SOURASHTRA COLLEGE, MADURAI – 625004

(An Autonomous Institution Re-accredited with 'B+' grade by NAAC)

DEPARTMENT OF CHEMISTRY

CERTIFICATE COURSE IN OILS AND FATS – SYLLABUS

(Under CBCS based on OBE) (For those admitted during 2024 – 2025 and after)

COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
24CCYC11	OILS AND FATS – I	CERTIFICATE COURSE	20 Hrs.	–	–

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	IV	–	100	100

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	✓

COURSE DESCRIPTION:

This course imparts basic idea about oils and fats. It's physical & chemical properties and also studied the analysis of oils and fats.

COURSE OBJECTIVES:

- To understand the fundamental concepts of oils and fats.
- To analyze the physical parameters of oils and fats.
- To gain knowledge about the chemical properties.
- To acquire practical knowledge to analysis of oils and fats.
- To study about the essential oils.

COURSE OUTCOMES (COs):

After the completion of the course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	understand the fundamental concepts of oils and fats.	Upto K3
CO 2	understand the physical properties of oils and fats	Upto K3
CO 3	gain the knowledge of chemical properties of oils and fats	Upto K3
CO 4	remember the analysis of oils and fats	Upto K3
CO 5	understand the basic concepts of essential oils	Upto K3

K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLY

Passed in the BoS Meeting held on 09/03/2024 **Signature of the Chairman**

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OILS AND FATS – I

UNIT – I: INTRODUCTION TO OILS AND FATS

Definition – triglycerides – types of triglycerides – common fatty acids present in oils and fats – extraction of oils and fats – classification of oils and fats – distinction between animal and vegetable fats – fat substitutes – uses of oils and fats.

UNIT – II: PHYSICAL PROPERTIES OF OILS AND FATS

Oiliness and viscosity – surface and interfacial tension – density and expansibility – Thermal properties: heat of combustion – heat of vaporization – solubility – Electrical properties: resistance and dielectric constant.

UNIT – III: CHEMICAL PROPERTIES OF OILS AND FATS

Hydrolysis – hydrogenation – hydrogenolysis – trans– esterification – autoxidation– polymerisation.

UNIT – IV: ANALYSIS OF OILS AND FATS

Acid value – saponification value – iodine value – Reichert– Meissl value – acetyl value.

UNIT – V: ESSENTIAL OILS

Source and uses of essential oils – Agar oil – Chinnamon leaf oil – Citrus oil – Eucalyptus oil – Lemon Grass oil – Turpentine oil – Ginger Grass oil – Jasmine oil.

TEXT BOOKS:

1. ***Industrial Chemistry*** by B. K Sharma, Goel Publishing House, Krishna Prakashan Media (P) Ltd., Meerut, 19th Edition (2016).
2. ***Food Science*** by B. Srilakshmi, New age International Publishers, New Delhi (2010).

REFERENCE BOOKS:

1. ***Fats and Oils Handbook*** by Michael Bockisch, Elsevier Science (2015).
2. ***Modern Technology of Oils, Fats & Its Derivatives***, Niir Board, NIIR Project Consultancy Services (2002).

DIGITAL TOOLS:

1. https://www.youtube.com/watch?v=XBQN5NaO29c
2. https://www.youtube.com/watch?v=n0hpdqWSWO4
3. https://www.youtube.com/watch?v=T20omy9_e2M
4. https://www.youtube.com/watch?v=l2QOi9mZoFc
5. https://www.youtube.com/watch?v=BNaE06– yEi4

Mapping of CO with PSO

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	2	3	2	1	2	3
CO2	1	2	3	2	3	2
CO3	2	1	2	2	2	2
CO4	2	2	3	3	2	2
CO5	2	1	2	3	3	3

3. Advanced Application 2. Intermediate Development 1. Introductory Level

COURSE DESIGNER: Dr. V. SATHIYENDIRAN

Passed in the BoS Meeting held on 09/03/2024 Signature of the Chairman

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DEPARTMENT OF CHEMISTRY

CERTIFICATE COURSE IN OILS AND FATS – SYLLABUS

(Under CBCS based on OBE) (For those admitted during 2024 – 2025 and after)

COURSE CODE	COURSE TITLE	CATEGORY	T	P	CREDITS
24CCYC12	OILS AND FATS –II	CERTIFICATE COURSE	20 Hrs.	-	-

YEAR	SEMESTER	INTERNAL	EXTERNAL	TOTAL
II	IV	–	100	100

NATURE OF COURSE	Employability	✓	Skill Oriented	✓	Entrepreneurship	✓

COURSE DESCRIPTION:

This course reports basic awareness about oils extraction process and spoilage of oils.

COURSE OBJECTIVES:

- To gain knowledge about the chemical composition of oils.
- To learn the method of extraction of oil seeds
- To get characteristics and extraction of oils seeds
- To gain information about the refining and bleaching.
- To learn knowledge about spoilage of oils and its prevention.

COURSE OUTCOMES (COs):

After the completion of the course, the students will be able to

No.	Course Outcomes	Knowledge Level (According to Bloom's Taxonomy)
CO 1	understand the chemical composition of oils	Upto K3
CO 2	understand the extraction of oils	Upto K3
CO 3	gain the knowledge of over refining and bleaching processes	Upto K3
CO 4	remember the various applications of oils and fats	Upto K3
CO 5	understand the basic concepts of spoilage of oils and its prevention	Upto K3

K1– KNOWLEDGE (REMEMBERING), K2–UNDERSTANDING, K3–APPLY

Passed in the BoS Meeting held on 09/03/2024 **Signature of the Chairman**

OILS AND FATS – II

UNIT – I: COMPOSITION OF OIL SEEDS

Chemical composition of seeds and oils of groundnut, sesame, coconut, cotton seed, mustard, sunflower, linseed and soya bean crops.

UNIT – II: OIL EXTRACTION METHODS – I

Methods of extraction of oils from seeds – process of extraction of oils – cleaning – dehulling – heat treatment rendering – cooking types of rendering extraction – various solvents used for Soxhlet extraction – mechanical extraction of oil – solvent

UNIT – III: OIL EXTRACTION METHODS – II

Characteristics and methods of extraction of the following: castor oil, sesame oil, cotton seed oil, sunflower oil, linseed oil, soya bean oil.

UNIT – IV: OIL PROCESSING METHODS

Refining – bleaching – effect of refining – types of refining – bleaching – adsorption method chemical methods of bleaching – deodourisation.

UNIT – V: SPOILAGE OF OILS

Methods of spoilage – hydrogenation – spoilage during storage method and prevention of spoilage – improving keeping quality – uses of oils and fats.

TEXT BOOKS:

1. ***Industrial Chemistry*** by B. K Sharma, Goel Publishing House, Krishna Prakashan Media (P) Ltd., Meerut, 19th Edition (2016).
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2. https://www.youtube.com/watch?v=BNaE06– yEi4
3. https://www.youtube.com/watch?v=gL3sVFnWWdw
4. https://www.youtube.com/watch?v=mpSidgUbbuA
5. https://www.youtube.com/watch?v=Io– fovloFxo

Mapping of CO with PSO

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CO4	2	2	3	3	2	2
CO5	2	1	2	3	3	3

3. Advanced Application 2. Intermediate Development 1. Introductory Level

COURSE DESIGNER: Dr. N. P. KRISHNAN & Dr. T. S. MANIKANDAN

Passed in the BoS Meeting held on 09/03/2024 Signature of the Chairman