University of Kerala

Discipline	**BOTANY**				
Course Code	**UK4VACBOT201**				
Course Title	**ENTREPRENEURSHIP IN PLANT SCIENCE**				
Type of Course	**VAC**				
Semester	**IV**				
Academic Level	**200 - 299**				
Course Details	Credit	Lecture per week	Tutorial per week	Practical per week	Total Hours/Week
	03	03 Hours	-	-	03 Hours
Pre-requisites	No Pre-requisites				
Course Summary	This course aims to provide students with a comprehensive understanding of plant biology alongside the development of entrepreneurial skills necessary for creating, managing, and sustaining ventures in the botanical industry. Students will be equipped to identify opportunities, innovate, and establish successful businesses in various sectors related to plants, agriculture, and environmental conservation.				

Detailed Syllabus:

Module	Unit	Content	Hrs
I		**Introduction to Entrepreneurship**	**09**
	1	Types and Characterization of Botanical Entrepreneurship- agribusiness, bio ventures, and aesthetics - characterizing ventures based on botanical products.	
	2	Need, Entrepreneurial Values, Motivation, and Barriers- Analyzing the socio-economic factors driving entrepreneurial endeavours in Botany- Identifying values- motivation factors- and overcoming barriers	
	3	Entrepreneurship as Innovation, Risk Assessment, and Solutions - Examining the role of innovation in botanical entrepreneurship. Assessing risks specific to botanical ventures and proposing strategic solutions.	
II		**Bio ventures in the context of Kerala**	**09**
	4	Overview of Key Botanical Industries in Kerala- Commercial uses of *Spirulina*, *Pleurotus sajor- caju*, *Ganoderma*, *Lentinus edodes*, *Moringa oliefera*, and Coconut industries within the Kerala context.	
	5	Case studies on successful ventures like Jackfruit 365 and Vegrow. Biotech startups and support mechanisms Zaara Biotech, KDISC, Bio 360 Life Sciences Park, BioNest.	
	6	Aesthetics in Kerala Botanical Entrepreneurship- Exploring the market for ornamental plants and flowers in Kerala. Opportunities and challenges specific to the aesthetics industry in the state.	
III		**Business planning and case studies**	**09**

	7	Preservation and processing- Canning and Processing of Fruits in Kerala -Overview of fruit canning processes and equipment, with a focus on Kerala's fruit varieties - Jack fruit, Pineapple, and Mango- Adapting processes to meet the unique demands of the Kerala fruit market.	
	8	Fruit and vegetable-based products- production of juices, squashes, and other fruit-based products considering Kerala's agricultural landscape.	
	9	Bamboo and cane-based products, Nutraceuticals, and oils- Herbal medicines and cosmetics.	
	10	Educational Business ventures- risks and possibilities - Udemy, Business Based learning.	
	11	MUDRA Yojana - Overview, its role in funding micro-enterprises. Practical insights into the application process and eligibility criteria.	
	12	Stand Up India- Exploring the Stand Up India scheme and its focus on promoting entrepreneurship among women and SC/ST communities.	
	13	SC/ST Hub: Understanding the SC/ST Hub initiative and its role in supporting entrepreneurs from marginalized communities. Examining how the SC/ST Hub facilitates access to finance, markets, and capacity building.	
	14	Schemes for women entrepreneurs -Mahila Samriddhi Yojana, Women Entrepreneurship Platform (WEP), Trade Related Entrepreneurship Assistance and Development (TREAD) Kudumba Shree/ Mahila Udhyami Yojana-Nai Roshni- Scheme for Leadership Development of Minority Women-Mahila Shakti Kendra	
IV	**Government initiatives and support scheme for Entrepreneurial Ventures**		**09**
	15	Navigating Government Support- Practical guidance on how entrepreneurs can navigate and access the above-mentioned government schemes	
	16	Analyzing real world success stories of entrepreneurs who have benefited from the mentioned government initiatives: BIRAC schemes, YIP, Atal innovation missions- Extracting key lessons and best practices.	
	17	Entrepreneurial Impact Assessment: Evaluating the impact of government schemes on entrepreneurial ventures. Discussing challenges faced and proposing solutions for improvement.	
V	**Success Stories**		**09**
	18	Develop a comprehensive business plan integrating one or more government schemes and do presentations.	
	19	Each student presents an analysis of a chosen success story related to government support schemes- Propose an entrepreneurial idea based on plant and plant products.	
	20	Make an audio-visual document of an interview with an entrepreneur.	

Suggested Reading

1. Yashpal Singh 2020: Botany for BSc Students Semester II: Entrepreneurship in Botan
2. Bonney, R., Cooper, C.B., Dickinson, J., & Steve, K., (2009). Citizen science: a developing tool for expanding science knowledge and scientific literacy. Bioscience, (NEP 2020- Jammu) S Chand Publishing.
3. Edmond, J. B., Musser, A. M., & Andrews, F. S., (1957). Fundamentals of Horticulture. McGraw Hill Book Co., New Delhi.

References

1. Arya, H., & Bhatt, T. K., (2021). Introduction of intellectual property rights. In The Design & Development of Novel Drugs and Vaccines. Academic Press.
2. Aydara, E. F., Sena, T., & Beraat, O., (2020). Plant-based milk substitutes: Bioactive compounds, conventional and novel processes, bioavailability studies, and health effects. Journal of Functional Foods. 103975. 1-15.
3. Beasley, K., Lee-Hammond, L., & Hesterman, S., (2021). “A Framework for Supporting the Development of Botanical Literacies in Early Childhood Education”. International Journal of Early Childhood 53 (2): 119–137.
4. Borlaug, N., (1970). "The Green Revolution, Peace, and Humanity”. Nobel Lecture. Available at http://www. nobel.se.
5. Chen, X., Lu, X., Shu, N., Wang, S., Wang, J., Wang, D., Guo, L., & Ye, W., (2017). Targeted mutagenesis in cotton (Gossypium hirsutum L.) using the CRISPR/Cas9 system. Scientific Reports. 7, 44304
6. Chrispeels, M. J., & Sadava, D. E., (1994). Plants, Genes and Agriculture. Jones & Bartlett Publishers
7. Cruses, W.V., & Fellows, P. J., (2000). Commercial fruits and vegetable processing. CRC press, United

Course Outcomes

No.	Upon completion of the course the graduate will be able to	Cognitive Level	PSO addressed
CO-1	Demonstrate knowledge of diverse botanical entrepreneurship	R, U	
CO-2	Develop comprehensive business acumen for botanical ventures incorporating innovation, risk assessment, and strategic solutions	R, U	PSO-4,6
CO-3	Navigate and integrate government initiatives and support schemes in entrepreneurial endeavors in botanical sector.	U, AP,	
CO-4	Analyze and evaluate real-world success stories of entrepreneurs from government initiatives	Ap, An, E	PSO-7,8

CO-5	Propose entrepreneurial ideas based on plant and plant-based products conducting preliminary research	Ap, An, C	PSO-6,8

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

Name of the Course: Entrepreneurship in Plant Science

Credits: 3:0:0 (Lecture:Tutorial:Practical)

CO No.	CO	PO/PSO	Cognitive Level	Knowledge Category	Lecture (L)/Tutorial (T)	Practical (P)
1	1		R, U	F, C	L,T	
2	2	4,6	R, U	P	L, T	
3	3		U, AP,	F, C, P	L, T	P
4	4	7,8	Ap, An, E	F, C	L, T	
5	5	6,8	Ap, An, C	F, C, P	L, T	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		✓		✓