BACHELORS WITH BOTANY AS MAJOR (CT – I)
3rd SEMESTER
BOT324J: BOTANY ARCHEGONIATES: BRYOPHYTES, PTERIDOPHYTES, AND GYMNOSPERMS
CREDITS: THEORY: 4; PRACTICAL: 2

OBJECTIVES:
To impart understanding about diversity and economic importance of bryophytes, pteridophytes, gymnosperms and some fossil species, and to acquaint students about the their classification, structure, morphology and reproduction.

LEARNING OUTCOME:
The students will learn about basic concept, diversity, general characteristics and economic importance of bryophytes, pteridophytes, gymnosperms and fossil species.

THEORY (4 CREDITS)

UNIT I:
General characteristics of bryophytes, Main criteria for classification of bryophytes, morphology, anatomy and reproduction (excluding developmental details) of *Marchantia Antheceros* and *Funaria*; a Evolution of sporophyte; apogamy and apospory; alternation of generation; economic importance of bryophytes.

UNIT II:
General characteristics of pteridophytes; criteria for classification of pteridophytes (Parihar 1996); morphology, anatomy and reproduction (excluding developmental details) of *Equisetum* and *Dryopteris*; heterospory and origin of seed habit; evolution of stellar systems in pteridophytes.

UNIT III:
General characteristics of gymnosperms, criteria for classification of gymnosperms. Distribution of gymnosperms in India; morphology, anatomy and reproduction (excluding developmental details) of *Cycas* and *Pinus*; evolutionary and economic importance of gymnosperms.

UNIT IV:
Adaptations to land habit. General account of fossil bryophytes (*Naiadita*) fossil pteridophytes (*Rhynia*), and fossil gymnosperms (*Lyginoptris*).Introduction to paleobotany, Geological time scale.

PRACTICAL EXERCISES (2 CREDITS)
- Study of vegetative and reproductive structures of *Marchantia Anthoceros* and *Funaria* through temporary slides and permanent slides.
- Study of vegetative and reproductive structures of *Selaginella*, *Equisetum* and *Dryopteris* through temporary slides and permanent slides.
- Study of vegetative and reproductive structures of *Cycas* and *Pinus*- through temporary slides and permanent slides

SUGGESTED READINGS

- Pteridophyta (vascular cryptogams) by Dr.P.C.Vashista,Dr.A.K.Sinha,Dr Anil Kumar
- Diversity of microbes and cryptograms and seed plant diversity and sytematics) by S.P.Pandey and S.K.Verma Pradeeps Botany by Dr.H.N.Shrivasta vol iii
- Gymnosperms by Dr.P.C.Vashista,Dr.A.K.Sinha,Dr Anil Kumar
- **B**ryophyte text book by Dr. O.P Sharma