Course code	Course Title	C	H	I	E	T
17U2BMC2	**ANATOMY AND EMBRYOLOGY**	**5**	**5**	**25**	**75**	**100**

Unit I Anatomy **20 Hrs**

Plant tissues – meristems, characteristics. Classification based on origin, position, plane of cell division and function. Apical meristem – organization. Theories – Histogen, Tunica Corpus and Korper-Kapper. Root apex – structure, concept of Quiscent center. Permanent tissues - simple - parenchyma, collenchyma and sclerenchyma; complex tissues - components of xylem and phloem.

Unit II **15 Hrs**

Primary structure of dicot and monocot stem. Internal structure of dorsiventral and isobilateral leaf. Primary structure of dicot and monocot root. Nodal anatomy – uni – *Justicia*; tri - *Azadirachta* and multilacunar – *Aralia*.

Unit III **15 Hrs**

Secondary structure of dicot stem and root. Anomalous secondary growth in *Aristolochia*, *Boerhaavia* and *Dracaena*.

Unit IV Embryology **15 Hrs**

Parts of a typical dicot flower – Structure of mature anther - types and functions of tapetum. Types and structure of ovule - orthotropous, anotropous and camphylotropous. Types of embryo sac – monosporic, bisporic and tetrasporic. Development of *Polygonum* type of embryo sac. Pollination types - anemophily, hydrophily and entomophily.

Unit V **10 Hrs**

Double fertilization, syngamy, triple fusion and significance. Structure and development of dicot embryo (*Capsella*). Endosperm types – nuclear, cellular and helobial.

REFERENCES

1. Fahn, A, Plant Anatomy, 1967, Pergamon Press.
2. Cutter, Plant Anatomy, 1969, Experiment and Interpretation, Edward Arnold Publication.
3. Maheswari, Embryology of Angiosperms, 1974, Vikas publishing house.
4. Bhojwani, Embryology of Angiosperms, 1974, Vikas publishing house.
5. Easu, K, Anatomy of seed plants, 1979, Wiley Easter.
6. Pandey, P. B, Plant Anatomy, 2005, S. Chand & Co Ltd., New Delhi.

PRACTICALS

1. Primary structure: Transverse section of dicot and monocot stem.
2. Primary structure: Transverse section of dicot and monocot root.
3. Transverse section of dorsiventral and isobilateral leaves.
4. Secondary and anomalous structure - dicot stem.
5. Transverse section of monothecous and dithecous anther.
6. Dissection of dicot embryo and pollinium.
7. Dissection of cellular endosperm.
8. Observation of slides: Shoot and root apical meristem, types of ovule, embryo sac and morphology of pollens.