

Name of the Programme: M. Sc. (Botany)

Course Code: BOT-628

Title of the Course: Oenology

Number of Credits: 1

Effective from AY: 2022-23

<u>Prerequisites for the course:</u>	Basic knowledge of biology.	
<u>Objective(s):</u>	To understand the basics of oenology. To understand the origin, history, and concept of wine tasting. To impart training on small-scale fruit wine production.	
<u>Content:</u>	<ol style="list-style-type: none">1. Overview of Oenology, ancient and modern methods of winemaking.2. Viticulture and Grape species.3. Wine Types and Styles, Wine Regions and Terroir, the Indian wine scene.4. Harvesting and processing of grapes and other fruits.5. Sources of contamination in winemaking; Sanitation and Sterilization.6. Scales of winemaking, micro-vinification, Materials, and supplies used in winemaking.7. Chemistry and cell biology of fermentations with yeast and bacteria.8. Fermentation processes; Post-fermentation.9. Wine analysis; Chemical components of Wine; Biochemical reactions in fermentation. Winery by-products and their management.10. Wine acids, Aroma compounds (Terpenes), colour and flavour compounds (phenolics, Tannins).11. Sensory evaluation and quality control in winemaking.12. Wine microbial spoilage and its control; Wine defects and remedies.13. Wine bottling, corking, packaging, branding, and marketing strategies.14. Alcohol marketing laws (India and Worldwide); Revenue system in Goa and other States.15. Alcohol regulatory policies; State excise policies in Goa and other States.	1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour 1 hour
<u>Pedagogy:</u>	Lectures/Tutorials/Assignments/Seminars/Videos/Expert-Lectures/Industrial visits/Moodle based guidance.	
<u>References/Readings:</u>	Amerine, M.A., Berg, H.W., Kunkee, R.E., Ough, C.S., Singleton, V.L. and Webb, A.D. (1980). The Technology of Winemaking. 4th edition. A.V.I. Publishing Co. Inc. Westport. Amerine, M.A. and Roessler, E.B. (1983). Wines: Their sensory	

	<p>evaluation. WH Freeman & Co. San Francisco.</p> <p>Amerine, M.A., and Singleton, V.L. (1977). Wine: An Introduction to the Wines of the World, Grape Cultivation, Techniques of Wine-making, and how to evaluate and Enjoy Wines. University of California Press.</p> <p>Fleet, G.H. (1993). Wine Microbiology and Biotechnology. Harwood Academic Publishers, Chur.</p> <p>Fugelsang, K.C. (1997). Wine Microbiology. Chapman & Hall, New York.</p> <p>Jackson, R.S. (2000). Wine Science: Principles, Practice, Perception. Second Edition. Academic Press, Inc., 525 B Street, Suite 1900, San Deigo, California.</p> <p>Jordão, A.M., and Cosme, F. (2022). The Application of Wood Species in Enology: Chemical Wood Composition and Effect on Wine Quality. Applied Sciences, 12(6), 3179.</p> <p>Linskens, H. F. and Jackson, J.F. (1988). Wine Analysis: Modern Methods of Plant Analysis. New series volume 6. Springer Verlag.</p> <p>Ough, C.S. (1991). Winemaking Basics. Food Products Press, New York.</p> <p>Ribereau-Gayon, P., Dubourdieu, D. and Doneche, B.A. Lonvaud. (2000). Handbook of Enology Volume 1: Microbiology of Wine and Vinifications. John Wiley and Sons, New York.</p> <p>Ribereau-Gayon, P., Glories, Y.A. Maugean and Dubourdieu, D. (2021). Handbook of Enology Volume 2: Microbiology of Wine, The Chemistry of Wine Stabilization and Treatments. John Wiley and Sons, New York.</p> <p>Schahinger, G. and Rankine, B. (1992). Cooperage for Winemakers: A manual on the construction, maintenance, and use of oak barrels. Ryan Publications, Adelaide, South Australia.</p> <p>Storm, D.R. (1997). Winery utilities: planning, design and operation. Chapman and Hall, New York.</p> <p>Vine, R.P. (1981). Commercial Winemaking, Processing and Controls. A.V.I. Publishing Co., Westport, CT.</p> <p>Vine, R.P., Harkness E.M., Browning, T., Wagner, C. and Bordelon, B. (1997). Winemaking: from grape growing to marketplace. Chapman and Hall, New York.</p> <p>Waterhouse, A.L. and Ebeler, S.E. (1998). Chemistry of Wine Flavor. American Chemical Society, Washington, D.C.</p> <p>Yendell, K. (2015). Winemaking: Fermenting, Pressing, Bottling, and Aging: An Introduction to Oenology. United States: CreateSpace Independent Publishing Platform.</p> <p>Enological websites</p>	
--	---	--

	<ul style="list-style-type: none"> • Academic study of winemaking from the University of California, Davis http://www.wineserver.ucdavis.edu • Web site for American journal of oenology and viticulture. http://www.ajevonline.org • Internet journal of viticulture and oenology http://www.infowine.com 	
<u>Learning Outcomes:</u>	<ol style="list-style-type: none"> 1. Will enable to understand international trends in the production and marketing of wines and to define a terroir. 2. Will enable to appreciate the role of wine in culture, religion, industry, and economy. 3. Will enable to assist in the wine industry. 4. Will provide better prospects in the tourism industry. 	