Master of Science
M.Sc. Biochemistry Semester I

Course Code	PS01EBIC54	Title of the Course	Biochemistry of Horticultural Commodities
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	Students should be able to : Understand Biochemical importance of phytochemical constituents

Course Content		
Unit	Description	Weightage* (%)
1.	Introduction: common fruits, vegetables, flowers and their quality characteristics Fundamental Nature of Perishable Products - Aspects of Deterioration Biochemistry of development, maturation, ripening and senescence of fruits and vegetables; Biochemistry of flower development and senescence	25
2.	Maturity indices and harvesting of fruits, vegetables and flowers Metabolism of Harvested Products/Metabolic Control Mechanisms of Ripening and Senescence Processes Programmed cell death during plant senescence	25
3.	Phytochemistry of fruits and vegetables Carotenoids and colour in fruit and vegetables Phenolic compounds and oxidative mechanisms in fruit and vegetables Aroma biochemistry of fruits and vegetables Gibberellins and fruit development Phytochemistry of fruit and vegetables: an ecological overview	25
4.	Biochemical analysis of major nutrient constituents Postharvest Biology and Technology of fruits, vegetables and flowers Postharvest handling and Physiology of fruits, vegetables, cut flowers and spices Edible films and coatings for fruits and vegetables Processing of horticultural commodities	25

Teaching-Learning Methodology	Topics will be taught and discussed in interactive sessions using conventional black board and chalk as well as ICT tools such as power point presentations and videos. Practical sessions will be conducted in a suitably equipped laboratory either individually or in groups depending on the nature of exercise as well as availability of infrastructure. Course materials will be provided from primary and secondary sources of information.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Students should be able carry out phytochemical analysis.
2.	Student should be able to work as Postharvest Technologist in agro industries.

Suggested References:	
Sr. No.	References
1.	Gopinadhan, P., Dennis, P. M., Avtar, K. H. and Susan, L. (2008) Postharvest Biology and Technology of fruits, vegetables and flowers. Wiley-Blackwell, 2008. ISBN: 978-0-813-80408-8

2.	Tomas-Barberan, F. A. and Robins, R. J. Phytochemistry of fruits and vegetables. Edited by F. A. Tomás-Barberán and R. J. Robins, 1997 Oxford Science Publication. ISBN: 9780198577904
3.	Salunkhe, D. K. and Kadam, S. S. Handbook of Fruit Science and Technology: Production, composition, Storage and Processing. Edited By D. K. Salunkhe and S.S. Kadam, 2005 CRC Press, Taylor & Francis Group ISBN: 9780824796433
	Thompson, A. K. (1996) Postharvest Technology of Fruit and Vegetables
	Milda, E. E., Kerry, C. H. (2009) Edible films and coatings for food applications.
	Kenneth, V. T. (1980) Senescence in plants
	Heldt, H. 2005. Plant Biochemistry (3rd Edn.) Indian Reprint, Elsevier, New Delhi.
	Dey, P. M. & Harborne, J. B. (Eds.) 1997. Plant Biochemistry, Academic Press, London
	Doby, G.: Plant Biochemistry. Inter Science Publishers, New York
	Buchanan et al. 2004. Biochemistry & Molecular Biology of Plants.
	Taiz, L. and Zeiger, E. Plant Physiology, 4th Edition. Sinauer Associates, Inc.
	Hopkins, W. G., Introduction to Plant Physiology. 3rd Edition. John Wiley & Sons, New York.
	Salisbury, F. B. and Ross, C. W., Plant Physiology, 4th Edition. Wadsworth Publishing Company, California
	Lehninger, A. L., D. L. Nelson and M. M. Cox 2000: Principles of Biochemistry. CBS Publishers and Distributors, New Delhi.
	Briggs, W. R. (ed.) Plant hormones. Klywer Academic Publishers, Dordrecht.

On-line resources to be used if available as reference material
On-line Resources
Related review articles and research papers