UNIVERSITY OF KERALA

MASTER OF SCIENCE IN

MICROBIOLOGY

(M.Sc. Microbiology)

SCHEME & SYLLABUS

(Semester Scheme)

Two Year Full Time Programme

2013 admission Onwards

Preamble

The postgraduate course in Microbiology aims to professionally train students with an undergraduate degree in life science to provide services in teaching institutions, research institutions, hospitals, quality control divisions of industries , food processing units and other related settings. These postgraduates are expected to be equipped to pursue research and to contribute to the knowledge building process in the same field.

Eligibility criteria for admission

B.Sc. degree in Life Sciences [Biochemistry, Botany, Biotechnology (double main & triple main)}, Biochemistry & Industrial Microbiology or Microbiology from University of Kerala or recognised as equivalent thereto by University of Kerala securing not less than 55% marks.

Course Structure

The post Graduate course leading to the award of the Master of Science Degree in Microbiology by the University of Kerala is spread over four semesters of 18 weeks duration. The academic work is a package of thirteen theory papers which includes one elective paper to be chosen from four options , four practical papers, one dissertation , one industrial visit and a comprehensive viva voce. Each semester will include didactic lectures, practical training, assignment writings, seminars, group discussions and tutorials.

In semester I there are three theory papers and one practical paper along with an industrial visit. In semester II, there are three theory papers and one practical paper. In semester III, there are three common theory papers, one practical paper and one elective theory paper. Semester IV comprises of three common theory papers, one practical paper and one dissertation. There will be a comprehensive viva voce at the end of semester IV to evaluate enbloc semesters I, II, III & IV. The practical papers in all the semesters contain units related to the theory papers in that semester.

The scheme of papers and the distribution of marks for continuous evaluation (CA) and End Semester Examination (ESA) are given below:

Examinations and Requirements for Passing

Evaluation of each paper shall be done in parts viz., Continuous Assessment (CA) and End Semester Assessment (ESA). The distribution of marks shall be 25% for CA and 75% for ESA for all theory papers. In the case of practical papers, the distribution of marks shall be 15 for CA and 55 for ESA in a total of 70.

There shall be no continuous assessment for dissertation work

The allocation of marks for Continuous Assessment (CA) for theory papers shall be in the following proportion:

a. Attendance - 5
b. Assignment - 5
c. Tests - 10
d. Seminars - 5

Total -25

Attendance in all theory and practical classes is compulsory. Only those who secure a minimum of 75% attendance in the aggregate for all the papers of a semester taken together alone will be allowed to register for the End Semester Examination of the semester.

Each student shall be required to do two assignments for each paper; a maximum five marks shall be awarded for two assignments.

There shall be two class tests during a semester. Marks of tests shall be awarded on the basis of the marks secured for the best of two tests. Maximum ten marks shall be awarded for the test.

Students shall be required to present a seminar on a selected topic in each paper. The evaluation of the seminar will be done on the basis of presentation, content of the seminar paper and participation in discussion. The maximum marks shall be five.

Pass requirement shall be 40% marks for ESA for each paper and an aggregate minimum of 50% marks including CA for all the papers put together of a semester

Dissertation

Aim: (a) Application of knowledge to real life situation (b) To introduce research methodology.

Topic of the dissertation may be chosen from any area of Microbiology and should be laboratory based with emphasis on originality of approach. It may be started during second or third semester and shall be completed by the end of the IV semester. The dissertation submitted should include (a) background information in the form of introduction (b) objectives of the study (c) materials and methods employed for the study (d) results and discussion thereon (e) summary and conclusions and (f) bibliography. Apart from these sections, importance of the results, originality and general presentation also may be taken into consideration for evaluation.

Two copies of the dissertation duly certified by the supervising teacher and countersigned by the principal, where the course is held, shall be submitted to the University before the commencement of the End Semester Examination (ESA) at the end of the fourth semester. The maximum marks for the dissertation shall be 100 of which 20% shall be allotted to viva-voce examination, which shall be conducted along with the comprehensive viva.

Pattern of Question papers for the End Semester Examination

Each question paper must have three parts drawing questions from all the units in the syllabus. Part I of the paper shall consist of long essays, Part-II short essays and Part-III brief notes and concepts.

In Part-I, two out of three questions each carrying 10 marks, in Part-II, five out of eight questions each carrying 5 marks and in Part-III ten out of fourteen questions each carrying 3 marks shall be answered. Thus the total marks shall be 75.

ESA for the practicals at the end of semester II & IV and the comprehensive viva –voce at the end of semester IV shall be conducted by the board of examiners appointed by the controller of examinations.

Any other PG regulations decided by the University of Kerala shall be applicable to the students of M.Sc Microbiology of this university.

MARKS AWARDED IN EACH SEMESTER

Semester I	-	390
Semester II	-	370
Semester III	-	470
Semester IV	-	570
Total	-	1800

Distribution of hours/semester (I, II & IV)

3 Theory papers 90x3	=	270 hrs
Practical	=	180 hrs
Test Papers/Seminars	=	30 hrs

Distribution of hours/semester (III)

4 Theory papers	=	252 hrs
Practical	=	180 hrs
Test Papers/Seminars	=	30 hrs

SCHEME FOR PRACTICALS

Semester I	**MB104**	Lab 1 -Microbial Biochemistry & Bioinformatics	70 marks
Semester II	**MB204**	Lab 2- General Microbiology, Immunology & Recombinant DNA Technology	70 marks
Semester III	**MB304**	Lab 3- Environmental, Agricultural, Food & Industrial Microbiology	70 marks
Semester IV	**MB404**	Lab 4 - Medical Microbiology	70 marks

The practical examinations are conducted at the end of semester II & semester IV. At the end of semester II examination for practical MB104 & MB204 and at the end of semester IV, examination for practical MB304 & MB404 will be conducted.

Distribution of marks for Practical Examination

			Duration	ESA	CA	Total marks
Semester II	**MB104**	**Practical I**	6 hrs			
		Minor		10		
		Major		40		
		Record		5	15	70
Semester II	**MB204**	**Practical II**	6 hrs			
		Minor		10		
		Major		40		
		Record		5	15	70
Semester IV	**MB304**	**Practical III**	6 hrs			
		Minor		10		
		Major		40		
		Record		5	15	70
Semester IV	**MB404**	**Practical IV**	6 hrs			
		Minor		10		
		Major		40		
		Record		5	15	70

Overall distribution of marks

Theory	100x13	=	1300
Practical	70x4	=	280
Industrial visit		=	20
Dissertation		=	100 (80 + 20)
Viva-Voce		=	100 (50 + 50)
Total		=	1800

SCHEME OF THE SYLLABUS

Semester	Paper No.	Title of the Paper	Instructional Hours/Week			Max. Marks		
			L	T	P	CA	ESA	Total
Semester I	**MB101**	Microbial Biochemistry	5	1	0	25	75	100
	MB102	Biophysics, Instrumentation & Biostatistics	5	1	0	25	75	100
	MB103	Cell & Molecular Biology & Bioinformatics	5	1	0	25	75	100
	MB104	Lab 1 -Microbial Biochemistry & Bioinformatics	0	0	10	15	55	70
	MB105	Industrial Visit	0	0	1	-	20	20
		Total				**90**	**300**	**390**
Semester II	**MB201**	General Microbiology	5	1	0	25	75	100
	MB202	Immunology & Immunotechniques	5	1	0	25	75	100
	MB203	Recombinant DNA Technology	5	1	0	25	75	100
	MB204	Lab 2- General Microbiology, Immunology & Recombinant DNA Technology	0	0	10	15	55	70
		Total				**90**	**280**	**370**
Semester III	**MB301**	Environmental & Agricultural Microbiology	4	1	0	25	75	100
	MB302	Food & Dairy Microbiology	3	1	0	25	75	100
	MB303	Industrial Microbiology	3	1	0	25	75	100
	MB304	Lab 3- Environmental, Agricultural, Food & Industrial Microbiology	0	0	10	15	55	70
	MB305	Electives	4	1	0	25	75	100
		Total				**115**	**355**	**470**
Semester IV	**MB401**	Medical Bacteriology	5	1	0	25	75	100
	MB402	Medical Virology, Mycology & Parasitology	5	1	0	25	75	100
	MB403	Clinical & Diagnostic Microbiology	5	1	0	25	75	100
	MB404	Lab 4 - Medical Microbiology	0	0	10	15	55	70
	MB405	Dissertation					100	100
		Viva-Voce					100	100
		Total				**90**	**480**	**570**
		Grand Total						**1800**