

**5<sup>th</sup> SEMESTER**  
**SKILL ENHANCEMENT COURSE (BOTANY)**

**BO517S1: SEED TECHNOLOGY-I**

**CREDITS: THEORY-2, PRACTICALS-2**

**THEORY (2 CREDITS)**

**UNIT 1: SEED DEVELOPMENT, PRODUCTION AND STORAGE**

- Seed development (sporogenesis, fertilization, embryogenesis & seed formation); seed dormancy and factors causing dormancy of seeds; Seed dispersal strategies, concept of seed classes (nuclear, breeder, foundation, registered, certified seeds): economic importance of seeds
- Importance of genetic purity in seed production; seed production in some common crops (rice, maize, pea and mustard); methods of hybrid seed development; importance of seed processing
- Seed treatments (physical and chemical); seed storage and factors affecting seed storage.

**UNIT 2: SEED GERMINATION, TESTING, VIGOUR AND CERTIFICATION**

- Seed germination – introduction & types, Factors affecting seed germination, role of promoters and inhibitors.
- Seed vigour – concept, factors affecting seed vigour, physiological and genetic basis of seed vigour and methods of measuring seed vigour;
- Seed testing: (Moisture test, germination test, tetrazolium test – principle, procedure and evaluation); methods to break seed dormancy; Concept of seed certification, certification agency; seeds legislation in India and law enforcement

**PRACTICAL WORK (2 CREDITS):**

1. Study the morphology and structure of different types of seeds.
2. Study the seed germination using different methods and also calculate the MGT (Mean Germination Time).
3. Study the effects of different chemicals and phyto-hormones on seed germination.
4. Study the seed viability using Tetrazolium Test.
5. Determination of seed moisture using Air-Oven method and Grinding method.
6. Study the seed vigour using different direct vigour tests (Brick Gravel test, paper piercing test, accelerated aging test).
7. Study the starch granules of some common seeds (Beans, Maize, Rice).
8. Determination of fungal and bacterial pathogens of seeds by incubation method.

**SUGGESTED READINGS:**

1. Bhojwani SS & Bhatnagar SP. 1999. *The embryology of Angiosperm*. Vikas publications.
2. Copeland LO & McDonald MB. 2001. *Principles of seed science and Technology*. 4<sup>th</sup> Ed. Chapman & Hall.
3. Agarwal RL. 1997. *Seed Technology*. 2<sup>nd</sup> Ed. Oxford & IBH.
4. Kelly AF. 1998. *Seed Production of Agricultural Crops*. Longman.
5. McDonald MB Jr & Copeland Lo. 1997. *Seed Production: Principles and Practices*. Chapman & Hall.
6. Barton LV. 1985. *Seed Preservation & Longevity*. International Books and Periodicals Supply Service. New Delhi.
7. Justice OL & Bass LN. 1978. *Principles and Practices of seed storage*. Castle House Publ. Ltd.
8. Nema NP. 1986. *Principles of Seed Certification and Testing*. Allied Publications.
9. Tunwar NS & Singh SN. 1988. *Indian Minimum Seed Certification Standards*. CSCB, Ministry of Agriculture, New Delhi.