

UNIVERSITY OF KERALA

THIRUVANANTHAPURAM



**M.Sc. DEGREE COURSE IN
FOOD AND DAIRY BIOTECHNOLOGY**

Regulations, Scheme & Syllabus

(wef. 2012 Admissions onwards)

M. Sc. DEGREE COURSE IN FOOD AND DAIRY BIOTECHNOLOGY

1. **Qualification** : A Bachelor's Degree with 55% marks in Part III excluding language in Biotechnology / Microbiology / Botany / Zoology / Life sciences / Biochemistry / B.Sc. Agriculture / BE or B.Tech in chemical Engineering or Biotechnology/ Environmental sciences / Environmental Science and Water Management / B.Sc. Food Science and Quality Control / Home Science / Dairy Science / B.Tech. Dairy Science and Technology / MBBS / BVSc./ B.Sc. Nursing / MLT / B.Sc Botany and Biotechnology.
2. **Admission** : Direct based on the marks in the qualifying examinations
3. **Intake capacity** : 10 Students or as desired by the University
4. **Organization of Course Contents**
 - The contents of each course have been organized into:
 - Objective – to elucidate the basic purpose.
 - Theory units related practical – to facilitate uniform coverage of syllabus for paper setting.
 - Suggested Readings – to recommend some standard books as reference material. This does not unequivocally exclude other such reference material that may be recommended according to the advancements and local requirements.
 - E-Resources - for quick update on specific topics/events pertaining to the subject.

All regulations followed for the PG courses in the affiliated colleges of Kerala University should be followed for the M.Sc. in Food and Dairy Biotechnology also.

The structure and organization of the course is given below.

Sl. No.	Course Name	Credits	Practical	Theory	Total
1	Food Microbiology	3	1	2	3
2	Food Preservation and Technology	3	1	2	3
3	Food Quality and Control Applications	3	1	2	3
4	Food Chemistry III	3	1	2	3
5	Food Processing III	3	1	2	3
6	Food Processing II	3	1	2	3
7	Food Processing I	3	1	2	3
8	Food Microbiology	3	1	2	3
9	Food Preservation and Technology	3	1	2	3
10	Food Quality and Control Applications	3	1	2	3
11	Food Chemistry III	3	1	2	3
12	Food Chemistry II	3	1	2	3
13	Food Chemistry I	3	1	2	3
14	Food Processing III	3	1	2	3
15	Food Processing II	3	1	2	3
16	Food Processing I	3	1	2	3
17	Food Microbiology	3	1	2	3
18	Food Preservation and Technology	3	1	2	3
19	Food Quality and Control Applications	3	1	2	3
20	Food Chemistry III	3	1	2	3
21	Food Chemistry II	3	1	2	3
22	Food Chemistry I	3	1	2	3
23	Food Processing III	3	1	2	3
24	Food Processing II	3	1	2	3
25	Food Processing I	3	1	2	3
26	Food Microbiology	3	1	2	3
27	Food Preservation and Technology	3	1	2	3
28	Food Quality and Control Applications	3	1	2	3
29	Food Chemistry III	3	1	2	3
30	Food Chemistry II	3	1	2	3
31	Food Chemistry I	3	1	2	3
32	Food Processing III	3	1	2	3
33	Food Processing II	3	1	2	3
34	Food Processing I	3	1	2	3
35	Food Microbiology	3	1	2	3
36	Food Preservation and Technology	3	1	2	3
37	Food Quality and Control Applications	3	1	2	3
38	Food Chemistry III	3	1	2	3
39	Food Chemistry II	3	1	2	3
40	Food Chemistry I	3	1	2	3
41	Food Processing III	3	1	2	3
42	Food Processing II	3	1	2	3
43	Food Processing I	3	1	2	3
44	Food Microbiology	3	1	2	3
45	Food Preservation and Technology	3	1	2	3
46	Food Quality and Control Applications	3	1	2	3
47	Food Chemistry III	3	1	2	3
48	Food Chemistry II	3	1	2	3
49	Food Chemistry I	3	1	2	3
50	Food Processing III	3	1	2	3
51	Food Processing II	3	1	2	3
52	Food Processing I	3	1	2	3
53	Food Microbiology	3	1	2	3
54	Food Preservation and Technology	3	1	2	3
55	Food Quality and Control Applications	3	1	2	3
56	Food Chemistry III	3	1	2	3
57	Food Chemistry II	3	1	2	3
58	Food Chemistry I	3	1	2	3
59	Food Processing III	3	1	2	3
60	Food Processing II	3	1	2	3
61	Food Processing I	3	1	2	3
62	Food Microbiology	3	1	2	3
63	Food Preservation and Technology	3	1	2	3
64	Food Quality and Control Applications	3	1	2	3
65	Food Chemistry III	3	1	2	3
66	Food Chemistry II	3	1	2	3
67	Food Chemistry I	3	1	2	3
68	Food Processing III	3	1	2	3
69	Food Processing II	3	1	2	3
70	Food Processing I	3	1	2	3
71	Food Microbiology	3	1	2	3
72	Food Preservation and Technology	3	1	2	3
73	Food Quality and Control Applications	3	1	2	3
74	Food Chemistry III	3	1	2	3
75	Food Chemistry II	3	1	2	3
76	Food Chemistry I	3	1	2	3
77	Food Processing III	3	1	2	3
78	Food Processing II	3	1	2	3
79	Food Processing I	3	1	2	3
80	Food Microbiology	3	1	2	3
81	Food Preservation and Technology	3	1	2	3
82	Food Quality and Control Applications	3	1	2	3
83	Food Chemistry III	3	1	2	3
84	Food Chemistry II	3	1	2	3
85	Food Chemistry I	3	1	2	3
86	Food Processing III	3	1	2	3
87	Food Processing II	3	1	2	3
88	Food Processing I	3	1	2	3
89	Food Microbiology	3	1	2	3
90	Food Preservation and Technology	3	1	2	3
91	Food Quality and Control Applications	3	1	2	3
92	Food Chemistry III	3	1	2	3
93	Food Chemistry II	3	1	2	3
94	Food Chemistry I	3	1	2	3
95	Food Processing III	3	1	2	3
96	Food Processing II	3	1	2	3
97	Food Processing I	3	1	2	3
98	Food Microbiology	3	1	2	3
99	Food Preservation and Technology	3	1	2	3
100	Food Quality and Control Applications	3	1	2	3

UNIVERSITY OF KERALA
M. Sc. Degree course in Food & Dairy Biotechnology (Semester System)

Sem-ester	Paper Code	Title of the Paper	Hours/ Semester	Hours / Week		ESA Hours	Maximum Marks			
				L	P		CA	ESA	Total	
I	FDB101	Food & Dairy Process Biotechnology	90	5		3	25	75	100	
	FDB102	Principles of Food Processing & Preservation	90	5		3	25	75	100	
	FDB103	Food Microbiology & Chemistry	90	5		3	25	75	100	
	FDB104	FDB Techniques I	180		10	4	25	75	100	
		TOTAL FOR SEMESTER I		450	15	10	13	100	300	400
II	FDB201	Dairy Products and R & D Management	90	5		3	25	75	100	
	FDB202	Advanced Dairy And Food Packaging	90	5		3	25	75	100	
	FDB203	Instrumental Methods for Food Quality Analysis and Management	90	5		3	25	75	100	
	FDB204	FDB Techniques -II	180		10	4	25	75	100	
		TOTAL FOR SEMESTER II		450	15	10	13	100	300	400
III	FDB301	Principles Of Food Engineering	90	5		3	25	75	100	
	FDB302	Fruit & Vegetable Processing and Fermentation Technology	90	5		3	25	75	100	
	FDB303	Statistical And Computer Applications For Food Science	90	5		3	25	75	100	
	FDB304	FDB Techniques III	180		10	4	25	75	100	
		TOTAL FOR SEMESTER III		450	15	10	13	100	300	400
IV	FDB401	Nutraceuticals, Health Foods, Food Additives & Ingredients	90	5		3	25	75	100	
	FDB402	Technology of Food Emulsions, Foams and Gels, & Beverages	90	5		3	25	75	100	
	FDB403	Project work & Dissertation	150		8			200	200	
	FDB404	FDB Techniques IV	120		7	3	25	75	100	
	FDB405	Comprehensive Viva Voce						100	100	
		TOTAL FOR SEMESTER IV		450	10	15	9	75	525	600
		Grand Total							375	1425

L-Lecture, P-Practical, ESA-End Semester Assessment, CA-Continuous Assessment(Internal)

M.Sc. Degree course in Food & Dairy Biotechnology (Semester System)

Study Tour

Study tour in the 4th semester of the PG programme is compulsory, and it should be conducted with a broad objective of that the students should familiarize the research trends in food and dairy biotechnology. Tour should be a minimum of three day trip to various research stations/ industries of national importance doing active research in the two thrust areas- Food and Dairy Biotechnology.

Project work & Dissertation

Topic of the dissertation may be chosen from any part of the thrust area (food and dairy biotechnology), with emphasis on originality of approach. The problem may be getting identified in the second semester itself, and the preliminary works should be started in the third semester. It should be duly signed by the research guide and the Coordinator of the programme and submitted for evaluation. The dissertation to be submitted should include: Introduction, Review of Literature, Objectives, Materials and Methods, Results and Discussion, Summary and Conclusion, and References.

Scheme for Practicals	Duration	CA	ESA	Total Marks
FDB Techniques I (FDB 104) includes all the practicals of FDB 101, FDB 102 & FDB 103	4 hrs	25	75	100
FDB Techniques II (FDB 204) includes all the Practicals of FDB 201, FDB 202 & FDB 203	4 hrs	25	75	100
FDB Techniques III (FDB 304) includes all the Practicals of FDB 301, FDB 302 & FDB 303	4 hrs	25	75	100
FDB Techniques IV (FDB 404) includes all the practicals of FDB 401 and FDB 402	4 hrs	25	75	100

The practical examinations are conducted at the end of each semester. Certified records of practical works done and submissions, if any, should be submitted at the time of each practical examination. The Lab & Industry visit report (Tour Report) should be submitted at the time of semester IV practical examination.

SCHEME OF EXAMINATION AND MARK DISTRIBUTION

Semester	Paper code	Paper	Hours/ Semeste	ESA hours	Maximum marks		
					CA	ESA	Total
I	FDB101	Paper 1	90	3	25	75	100
	FDB102	Paper 2	90	3	25	75	100
	FDB103	Paper 3	90	3	25	75	100
	FDB104	FDB Technique-I	180	4	25	75	100
		Total for Semester I		450	13	100	300
II	FDB201	Paper 1	90	3	25	75	100
	FDB202	Paper 2	90	3	25	75	100
	FDB203	Paper 3	90	3	25	75	100
	FDB204	FDB Technique-II	180	4	25	75	100
		Total for Semester II		450	13	100	300
III	FDB301	Paper 1	90	3	25	75	100
	FDB302	Paper 2	90	3	25	75	100
	FDB303	Paper 3	90	3	25	75	100
	FDB304	FDB Technique- III	180	4	25	75	100
		Total for Semester III		450	13	100	300
IV	FDB401	Paper 1	90	3	25	75	100
	FDB402	Paper 2	90	3	25	75	100
	FDB403	Dissertation	150			200	200
	FDB404	FDB Technique-IV	120	3	25	75	100
	FDB405	Viva Voce				100	100
		Total for Semester IV		450	9	75	525
	Grand Total				375	1425	1800

Distribution of marks in each Semester Examination

Semester	Continuous Assessment		End Semester Assessment		Total marks
	Theory	Practical	Theory	Practical	
I	75	25	225	75	400
II	75	25	225	75	400
III	75	25	225	75	400
IV	50	25	150	75	300
Project work & Dissertation					200
Comprehensive Viva Voce					100
Grand Total					1800

Distribution of Marks in Practical Examination

Practical Exam (FDB Techniques)	Examination	Record/Submission	Total Marks
I	65	Record - 10	75
II	65	Record - 10	75
III	65	Record - 10	75
IV	60	Record - 10 Tour Report (Lab & Industry visit report) -05	75