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 2022-23

Name of the Programme : FOOD SCIENCE AND QUALITY CONTROL

Name of the Department : CHEMISTRY

Course Code : CH 065

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 - 2022-23

CHEMISTRY
Food Science and Quality Control

COMMERCE
Certified Insurance Advisor and Risk Analyst (CIARA)

MANAGEMENT
Diploma in Port Operations and Management (DPOM)

ECONOMICS
Statistical Data Analysis Using Software Packages

PSYCHOLOGY
Guidance Counciling and Psychology of Interpersonal Relationships

PHYSICS
Basics of C Programming

SOFTWARE DEVELOPMENT
Python

TOURISM STUDIES
Customer Service Skills

ZOOLOGY
Techniques in Coastal Aquaculture

HISTORY
(Certificate Course)
Introduction to Indian Constitution

ENGLISH
(Certificate Course)
Basic Proficiency in English Language

MALAYALAM
(Certificate Course)
Madhyama Malayalam

Phone : 0478-2822387, 2810387
Email : michaelscherthala@gmail.com. Web : www.stmcc.in

NAME OF COURSE : **FOOD SCIENCE AND QUALITY CONTROL**

COURSE CODE : **CH 065**

NO OF STUDENTS ENROLLED : **34**

CONTENTS

Certificate Course

in

Food Science and Quality Control

Unit I - Quality Control of Food Materials (6hrs)

Definition of quality control, Need and importance of quality control, principles of quality control, food related hazards - physical, chemical and biological hazards, factors affecting food safety, quality attributes of food-nutritional, microbial and sensory attributes, Sampling Method of Quality Evaluation – objectives, guidelines, Quality assurance in Food Services System-difference between quality assurance and quality control, total quality control (TQC), statistical quality control (SQC).

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 - Food Standard Laws and Safety Management (6hrs)

Voluntary and compulsory standards, packaging and labeling, standards food laws – Hazard Analysis Critical Control Point (HACCP), CCP, Codex Alimentarius Commission (CODEX), National Codex Committee of India, ISO-22000, ISO-9001:2000, ISO22000:2005, ISO 17025/CODES/GLP, food quality management- quality management principles, external quality control activities, certification and quality marks, national standard bodies – (British Retail Consortium) BRC food and BRC IoP (Institute of Packaging) standards, (International Food Standard) IFS, (Safe Quality Food standard) SQF: 1000, SQF: 2000.

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 – Fish: Nutrition and Quality (6hrs)

Major classes of lipids in fish (triglycerides, phospholipids, wax esters etc), major fatty acids in

fishes (saturated fatty acids, monounsaturated fatty acids and polyunsaturated fatty acids (PUFAs)), protein in fishes (sarcoplasmic, myofibrillar etc), minerals present in fishes (both major (Na, K and Ca) and minor (Fe, Zn, Mn, Se etc)). Sensory evaluation of fishes, chemical indicators of decay (free fatty acids, lipid peroxides, thiobarbituric acid), histamine, Indole, K value, trimethylamine, total volatile base nitrogen, ammonia and total plate count in fishes as quality indicators. Common adulterants present in fishes (ammonia and formaldehyde) and their identification.

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. 6th 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. 2nd 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. 3rd Edition, 2003, Elsevier Inc.
9. Post-harvest Technology of fish and fish products. K. K. Balachandran. 2nd Edition, 2016, Daya Publishing House.

Unit IV – Diary 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 Proceesing – Ananthakrishnan, C.P., Khan, A.Q. and Padmanabhan, P.N. – Shri Lakshmi Publications.
5. Dairy India 2007, Sixth edititon 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 Mc Graw-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 House,New Delhi. 2004.

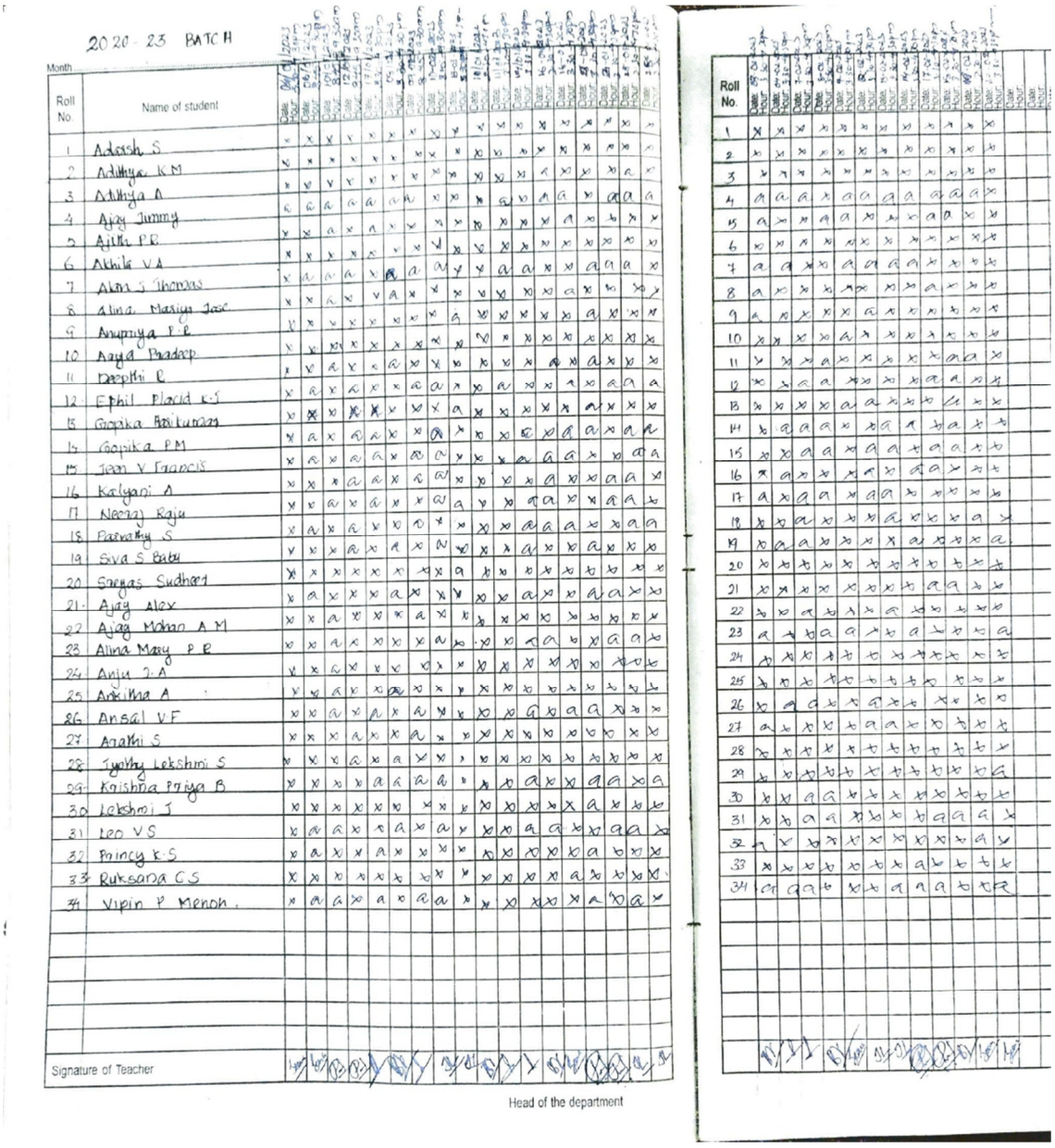
Class Schedule Format 2022-2023

Department: Chemistry **Course: Food Science & Quality Control**

Sl No	Date	Day	Time	Name of Teacher	Class Room No
1	19/09/2022	Monday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
2	22/09/2022	Tuesday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
3	23/09/2022	Friday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
4	26/09/2022	Monday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
5	28/09/2022	Wednesday	3.30 - 4.30 pm	Dr. Beena James	A- 48
6	30/09/2022	Friday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
7	10-03-2022	Monday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
8	10-06-2022	Thursaday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
9	10-07-2022	Friday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
10	10-10-2022	Monday	3.30 - 4.30 pm	Dr. Beena James	A- 48
11	10-12-2022	Wednesday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
12	14/10/2022	Friday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
13	17/10/2022	Monday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
14	19/10/2022	Wednesday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
15	21/10/2022	Friday	3.30 - 4.30 pm	Dr. Beena James	A- 48
16	25/10/2022	Tuesday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48

17	26/10/2022	Wednesday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
18	28/10/2022	Friday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
19	31/10/2022	Monday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
20	11-02-2022	Wednesday	3.30 - 4.30 pm	Dr. Beena James	A- 48
21	11-04-2022	Friday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
22	11-07-2022	Monday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
23	11-09-2022	Wednesday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
24	11-11-2022	Friday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
25	14/11/2022	Monday	3.30 - 4.30 pm	Dr. Beena James	A- 48
26	16/11/2022	Wednesday	3.30 - 4.30 pm	Smt. Seena Elizabeth George	A- 48
27	18/11/2022	Friday	3.30 - 4.30 pm	Dr.Pearl Augustine	A- 48
28	21/11/2022	Monday	3.30 - 4.30 pm	Smt. Liya Jose	A- 48
29	23/11/2022	Wednesday	3.30 - 4.30 pm	Sri. Joseph Libin K.L	A- 48
30	25/11/2022	Friday	3.30 - 4.30 pm	Dr. Beena James	A- 48

ATTENDANCE STATEMENT



St. Michael's College, Cherthala

Add-on Course Examination March 2023

Discipline: Chemistry

Food Science and Quality Control

Time: 1 Hr. **Maximum Marks: 30**

Section A

(Very short answer type, Answer in one word/2 sentences,1 mark each)

Answer all questions

1. The authority that regulates and supervises the food safety in India is……
2. Name any one of the preservative used in food processing.
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

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

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 C

(Long essay, 10 marks each)

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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Mark List

Discipline : Chemistry

Course Title : Food Science & Quality Control

Date of Examination :

16/03/2023 Maximum Marks: 30

Sl No	Candidate Code	Name of the Student	Mark Obtained	% of Mark	Grade
1	23520136001	ADARSH S	25	83.33	A
2	23520136002	ADITHYA K M	29	96.67	A +
3	23520136003	ADITHYA A	28	93.33	A +
4	23520136004	AJAY JIMMY	20	66.67	C
5	23520136005	AJITH P R	19	63.33	C
6	23520136006	AKHILA V A	30	100.00	A +
7	23520136007	ALAN J THOMAS	12	40.00	E
8	23520136008	ALINA MARIYA JOSE	20	66.67	C
9	23520136009	ANUPRIYA P R	28	93.33	A +
10	23520136010	ARYA PRADEEP	21	70.00	B
11	23520136011	DEEPTHI R	26	86.67	A
12	23520136012	EPHIL PLACID K J	23	76.67	B
13	23520136013	GOPIKA HARIKUMAR	28	93.33	A +
14	23520136014	GOPIKA P M	28	93.33	A +
15	23520136015	JEEN V FRANCIS	21	70.00	B
16	23520136016	KALYANI A	26	86.67	A
17	23520136017	NEERAJ RAJU	23	76.67	B
18	23520136018	PARVATHY S	28	93.33	A +
19	23520136019	SIVA S BABU	21	70.00	B
20	23520136020	SREYAS SUDHEER	28	93.33	A +
21	23520136021	AJAY ALEX	19	63.33	C
22	23520136022	AJAY MOHAN A M	19	63.33	C
23	23520136023	ALINAMARY P R	25	83.33	A
24	23520136024	ANJU T A	25	83.33	A
25	23520136025	ANKITHA A	25	83.33	A
26	23520136026	ANSAL V F	18	60.00	C
27	23520136027	ARATHI S	26	86.67	A
28	23520136028	JYOTHY LEKSHMI S	25	83.33	A
29	23520136029	KRISHNA PRIYA B	27	90.00	A +
30	23520136030	LEKSHMI J	26	86.67	A
31	23520136031	LEO V S	23	76.67	B

32	23520136032	PRINCY K S	27	90.00	A +
33	23520136033	RUKSANA C S	28	93.33	A +
34	23520136034	VIPIN P MENON	23	76.67	B

Name and Dated Signature of
the Course Coordinator

Name and Dated Signature of
the HoD

St. Michael's College, Cherthala
Mayithara P.O., Cherthala,
Re-accredited by NAAC with 'A' Grade

Add-on / Certificate Course

Certificate of Merit

This is to certify that Mr./Ms. ADARSH S of B.Sc. Chemistry has completed certificate/Add-on course on. Food Science & Quality Control in the academic year 2022-2023.

He/She is awarded with a grade. A

Head of the Department Co-ordinator Principal

St. Michael's College, Cherthala
Mayithara P.O., Cherthala,
Re-accredited by NAAC with 'A' Grade

Add-on / Certificate Course

Certificate of Merit

This is to certify that Mr./Ms. ADITHYA K M of B.Sc. Chemistry has completed certificate/Add-on course on. Food Science & Quality Control in the academic year 2022-2023.

He/She is awarded with a grade. A+

Head of the Department Co-ordinator Principal

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 Food Science and Quality Control. It is a five module 30hrs programme. The syllabi cover most of the essential features of the dietary food materials including its nutritional value, cultivation, processing and marketing. After the completion of the programme the student will get an idea about the quality of the food materials we used, what are the requirements to maintain its quality, various stages of its processing, different kinds of analytical techniques to measure its quality etc. This programme also opened a gateway for the students to choose his carrier in food science, quality control, analytical chemistry, Food- science and Nutrition etc.

ST MICHAEL'S COLLEGE
MAYITHARA
688539
CHERTHALA

Principal
St. Michael's College
Cherthala