

## **PG & RESEARCH DEPARTMENT OF BOTANY**



**SREEKRISHNA COLLEGE, GURUVAYUR -680102**

**Certificate Course – 2024-25**

**Certificate Course on SEED SCIENCE AND TECHNOLOGY**

**Course Code :CERSKCBOT006**

Total Hours:30 Hours

Total Marks :40 Marks

### **Objectives:**

1. Explore the fundamental aspects of seed research
2. Learn about the methods and practices involved in the production of high-quality seeds.
3. Familiarize with seed certification and seed standardization protocols.
4. Encourage critical thinking and innovation in seed science by engaging in research projects, field trials, or experiments related to seed technology.

### **Learning Outcomes**

1. Develop critical thinking skills to address complex problems in seed science and technology.
2. Propose solutions to practical challenges in seed production and utilization.

### **Target Audience**

- Graduate students in Botany

## Syllabus

### **Module 1: Floral biology, Seed development and Maturation (8hours)**

Floral types, structure and biology in relation to pollination mechanisms, Sporogenesis: Micro and Megasporogenesis, Embryo sac, Incompatibility and male sterility, Factors affecting fertilization, Structure of Dicot and Monocot embryos, Apomixis, Polyembryony, Synthetic seeds

**Practical:** Pollen germination, external and internal structure of dicot and monocot embryo, Digital seed album

### **Module 2: Seed quality testing and seed technology (12hours)**

Seed biology: morphological and physiological development of seeds, Seed germination, Seed dormancy, Principles and practices of certified seed production, genetic stock, Breeder seed, Foundation and certified seed, Seed pest and pathogens, Seed sampling, Seed purity analysis, Seed moisture content, Seed viability and vigour testing, Seed health testing

**Practical :** Seed moisture content test, Seed germination test, Seed viability test, Seed dormancy

### **Module 3: Physiology and Biochemistry of seeds (10hours)**

Classification of seeds, Seed desiccation, Seed storage: Seed viability during storage, long and short term storage methods, ageing of seeds and deterioration in germination and vigour, problems of storing seed at high and low moisture content, Cryostorage.

**Practical:** Seed desiccation, Seed storage

## References

1. J.D.Bewley and M. Black. 1978. *Physiology and biochemistry of seeds- in relation to germination* .Volume.1.Springer-Verlag Berlin Heidelberg, New York.
2. J.D.Bewley and M. Black. 1982. *Physiology and biochemistry of seeds- in relation to germination* .Volume.2.Springer-Verlag Berlin Heidelberg, New York.
3. Carol C Baskin and Jerry M. Baskin. 2001. *Seeds - Ecology, biogeography and evolution of dormancy and germination*. Academic Press, New York.
4. Kozlowski.T.T.1972. *Seed Biology* (Volume.III) Academic Press, New York.
5. R.L. Agarwal. 1980. *Seed Technology*, Oxford and IBH publishing Co. New Delhi.
6. J.Hanson.1985.*Practical manuals for Gene Bank No.1*, IBPGR Secreteriate, Rome.