University of Kerala

Discipline	**BOTANY**				
Course Code	**UK3DSCBOT203**				
Course Title	**BRYOPHYTES,PTERIDOPHYTES AND GYMNOSPERMS**				
Type of Course	**DSC**				
Semester	**III**				
Academic Level	**200 - 299**				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	04	03 Hours	-	02 Hours	05 Hours
Pre-requisites	UK2DSCBOT104				
Course Summary	To familiarize students with the characteristic features and evolutionary significance of Bryophytes, Pteridophytes and Gymnosperms. To generate awareness about the lifecycle of Bryophytes, Pteridophytes and Gymnosperms.To impart knowledge about ornamental ferns and gymnosperms				

Module	Unit	Content	Hrs
I		**Bryophytes**	**09**
	1	General characters, classification by Smith (1959)	
	2	Study of habit, thallus organization, vegetative and sexual reproduction, and alternation of generation of the following types (Developmental details are not required) *Riccia, Bryum.*	
II		**Pteridophytes**	**09**
	3	Introduction: General characters and classification (Bierhost - 1971); Study of habit, internal structure, reproduction, and life cycle of the following types (Developmental details not required). *Selaginella* and *Pteris* Fossil Pteridophytes- *Rhynia* stem T.S	
	4	Stelar evolution in Pteridophytes	
III		**Gymnosperms**	**10**
	5	Introduction –General characters and classification (Sporne- 1965)	
	6	Study of the habit, anatomy, reproduction, and life cycle of the following types (Developmental details are not required) *Cycas* and *Pinus* Fossil gymnosperms--*Lyginopteris*	
IV		**Economic importance**	**2**
	7	Economic, ecological, medicinal, horticultural, culinary, and research of bryophytes, pteridophytes and Gymnosperms.	
V		**Evolutionary trends**	**15**

	9	Archegoniate Evolutionary aspects- Transition to land habit, Conservation studies.	
	10	Polyembryony in Gymnosperms, Apogamy and Apospory.	
	11	Heterospory and seed habit in Pteridophytes.	

Practicals		
	1. Riccia- Habit- Anatomy of thallus 2. Bryum- Habit, Anatomy of thallus 3. Selaginella – Habit, T.S of stem and rhizophore. 4. Pteris - Habit, Anatomy of Rachis and Sporophyll, Prothallus 5. Cycas- T.S of leaf, Micro, and megasporophyll 6. Pinus-T.S. of the needle, morphology of male and female cone. 7. Permanent slide/ images of Fossils – Rhynia, Lyginopteris 8. Identify and submit geotagged photographs of archegoniates.	**30**

Suggested Reading

1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
1. Pandey, B. P. 2006. College Botany, Vol. II: Pteridophyta, Gymnosperms and Paleobotany. S. Chand & Company Ltd, New Delhi.
2. Sporne, K. R. 1965. Morphology of Gymnosperms. Hutchinson Co., Ltd., London.
3. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany - Pteridophyta (Vascular Cryptogams). . Chand & Company Ltd, New Delh

References

1. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
2. Thakur, A. K. and S. K. Bassi. 2008. A Textbook of Botany: Diversity of Microbes and Cryptogams. S. Chand & Company Ltd, New Delhi.
3. Vashishta, B. R., A. K. Sinha and Adarsha Kumar. 2008. Botany for Degree Students: Bryophyta. S. Chand & Company Ltd, New Delhi.
4. Vashishta, P. C., A. K. Sinha and Anil Kumar. 2006. Botany for Degree Students: Gymnosperms. Chand & Company Ltd, New Delhi

Web links

1. https://www.vedantu.com/biology/pteridophytes
2. https://plantlet.org/classification-of-pteridophytes/
3. https://www.thoughtco.com/what-are-gymnosperms-4164250

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Explain the general characters of Archegoniates and formation of fossils	R,U	PSO-1,2

CO-2	Classify archegoniate to different plant groups	R,U,	PSO-1,2
CO-3	Compare the structure of gametophyte and sporophyte of Archegoniates	U, An	PSO-1,2,
CO-4	Assess the economic and ecological significance of Archegoniates	U, An	PSO- 4,6
CO-5	Investigate aesthetic applications of archegoniates	U,Ap	PSO-7

R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create

Name of the Course: Bryophytes, Pteridophytes and Gymnosperms
Credits: 3:0:1 (Lecture:Tutorial:Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/ Tutorial (T)	Practical (P)
1	1	1,2	R,U	F, C	L,T	
2	2	1,2	R,U,	F, C	L,T	
3	3	1,2,	R,U,An	F, C	L,T	
4	4	4,6	U, An	F, p		P
5	5	4,6	U,Ap	F, C		P

F-Factual, C- Conceptual, P-Procedural, M-Metacognitive

Assessment Rubrics:

- Quiz / Assignment/ Quiz/ Discussion / Seminar
- Midterm Exam
- Programming Assignments
- Final Exam

Mapping of COs to Assessment Rubrics :

	Internal Exam	Assignment	Project Evaluation	End Semester Examinations
CO 1	✓			✓
CO 2	✓			✓
CO 3	✓			✓
CO 4		✓		✓
CO 5		✓		✓