Enclosure – II

Shree Manibhai Virani and Smt. Navalben Virani Science College, Rajkot (Autonomous)
Affiliated to Saurashtra University, Rajkot

Department of Microbiology
B. Sc. MICROBIOLOGY

VISION OF THE DEPARTMENT

Our vision is to produce highly qualified and competent microbiologists with expertise in all the relevant areas, to develop and maintain a strong and supportive research programme to complement our national needs while strengthening local relevance and to rise as center of excellence and knowledge in the subject of Microbiology

MISSION OF THE DEPARTMENT

The mission of Microbiology Department is to promote good quality education, research and to provide the most rigorous and inspiring training in the discipline of Microbiology with greater significance of application in all relevant areas. The Department strives to educate and mentor students to:

- Acquire practical skills necessary for operation and maintenance of small and medium scale industry and research institute,
- Be aware of the role of microorganisms in various aspects of life processes and understand their importance in agriculture, environment, food, health, and other areas,
- Apply microbiological techniques and technologies to the betterment of human life, environment and national economy,
- Contribute to the pursuit of knowledge by contributing meaningfully in the area of Research in Microbiology

OBJECTIVES OF THE PROGRAMME

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

1. Understand the basic morphology, physiology, diversity, and genetics of microorganisms, and exploit their interactions with environment and other living organisms.
2. Isolate, identify and maintain microbial cultures for disease diagnosis, application in agriculture, environment, genetic engineering, industry and other related fields of applied Microbiology.
3. Skill to operate basic and advanced instruments used for analysis of various biomolecules.
4. Exploit the role of microorganisms in day to day life for the better living conditions for humans

SCHEME OF INSTRUCTION AND EXAMINATIONS
For Students Admitted From A.Y. 2019-2020 & Onwards

Semester –I							
Course Code	**Course**	**Hrs- of Instructions/wk**	**Exam Duration hrs**	**Marks allotted**			**Credits**
				CIA	**SEE**	**Total**	
Part – I							
19ULCEN01	Functional English-I	3	3	40	60	100	3
Part – II							
19UMBCC101	**Core 1**: Fundamentals of Microbiology	4	3	30	70	100	4
19UMBCC102	**Core 2**: Bacteriology	4	3	30	70	100	4
19UMBDA101	**DSE allied-1**: Zoology	3	3	30	70	100	3
19UMBCC103	**Core Practical - 1-** Fundamental Microbiology and Bacteriology	6	6*	40	60	100	2
19UMBDA102	**DSE allied-1–Practical** Zoology	6	3	20	30	50	2
	TOTAL	**26**				**550**	**18**
Part –III							
-	**AECC-1**: Environmental Science	1	--	-	-	-	-
19AEVE01	**SEC-1**:Value Education for conscience development	1	--	-	-	-	-
		28					**1**

*3 hrs on day 1 and 3 hrs on second day

Semester –II							
Course Code	**Course**	**Hrs- of Instructions/wk**	**Exam Duration hrs**	**Marks allotted**			**Credits**
				CIA	**SEE**	**Total**	
Part –I							
16ULCEN02	Functional English-II	3	3	40	60	100	3
Part- II							
19UMBCC201	**Core 3**:Microbial Diversity	4	3	30	70	100	4
19UMBCC202	**Core 4:** Basic Biochemistry	4	3	30	70	100	4
19UMBCC203	**Core 5**:Cell Biology	4	3	30	70	100	4
19UMBDA201	**DSE allied-2**: Botany	3	3	30	70	100	3
19UMBCC204	**Core Practical – 2** Microbial Diversity, Biochemistry and Cell Biology	6	6*	40	60	100	2
19UMBDA202	**DSE allied-2: Practical** - Botany	4	3	20	30	50	2
	TOTAL	**28**				**650**	**22**
Part – III							
19AEESS01	**AECC-1**: Environmental Science	1	-	REMARKS			2
19AEVE02	**SEC-2**: Value Education for conscience development	1	-	REMARKS			2
		30					

*3 hrs on day 1 and 3 hrs on second day

Semester – III							
Course Code	**Course**	**Hrs- of Instructions/wk**	**Exam Duration hrs**	**Marks allotted**			**Credits**
				CIA	**SEE**	**Total**	
Part –I							
16ULCEN03	Advanced English Language - I	3	3	40	60	100	3
Part –II							
19UMBCC301	**Core 6**: Biostatistics and Bioinformatics	5	3	30	70	100	5
19UMBCC302	**Core 7**: Agricultural Microbiology	4	3	30	70	100	4
19UMBCC303	**Core 8**: Food and Environmental Microbiology	4	3	30	70	100	4
19UMBDA301	**DSE allied -3**: Sustainable Management	3	3	30	70	100	3
19UMBCC304	**Core Practical – 3** Applied and Analytical Microbiology	6	6*	40	60	100	3
19UMBDA302	**DSE allied -3: Practical** - Sustainable Management	6	3	20	30	50	2
	TOTAL	**31**				**650**	**24**

*3 hrs on day 1 and 3 hrs on second day

Semester – IV							
Course Code	**Course**	**Hrs- of Instructions/wk**	**Exam Duration hrs**	**Marks allotted**			**Credits**
				CIA	**SEE**	**Total**	
Part - I							
19UENLC04	Advanced English Language – II	3	3	40	60	100	3
Part - II							
19UMBCC401	**Core 9:** Bacterial Metabolism	4	3	30	70	100	4
19UMBCC402	**Core 10**: Analytical Techniques	4	3	30	70	100	4
19UMBCC403	**Core 11**: Industrial Microbiology	4	3	30	70	100	4
19UMBDA401	**DSE allied -4**: Basics of Ecology	3	3	30	70	100	3
19UMBCC404	**Core Practical – 4** Microbial Technology and Instrumentation	6	6*	40	60	100	3
19UMBDA402	**DSE allied -4 Practical** Basics of Ecology	6	3	20	30	50	2
	TOTAL	**30**				**650**	**23**

*3 hrs on day 1 and 3 hrs on second day

Semester – V							
Course Code	**Course**	**Hrs- of Instructions/wk**	**Exam Duration hrs**	**Marks allotted**			**Credits**
				CIA	**SEE**	**Total**	
Part –II							
19UMBCC501	**Core 12**: Immunology	4	3	30	70	100	4
19UMBCC502	**Core 13:** Medical Microbiology	4	3	30	70	100	4
19UMBCC503	**Core 14**: Phycology (Self Study)	1	3	30	70	100	4
19UMBCC504	**Core 15**: Computer Based Test (for Core Courses of Semesters I to V)	-	2	50	-	50	1
19UMBDC501/ 19UMBDC502/	**DSE-Core 1** Quality Assurance and Quality control/Mycology and Virology	4	3	30	70	100	4
19UMBCC505	**Core Practical- 5** Clinical Microbiology	9	9*	40	60	100	3
19UMBDC503/ 19UMBDC504	**DSE-Core 1 –Practical** Quality Assurance and Quality control/ Mycology and Virology	2	3	20	30	50	1
	Research Project/ Training/Internship	3	-	-	-	-	-
	Generic Elective-1- From Common UG Pool	2	-	100	-	100	2
	TOTAL	**29**				**700**	**23**

*6 hrs on Day 1 and 3 hrs on Day 2

Semester – VI							
Course Code	**Course**	**Hrs- of Instructions/wk**	**Exam Duration hrs**	**Marks allotted**			**Credits**
				CIA	**SEE**	**Total**	
Part –II							
19UMBCC601	**Core 16:** Molecular Biology	4	3	30	70	100	4
19UMBCC602	**Core 17**: Genetic Engineering	4	3	30	70	100	4
19UMBDC601/ 19UMBDC602	**DSE-Core 2** Microbiology and Health Care / Fundamentals of Research Methodology	4	3	30	70	100	4
19UMBCC603	**Core Practical- 6** Molecular Biology	9	9*	40	60	100	3
19UMBDC603/ 19UMBDC604	**DSE-Core 2 Practical** Microbiology and Health Care / Fundamentals of Research Methodology	2	2	20	30	50	1
19UMBCC604	**Research Project/ Training/Internship**	3	-	50	50	100	2
	Generic Elective-2 From Common UG Pool	2	3	50	-	100	2
19UMBCC605	**Microbiology Outreach Activity**	2	-	50	-	50	2
		30				**700**	**22**
						Total Marks : **3900**	
						Total Credit : 132 + 8 = 140	

*6 hrs on Day 1 and 3 hrs on Day 2

Part III						
Course Code	**Semester**	**Particulars**	**Hrs of instruction/week**	**No. of Courses**	**Credit/Course**	**Total Credits**
Ability Enhancement Compulsory Course (AECC)						
As per common list	I & II	**AECC-I** Environment Science	1	1	2	2
	IV & V	**AECC-II** Communication Skill/Soft Skills	2	2	1	2
					Sub Total	**4**
Skill Enhancement Course (SEC)						
As per common list	I	**SEC-I** Value Education-I	1	1	1	1
	II	Value Education-II	1	1	1	1
	Any Semester between II - V	**SEC-II** *Co-Curricular Course	> 40 hours in total	1	1	1
	Any Semester between II - V	**SEC-III** **Value Added Courses	40 hours in total	1	1	1
					Sub Total	**4**
					Grand Total	**8**

*** Co- Curricular Courses –** Option to student to choose one from a list of courses offered by the college, such as Add-on courses, Gandhian Studies Certificate Course, Women Studies Course, etc.

**** Value Added Courses - Option** to student to choose at least one from a list of courses offered by UG Departments

Project/Survey/Review writing / Internship: 3 hrs in 5th semester and 3 hrs in semester VI

Total Credit to earn Degree = 140 credits

Part I and II = 132credits AND Part III = 8 credits

- **TOTAL MARKS & CREDIT DISTRIBUTION**

S.NO	PART	Total Marks	Total Credits
1.	PART I: Language Course	400	12
2.	PART II : Core, DSE Allied, DSE Core, GE	3500	120
3.	PART III: AECC- I & II SEC – I,II &III	Remarks	08
	TOTAL	**3900**	**140**

PART – I : LANGUAGE COURSE

The following are compulsory courses offered in first to fourth semesters.

S.No	Semester	Course code	Course
1	I	16ULCEN01	Functional English –I
2	II	16ULCEN02	Functional English –II
3	III	16ULCEN03	Advanced English Language - I
4	IV	16ULCEN04	Advanced English Language - I

- **PART – II : CORE, DSE ALLIED, DSE CORE, GE**

CORE COURSES [Theory]

S. No	Semester	Course code	Course
1	I	19UMBCC101	Core 1: Fundamentals of Microbiology
2		19UMBCC102	Core 2: Bacteriology
3	II	19UMBCC201	Core 3:Microbial Diversity
4		19UMBCC202	Core 4: Basic Biochemistry
5		19UMBCC203	Core 5:Cell Biology
6	III	19UMBCC301	Core 6:Biostatistics and Bioinformatics
7		19UMBCC302	Core 7: Agricultural Microbiology
8		19UMBCC303	Core 8: Food and Environmental Microbiology
9	IV	19UMBCC401	Core 9: Bacterial Metabolism
10		19UMBCC402	Core 10: Analytical Techniques
11		19UMBCC403	Core 11: Industrial Microbiology
12	V	19UMBCC501	Core 12 Immunology
13		19UMBCC502	Core 13: Medical Microbiology
14		19UMBCC503	Core 14: Phycology (Self Study)
15		19UMBCC504	Core 15: Computer Based Test
16	VI	19UMBCC601	Core 16: Molecular Biology
17		19UMBCC602	Core 17: Genetic Engineering

CORE COURSE [Practical]

S. No	Semester	Course code	Course
1	I	19UMBCC103	**Core Practical - 1-** Fundamental Microbiology and Bacteriology
2	II	19UMBCC204	**Core Practical – 2-** Microbial Diversity, Biochemistry and Cell Biology
3	III	19UMBCC304	**Core Practical – 3-** Applied and analytical Microbiology
4	IV	19UMBCC404	**Core Practical – 4 –**Microbial Technology and Instrumentation
5	V	19UMBCC505	**Core Practical- 5 -** Clinical Microbiology
6	VI	19UMBCC603	**Core Practical- 6 -** Molecular Biology

OTHER CORE COURSES

S. No.	Semester	Course Code	Course
1	V & VI	19UMBCC604	Research Project/ Training/Internship
2	VI	19UMBCC605	Microbiology Outreach Programme

DSE ALLIED COURSE

S.No	Semester	Course code	Course
1	I	19UMBDA101	Zoology
2	II	19UMBDA201	Botany
3	III	19UMBDA301	Sustainable Management
4	IV	19UMBDA401	Basics of Ecology

DSE ALLIED COURSE [Practical]

S.No	Semester	Course code	Course
1	I	19UMBDA102	Zoology
2	II	19UMBDA202	Medicinal Botany
3	III	19UMBDA302	Sustainable Management
4	IV	19UMBDA402	Biostatistics and Bioinformatics

DSE CORE COURSES [Theory & Practical]

Students are required to opt for any one of the courses offered in 5^{th} & 6^{th} semesters respectively.

S. No	Semester	Theory		Practical	
		Course code	Course	Course code	Course
1.	V	19UMBDC501	Quality Assurance and Quality Control	19UMBDC603	Quality Assurance and Quality Control
		19UMBDC02	Mycology and Virology	19UMBDC604	Mycology and Virology

2.	VI	19UMBDC601	Microbiology and Health care	19UMBDC603	Microbiology and Health care
		19UMBDC602	Fundamentals of Research Methodology	19UMBDC604	Fundamentals of Research Methodology

GENERIC ELECTIVE

S. No	Semester	Course
1.	V	Any one course from list of courses offered across UG Departments
2.	VI	

- **PART –III : AECC , SEC**

Course Code	Semester	Particulars	Hrs of instruction/week	No. of Courses	Credit/Course	Total Credits
Ability Enhancement Compulsory Course (AECC)						
As per common list	I & II	**AECC-I** Environment Science	1	1	2	2
	IV & V	**AECC-II** Communication Skill/Soft Skills	2	2	1	2
					Sub Total	**4**
Skill Enhancement Course (SEC)						
As per common list	I	**SEC-I** Value Education-I	1	1	1	1
	II	Value Education-II	1	1	1	1
	Any Semester between II - V	**SEC-II** *Co-Curricular Course	> 40 hours in total	1	1	1
	Any Semester between II - V	**SEC-III** **Value Added Courses	40 hours in total	1	1	1
					Sub Total	**4**
					Grand Total	**8**

- **Courses offered by the Department to UG students of other Departments**

GENERIC ELECTIVE COURSE

S. No.	Semester	Course Code	Course	Name of Program
1	V	19UMBGE501	Microbes in Human welfare	For all other UG Programs
2	VI	19UMBGE601	Advance in Microbiology	For all other UG Programs