(Master of Science –Home Science) (Food Biotechnology)
(M.Sc.-H.Sc.) (Food Biotechnology) Semester (I)

Course Code	PH01CFBT51	Title of the Course	Principles and Applications of Instruments and Techniques
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	1. Understand the principles of various analytical instruments and techniques used for Nutrition and Food science research 2. Become familiar with the applications of the above instruments and techniques

Course Content		
Unit	Description	Weightage (%)
1.	Spectroscopy: Colorimetry, Photometry, fluorimetry, atomic absorption, spectrophotometry, infra-red spectroscopy and their applications	25
2.	Chromatography: basics of Chromatography, Paper Chromatography, TLC, HPTLC, Column Chromatography, GC and HPLC	25
3.	Electrophoresis: Acrylamide gel electrophoresis (PAGE and SDS PAGE), 2-D gel electrophoresis, Agarose Electrophoresis for nucleic acid separation	20
4.	Principle and applications of the following instruments or techniques: ELISA, PCR, RT-PCR, Gel documentation system, Texture analyzer, Food colour measurement, Titration, Microtome for tissue sectioning, centrifuge	15
5.	Principle and applications of the following instruments or techniques: Centrifuge, Ph meter, Isotope, Electron microscope, Computer	15

Teaching-Learning Methodology	Classroom lectures (Blackboard/Power Point Presentations), Discussion on recent updates with related examples

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars,	15%

	Assignments, Attendance (As per CBCS R.6.8.3)	
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to understand	
1.	Basics of different spectroscopy and their application.
2.	Basics of chromatography and their principles and applications.
3.	Basics principle and applications of various instruments and techniques used in Food science and Nutrition.

Suggested References:

Sr. No.	References
1.	Nelson Suzanne S.(2003). *Food Analysis*, (3rd Edition), New York: Springer.
2.	Nollet., Leo M. L., Toldra., Fidel (2012). *Handbook of Analysis of Active Compounds in Functional Foods.* Boca Raton: CRC Press Taylor and Francis Group.
3.	Stahl.Egon., Ashworth M.R.F.(1990). *Thin Layer Chromatography A Laboratory Hand Book* (2nd Edition). Newyork: Springer.
4.	Irudayaraj & Joseph (2013). *Non-destructive testing of food Quality.* Black well publishing
5.	Nallet leo M L. (2014). *Hand book of dairy foods analysis*. CRC press Tylor & Francis group New York.
6.	Douglas. Skoog., Thomson. S A. (2007). *Principles of Instrumental Analysis* (6th Edition). Brooks/Cole.

On-line resources to be used if available as reference material

On-line Resources

Journal of chromatography B, Elsevier

Spectrophotometry - an overview, Science Direct

https://epgp.inflibnet.ac.in/

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