



# **St. Michael's College, Cherthala**

**Alappuzha, Kerala-688 539**

**Affiliated to University of Kerala  
and Re-accredited by NAAC with 'A' Grade**



**ADD ON COURSE 2021-22**

**Name of the Programme : COIR TECHNOLOGY**

**Name of the Department : CHEMISTRY**

**Course Code : CH 066**



# St. Michael's College

MAYITHARA P.O., CHERTHALA, ALAPPUZHA-688539

An institution with Minority Status Affiliated to the University of Kerala and  
Re-accredited by NAAC with 'A' Grade

## Add on Course - 2021-22

### CHEMISTRY

Coir  
Technology

### COMMERCE

GST Filing &  
Tally

### ECONOMICS

Applied  
Economics  
Analysis

### ENGLISH

Interpersonal  
Relationship  
Counseling and  
Psychological  
Guidance

### PHYSICS

Observing  
the sky with  
Stellarium and  
beyond

### SOFTWARE DEVELOPMENT

Add on Course  
in PHP

### TOURISM STUDIES

Air Transport  
Operations

### ZOOLOGY

Brackish Water  
Aquaculture  
Methods and  
Practices

### ENGLISH

#### Certificate Course

Fundamentals of  
Communication  
and Soft Skills



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Email : [michaelscherthala@gmail.com](mailto:michaelscherthala@gmail.com). Web : [www.stmcc.in](http://www.stmcc.in)

**NAME OF COURSE : COIR TECHNOLOGY**

**COURSE CODE : CH 066**

**NO OF STUDENTS ENROLLED :25**

**CONTENTS**

- SYLLABUS**
- CLASS SCHEDULES**
- ATTENDANCE STATEMENT**
- QUESTION PAPER**
- MARK LIST**
- CERTIFICATE**
- REPORT**



## Coir Technology

### **Unit I – Introduction to Coir Industry**

**(6hrs)**

Historical background and development of the coir industry, Overview of the coir sector in various countries, Botanical origin and structure of coconut husk, Extraction and processing of coir fiber, Physical and mechanical properties of coir fiber, Quality assessment and grading of coir fiber.

#### **References:**

1. An introduction to Food Science and Technology & Quality management - Devendra Bhatt & Priyanka Tomar.
2. Quality assurance in Microbiology, Bhatia,R. and Ichhpujan, R.L. CBS Publishers and Distributors, New Delhi. 2004.
3. Food Quality Management - Manoranjan Kalia.
4. Hand book of analysis & Quality Control - Rannanganna.
5. Kher, C.P. Quality control for the food industry. ITC Publishers, Geneva. 2000.

### **Unit II - Coir Yarn and Products:**

**(6hrs)**

Spinning methods for coir yarn production, Weaving and knitting techniques, Dyeing, printing, and finishing processes for coir products, Different coir-based products and their applications (e.g., mats, rugs, geotextiles).

#### **References:**

1. Gazette of Food Safety and Standards Act, (2006) Food Safety regulations and food safety management. Food Safety and Standards Authority of India. New Delhi.
2. The training manual for Food Safety Regulators. (2011) Vol.III, Food Safety regulations and food safety management. Food Safety and Standards Authority of India. New Delhi.
3. Jellinek, G., Sensory Evaluation of Food-Theory and Practice., Elis Horwood Ltd.,England.,1985.
4. Manay,S., Shadaksharaswamy, M., Food Facts and Principles, New Age International (P) Limited., New Delhi., 2008.

### **Unit III – Coir Processing Machinery,Coir Substrates and Horticultural Applications:**

**(6hrs)**

Overview of machinery used in coir processing, Maintenance and optimization of coir processing equipment, Automation and technological advancements in coir processing, Production and properties of coir-based substrates, Use of coir in horticulture, agriculture, and landscaping, Sustainable and organic farming practices utilizing coir products

**References:**

1. Mohanty, B. P. 2011. Fish as Health Food. Ch. 35, pp. 843-861, In:Handbook of Fisheries and Aquaculture, 2 nd edn. ICAR – DKMA, New Delhi. ISBN: 978-81-7164-106-2.
2. Sankar T. V. 2009. Functional properties of fish proteins. A Review. Fishery Technology, 46, 2, 87-98.
3. Nutrient profile of fish. www. Cifri.res.in.
4. Fundamentals of Biochemistry. J. L. Jain. 6<sup>th</sup> Edition, 2005, S. Chand & Company.
5. A comprehensive classification system for Lipids. J. Lipid Research, 2005, 46, 839-861.
6. Fundamentals of protein structure and function. Engelbert Buxbaum. 2<sup>nd</sup> Edition, 2015, Springer International Publishing, Switzerland.
7. Seafood proteins. Zdzislaw E. Silkorski, Bonnie Sun Pan and Fereidoon Shahidi. 1994. Chapman & Hall Inc.
8. Fish Nutrition. John E. Halver and Ronald W. Hardy. 3<sup>rd</sup> Edition, 2003, Elsevier Inc.
9. Post-harvest Technology of fish and fish products. K. K. Balachandran. 2<sup>nd</sup> Edition, 2016, Daya Publishing House.

**Unit IV – Dairy Science and Analysis**

**(6hrs)**

Nutritive value of milk, role of milk and milk products in human nutrition, physico chemical properties of milk, thermal stability of milk, theory and principles of dairy microbiology, common micro organisms in milk, fermentation of milk, milk borne diseases, milk and public health. Quality analysis of milk, sensory analysis of milk ,determination of specific gravity, fat, SNF, TS, acidity & pH in milk, common adulterants in milk and their detection techniques.

Standards for milk and milk products, bacteriological standards for milk and milk products – BIS, PFA standards, maximum permissible limits of aflatoxin, pesticides, antibiotic residues and heavy metals in milk and milk products.

**References:**

1. Dairy Science: Petersen (W.E.) Publisher – Lippincott & Company 2.
2. Outlines of Dairy Technology – Sukumar (De) – Oxford University press.
3. Indian Dairy Products – Rangappa (K.S.) & Acharya (KT) – Asia Publishing House. 4.
4. The technology of milk Processing – Ananthkrishnan, C.P., Khan, A.Q. and Padmanabhan, P.N. – Shri Lakshmi Publications.
5. Dairy India 2007, Sixth edition 6. Economics of Milk Production – Bharati Pratima Acharya Publishers.

**Unit V - Analytical Methods Used for Food Quality Determination (6hrs)**

Principle, working and applications of paper chromatography, TLC, GC, HPLC, HPTLC, LC/MS, inductively coupled Plasma Mass Spectrometry (ICP-MS), Spectrophotometry- introduction and principles of UV –Visible spectroscopy, Fluorimetry Atomic absorption spectroscopy, Radiotracer techniques and Electrophoresis.

**References:**

1. Nielsen, S.S. Introduction to the chemical analysis of foods. Jones and Bartlett Publishers, Boston, London. 2004.
2. Mahindru, S.N. Food additives. Characteristics, detection and estimation. Tata McGraw-Hill Publishing Company Limited, New Delhi. 2000.
3. Pearson, D. The Chemical Analysis of Foods. Churchill Livingstone, New York. 2002.
4. Sharma, B.K. Instrumental Methods of Chemical Analysis. Goel Publishing

<b>Add-On Cell</b>					
<b>St. Michael's College, Cherthala</b>					
<b>Class Schedule Format 2021-2022</b>					
<b>Department: Chemistry</b>			<b>Course: Food Science &amp; Quality Control</b>		
<b>Sl No</b>	<b>Date</b>	<b>Day</b>	<b>Time</b>	<b>Name of Teacher</b>	<b>Class Room No</b>
1	10/8/2021	Friday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
2	10/11/2021	Monday	3.30 - 4.30 pm	Dr. Pearl Augustine	A- 48

3	10/14/2021	Friday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
4	10/18/2021	Monday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
5	10/20/2021	Wednesday	3.30 - 4.30 pm	Dr. Beena James	A- 48
6	10/21/2021	Thursday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
7	10/25/2021	Monday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
8	10/26/2021	Tuesday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
9	11/3/2021	Wednesday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
10	11/5/2021	Friday	3.30 - 4.30 pm	Dr. Beena James	A- 48
11	11/8/2021	Monday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
12	11/9/2021	Tuesday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
13	11/11/2021	Thursday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
14	11/15/2021	Monday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
15	11/18/2021	Thursday	3.30 - 4.30 pm	Dr. Beena James	A- 48
16	11/22/2021	Monday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
17	11/23/2021	Tuesday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
18	11/29/2021	Monday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
19	11/30/2021	Tuesday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
20	12/1/2021	Wednesday	3.30 - 4.30 pm	Dr. Beena James	A- 48
21	12/2/2021	Thursday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
22	12/6/2021	Monday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
23	12/7/2021	Tuesday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
24	12/8/2021	Wednesday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
25	12/9/2021	Thursday	3.30 - 4.30	Dr. Beena James	A- 48

			pm		
26	12/13/2021	Monday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
27	12/14/2021	Tuesday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
28	12/15/2021	Wednesday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
29	12/16/2021	Thursaday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
30	12/17/2021	Friday	3.30 - 4.30 pm	Dr. Beena James	A- 48





3. What is meant by titratable acidity of milk?
4. Name any two milk borne diseases.
5. Name any two fat soluble vitamins in fishes.
6. Name any two minerals in fishes.
7. What is BRC?
8. Define SQF.
9. What is HPTLC?
10. Define retention factor.

(10x1=10 Marks)

**Section B, 2 marks each (Short answer type - should not exceed one paragraph)**

**Answer any five questions from the following**

11. Differentiate between total quality control and statistical quality control.
12. What is Pasteurization?
13. Explain the Gerber test for milk.
14. Differentiate between monounsaturated fatty acids and polyunsaturated fatty acids.
15. Name any two chemical indicators of decay and common adulterants in fishes.
16. What is Codex Alimentarius Commission?
17. What is mass spectrometry?
18. State Beer-Lamberts Law.

(5x2=10Marks)

**Section D, 10 marks each (Long essay)**

**Answer any one question**

19. (a) Differentiate between quality control and quality assurance.  
(b) Write a note on food related hazards.
20. Discuss the major chemical quality analysis for milk.
21. Discuss on the different food standard laws and safety management.

(1x10=10 Marks)

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**Add-On Cell****St.Michael's College, Cherthala****Mark List****Discipline : Chemistry****Course Title :Coir Technology**

Date of Examination : 12/03/2021

Maximum Marks: 30

Sl No	Candidate Code	Name of the Student	Mark Obtained
1	23519136001	ANAND RAM B	26
2	23519136002	CHRISTY BENNY	25
3	23519136003	DEEPTHI S	27
4	23519136004	DINI CYRIAC	28
5	23519136005	GOPIKA K	24
6	23519136006	JOEL JOSEPH	26
7	23519136007	MERLIN P J	29
8	23519136008	NANDANA.S	28
9	23519136009	PRECIOUS SAVIO VICTOR	25
10	23519136010	SREEHARI M	29
11	23519136011	SREEHARI MALLAN J	28
12	23519136012	TINU HARSHAN	27
13	23519136013	ALEENAMOL.P.A	26
14	23519136014	ALTHAF S	22
15	23519136015	ANANTHAKRISHNAN K R	24
16	23519136016	ANANYA NIMMI KALYANI	30
17	23519136017	ANILA THOMAS	25
18	23519136018	APARNA K S	24
19	23519136019	ASHNA K STEEPHAN	24
20	23519136020	ATHIRA PRASAD	22
21	23519136021	LIDHIYA BENNY	26
22	23519136022	PARVATHY P M	25
23	23519136023	PRATHAP DILEEP KUMAR	22
24	23519136024	SIJU K B	22
25	23519136025	SREELEKSHMI S	30



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**CHERTHALA, ALAPPUZHA - 688 539**

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## **ADD-ON COURSE CERTIFICATE**

*This is to certify that* Miss. GOPIKA K (23519136005) .....  
**Chemistry 2019 Admission** ..... *has completed*  
*Certificate/Add-on course in* **Coir Technology (CH 066)** .....  
..... *offered by the Department of Chemistry*  
*during the academic year 2021-2022. He/She is awarded with* **A** *Grade.*

Head of the Department

Course Coordinator

Principal



### **ST.MICHAEL'S COLLEGE, CHERTHALA**

Department of Chemistry

#### **Add-On Course: Coir Technology**

Coir technology refers to the utilization of coir, a natural fiber extracted from the husk of coconuts, in various applications. Coir is renowned for its versatility, sustainability, and eco-friendliness. Coir technology harnesses the potential of coconut husk fibers, offering sustainable solutions across various industries. Its versatility, eco-friendliness, and advantageous properties make it a valuable resource with a promising future in diverse sectors. Industrial job orientation among the B.Sc. students will helpful for them to build up a carrier in industry is the main motive behind the add-on course offered by the department. With this aim department of chemistry offered an add-on course in Coir Technology and also the college stands in the mid of

Alappuzha district, which has a pioneer heritage of Coir history. It is a five moduled 30hrs programme. The syllabi cover most of the essential features of the Coir including its pioneer details, processing, and its application in industry. After the completion of the programme the student will get an idea about the fundamentals of the coir technology, its industrial applications and different kinds of analytical techniques to measure its quality etc. This programme also opened a gateway for the students to choose their carrier in various coir industry and research organization etc.



Principal  
St. Michael's College  
Cherthala