## UNIVERSITY OF SARGODHA

## COURSE OUTLINE

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| **Course Title** | **Breeding Maize and Millets** | | | | | |
| **Course Code** | PBG-306 | | | | | |
| **Credit Hours** | 3(2-1)  Theory per week  Lecture: 2 | | | | | |
| **Pre-Requisite** | Nil | | | | | |
| **Category** | Agriculture-Plant Breeding and Genetics | | | | | |
| **Course Introduction** | This course is a graduate level of course about maize and millet crops. The course aim is to elaborate the evolutionary pathways of maize and millet crops and different types of maize. It also focuses on breeding methods which are used to improve these crops. The course also explains hybrid maize production and it scope. It enables the students to understand the concepts of heterosis and its significance. | | | | | |
| **Learning Outcome** | The students will be able to understand:   * Evolutionary pathways of Maize and Millets * Breeding methods in maize and millets * Hybrid maize production and its scope * Students will learn breeding methods of maize and millets | | | | | |
| **Syllabus** | * Importance of Maize and Millets * Origin and races of maize * Breeding method of Maize and millets * Heterosis and its exploitation * Hybrid seed production of maize and millet * Quality Maize protein * Breeding for various stresses. | | | | | |
| **Text Books** | 1. Chaudhry, A.R. 1963. Maize in Pakistan. Punjab Agric. Research Coordination Board, University of Agriculture, Faisalabad, Pakistan 2. Sleper, D.A and J.M. Poehlman.2006. Breeding Field Crops. 4th ed. Iowa State University Press, Ames, USA. 3. Singh, B.D. 2003. Plant breeding: Principles and Methods. Kalyani Publisher, New Dehli India 4. Singh, P. 2003. Essentials of Plant breeding.Kalyani Publisher, New Dehli India . | | | | | |
| **Assessment Criteria** |  | **Sessional**  **(8)** | **Midterm**  **(8)** | **FinaI term**  **(24)** | **Practical**  **(20)** | **Total**  **(60)** |
| **Criteria** | **12** | **8** | **20** | **20** | **60** |
| **Result** |  | | | | |

Frame Work

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| Week | Topics and Readings | Weeks |
| 1. | Course Introduction etc. Economic Importance of Maize, World Maize outlook | Week-One |
| 2. | Maize Production technology, Flower structure of Maize | Week-Two |
| 3. | Origin of Maize, Genetics of Corn, Types of Maize and Their significance, | Week-Three |
| 4. | Breeding Methods, Flowering and Pollination, Selection Procedures, recurrent selection, | Week-Four |
| 5. | Development and Handling of inbred lines, Development of Crosses of Maize Inbred Lines | Week-Five |
| 6. | Recurrent Selection and Population Improvement and handling of segregating Population, | Week-Six |
| 7. | Heterosis and its significance, | Week-Seven |
| 8. | Combining ability and Hybrid seed production in maize and millets | Week-Eight |
| 9. | Hybrid seed production in maize and millets, Development of synthetic Cultivars | Week-Nine |
| 10. | Use of male sterility, Recording of Data of Various Parameters | Week-Ten |
| 11. | Breeding for drought stress | Week-Eleven |
| 12. | Breeding for drought stress | Week-Twelve |
| 13. | Breeding for heat stress | Week-Thirteen |
| 14. | Breeding for Heat Tolerance | Week-Fourteen |
| 15. | Breeding Objectives, Current Scenario and Future Prospects | Week-Fifteen |
| 16. | Presentations, Revision | Week-Sixteen |