory Set The facilitator introduces the chapter by Brain Storming (Critical, Collaboration). Class would be divided into 3 groups. Each group will be asked to answer one of the following questions- • What do you think are the organs of reproduction in a plant? • What is the process of sexual reproduction in plants? • How and where do you think pollen grains are formed in plants? • Active learning- The students will answer the above questions and read them out to the class for further discussion which will be aided by the PPT and the video which will be shown on the structure of DNA.

	Questioning- <i>Guided practice followed by Independent Practice.</i> NCERT questions to be discussed in the classroom. : Q.1- 3 on page no. 40 of the textbook will be discussed
Content Obligatory Vocabulary (Keywords)	Androecium: the male reproductive whorl of a flower is called androecium. Tapetum: the inner most wall layer of the anther which provides nourishment to the young pollen grains. Microsporogenesis: The process by which haploid pollen grains are formed in the anther after meiosis in the sporogenous tissue. Pollen tetrad: the haploid products of a single megaspore mother cell remain joined together for some time. This is called pollen tetrad.
Learning Concepts/ Teaching Points	1. The flower is a modified stem which functions as a reproductive organ in higher plants 2. A flower normally consist of four parts Sepals, Petals , Stamens and Pistils. 3. The process of the formation of microspores (pollen grains) from microspore mother cells through meiosis in these cells is called microsporogenesis. 4. Pollen grain represents the male gametophytes
Hard Spots/ Focus Spots	The focus point of this topic is: The concept of microsporogenesis is the focus point of this portion. The reason: The concept is abstract and students cannot understand it easily because there are multiple layers each having a different role which leads to confusion among the students. The effect: The students are unable to explain the concept clearly when asked in the form of a question in the examination.
Experiential Content	Name of the activity: To study pollen germination on a slide. Type: Individual. Learning outcome: The students will be able study the structure of a pollen grain and see its germination on a slide. Procedure: 1.Prepare the pollen germination medium using10 grams sucrose, 30grams calcium nitrate and 10grams boric acid mixed in 100 grams of water. • 2. Pour one drop of this medium into the cavity of a cavity slide. • 3. Dust some pollen grains onto the slide with a brush and cover the slide with a cover slip.

	4. Leave the slide undisturbed for 10 – 15 minutes. 5. Observe the slide under a microscope. 6. Count the number of germinating and non - germinating pollen grains. Questions: 1. Name the branch of science dealing with the study of pollen? Why was it necessary to add sucrose to the medium in which pollen grains germinate? Hints/Answers 1, The branch is called palynology. 2. Sucrose provides nutrition to the germinating pollen and keeps them alive.
Subject Enrichment Activities for Internal Assessment	1, The students will draw a diagram of the different parts of a flower in their note books. 2. They will write down the main steps in the process of microsporogenesis and draw the related diagrams. 3. They will attempt the NCERT back question numbers 1-3 in their note books.
Recapitulation :	The facilitator will ask oral questions on the concept points covered in the lesson and then close the topic by going over the main features of the structure of the flower once again.
Assignment:	The students will be asked to attempt the following questions: 1. Papaver and Michelia both have multicarpellary ovaries. How do they differ from each other? 2. An anther with malfunctioning tapetum often fails to produce viable male gametophytes. Give any one reason. 3. A bilobed, dithecous anther has 100 microspore mother cells per microsporangium. How many male gametophytes this anther can produce? 4. How many microspore mother cells would be required to produce one hundred pollen grains in a pollen sac? And why? 5. How many microsporangia are present in a typical anther of an angiosperm? 6. Name the part of the flower which the tassels of the corn-cob represent. 7. In a flowering plant a microspore mother cell produce four male gametophytes while a megaspore mother cell form only one female gametophyte. Explain. 8. Explain giving two reasons why pollen grains can be best preserved as fossils.

