



**CVM**  
**UNIVERSITY**

Aegis: Charutar Vidya Mandal (Estd.1945)

FACULTY OF ENGINEERING & TECHNOLOGY

Effective from Academic Batch: 2022-23

**Programme:** Master of Technology (Food Technology)

**Semester:** 2

**Course Code:** 202380202

**Course Title:** Advanced Techniques in Food Analysis

**Course Group:** Core Course IV

**Course Objectives:**

1. To give basic theoretical concept of analytical techniques.
2. To familiarize the students with applications of advanced food analytical techniques in food evaluation

**Teaching & Examination Scheme:**

Contact hours per week			Course Credits	Examination Marks (Maximum / Passing)				
Lecture	Tutorial	Practical		Theory		J/V/P*		Total
				Internal	External	Internal	External	
3	0	2	4	50/20	50/20	25/10	25/10	150/60

\* J: Jury; V: Viva; P: Practical

**Detailed Syllabus**

Sr.	Contents	Hours
1	Spectroscopic Techniques: Introduction & theory of spectroscopic techniques, - Principle and application of each technique. UV-Visible, IR, Raman, & Mass spectroscopy AAS, NMR/ESR spectroscopy	8
2	Chromatographic Techniques: Introduction, HPLC, GC, Paper chromatography, TLC/HPTLC, Ion chromatography,	6
3	Microscopic techniques: Light microscopy, Scanning electron microscopy, Transmission electron microscopy, particle size analysis, Thermal techniques in food analysis: Differential scanning calorimetry and Thermo gravimetric analysis.	12
4	Colour: Importance and need of colour determination, methods of colour determination with Spectrophotometer, Colorimeter, Hunter Colour lab, CIE system, Lovibond Tintometer, Munsell colour and colour difference meter, Disc colorometry and their applications.	9



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### List of Practicals / Tutorials:

1	Determination of moisture by Karl Fischer method
2	Determination of Vitamin C (spectrophotometric)
3	Determination of gingerol by HPLC
4	Fatty acid profile in lipids by GC
5	Determination of thermal properties using DSC
6	Determination of sugar concentration and solids using Refractometer
7	Separation of food colors using TLC/HPTLC
8	Demonstration of PCR
9	Agarose Gel Electrophoresis
10	Demonstration of ELISA test

### Reference Books:

1	Sharma, B. K. (1994). Instrumental Methods of Chemical Analysis: Krishna, Meerut
2	Food Analysis: Theory and Practice, 1994. Y. Pomeranz and C.E. Meloan. 3rd edn., Conn. (USA): AVI Publ.
3	James, CS. (1995). Analytical Chemistry of Foods. Blackie Academic and Professional, UK
4	Skoog, D. A., Holler, F. J. and Nieman, T. A. (1998). Principles of Instrumental Analysis (5 ed.): Harcourt,

### Supplementary learning Material:

#### Pedagogy:

- Direct classroom teaching
- Audio Visual presentations/demonstrations
- Assignments/Quiz
- Continuous assessment
- Interactive methods
- Industrial/ Field visits
- Course Projects

### Internal Evaluation:

The internal evaluation comprised of written exam (40% weightage) along with combination of various components such as Certification courses, Assignments, Mini Project, Simulation, Model making, Case study, Group activity, Seminar, Poster Presentation, Unit test, Quiz, Class Participation, Attendance, Achievements etc. where individual component weightage should not exceed 20%.



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**Suggested Specification table with Marks (Theory) (Revised Bloom's Taxonomy):**

Distribution of Theory Marks						R: Remembering; U: Understanding; A: Application, N: Analyze; E: Evaluate; C: Create
R	U	A	N	E	C	
25	40	15	15	05	00	

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Course Outcomes (CO):**

Sr.	Course Outcome Statements	%weightage
CO-1	Develop an understanding about the advanced analytical and instrumental techniques	25
CO-2	Acquaint with the spectroscopic and microscopic techniques	30
CO-3	Grasp technical knowledge in chromatographic techniques	25
CO-4	Understand different colorimetry techniques in food Industry	20

Curriculum Revision:	
Version:	2.0
Drafted on (Month-Year):	June-2022
Last Reviewed on (Month-Year):	-
Next Review on (Month-Year):	June-2025