

K.S.Rangasamy College of Arts and Science (Autonomous)

Tiruchengode-637215

Department of Microbiology (PG)

1.2.1 Percentage of new courses introduced of the total number of courses across all programmes offered during the last five years

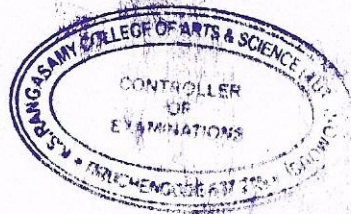
1. Elective II: Pharmaceutical Microbiology
2. Core XII: Food and Dairy Microbiology

Enclosures:

1. Copy of scheme of examination.
2. Syllabus copy of the new course introduced

Head of the Department

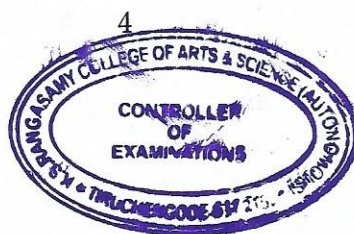
Controller of Examination

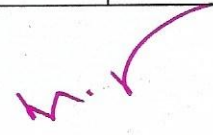


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SCHEME OF EXAMINATION

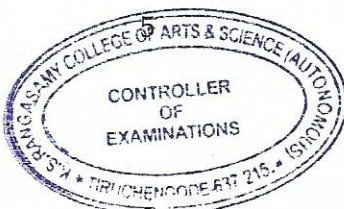
Subject Code	Subject	Hours of Instruction	Exam Duration	Maximum Marks			Credit Points
				CA	CE	Total	
FIRST SEMESTER							
Part A							
18PMBM101	Core I: Fundamentals of Microbiology and Taxonomy	5	3	25	75	100	5
18PMBM102	Core II: Microbial Biochemistry and Physiology	5	3	25	75	100	5
18PMBM103	Core III: Microbial Genetics	5	3	25	75	100	5
18PMBM104	Core IV: Immunology	5	3	25	75	100	5
18PMBM105	Core V: Bioinstrumentation	4	3	25	75	100	4
18PMBMP101	Core Practical I: Fundamentals of Microbiology & Taxonomy, Microbial Biochemistry & Physiology, Microbial Genetics, Immunology & Bioinstrumentation	5	9	40	60	100	4
Non Credit							
18PLS101	Career Competency Skills I	1	-	-	-	-	-
Total		30				600	28
SECOND SEMESTER							
Part A							
18PMBM201	Core VI: Soil and Agricultural Microbiology	5	3	25	75	100	5
18PMBM202	Core VII: Medical Microbiology	5	3	25	75	100	5
18PMBEL201	Elective I	5	3	25	75	100	4
18PMBMP201	Core Practical II: Soil and Agricultural Microbiology, Medical Microbiology, Environmental	6	9	40	60	100	4




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M.Sc., Applied Microbiology (Students admitted from 2018-2019 onwards)

	Microbiology and Cell biology						
Optional Subjects							
18PBCMBI201	IDC I: Diagnostic Biochemistry	3	3	25	75	100	2
18PBCMBIP201	IDC Practical I: Diagnostic Biochemistry	3	3	40	60	100	2
18PBTMBI201	IDC I: Plant Tissue Culture Technology	3	3	25	75	100	2
18PBTMBIP201	IDC Practical I: Plant Tissue Culture Technology	3	3	40	60	100	2
Part B							
18PVE201	Value Education : Human Rights	2	3	25	75	100	2
Non Credit							
18PLS201	Career Competency Skills II	1	-	-	-	-	-
	Total	30				700	24
THIRD SEMESTER							
Part A							
18PMBM301	Core VIII: Genetic Engineering	6	3	25	75	100	5
18PMBM302	Core IX: Biostatistics and Research Methodology	5	3	25	75	100	4
18PMBEL301	Elective II	5	3	25	75	100	5
18PMBMP301	Core Practical III: Genetic Engineering, Industrial Microbiology, and Food and Dairy Microbiology	6	9	40	60	100	3
18PMBMP302	Core Practical IV: Statistical Software	2	3	40	60	100	2
Optional Subjects							
18PBCMBI301	IDC II: Pharmaceutical Biochemistry	3	3	25	75	100	2
18PBCMBIP301	IDC Practical II: Pharmaceutical	3	3	40	60	100	2

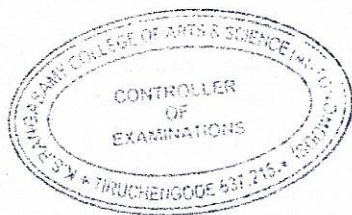


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	Biochemistry						
18PBTMBI301	IDC II: Animal Tissue Culture Technology	3	3	25	75	100	2
18PBTMBIP301	IDC Practical II: : Animal Tissue Culture Technology	3	3	40	60	100	2
Part B							
	Total	30				700	23
FOURTH SEMESTER							
Part A							
18PMBM401	Core X: Industrial Microbiology	5	3	25	75	100	4
18PMBM402	Core XI: Food and Dairy Microbiology	5	3	25	75	100	5
18PMBPR401	Project and Viva Voce	5	-	50	150	200	6
	Total	15				400	15
	Grand Total					2400	90



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ELECTIVE

The students shall choose any one of the following subjects as Elective I and II in the Second and Third semesters respectively.

Elective I

S.No.	SEMESTER	SUBJECT CODE	SUBJECT
1.	II	18PMBEL201	Elective I: Environmental Microbiology
		18PMBEL202	Elective I: Cell Biology

Elective II

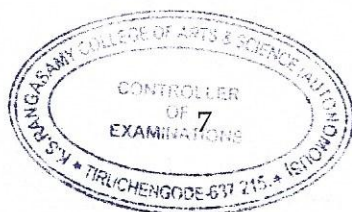
S.No.	SEMESTER	SUBJECT CODE	SUBJECT
1.	III	18PMBEL301	Elective II: Bioinformatics, Bioethics and IPR
		18PMBEL302	Elective II: Pharmaceutical Microbiology

FOR COURSE COMPLETION

- Student shall complete:
- Value Education: Human Rights in II semester.
- IDC in II and III semester.
- Elective subjects in II and III semesters.
- Project & Viva-Voce in IV semester.
- Career Competency Skills in I and II semester.

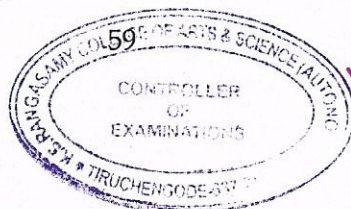
TOTAL MARKS AND CREDIT DISTRIBUTION

S.No.	COMPONENT	MARK	CREDITS
1.	PART A: Core, Elective and IDC subjects	2300	88
2.	PART B: Value Education	100	02
TOTAL		2400	90



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18PMBMEL302	ELECTIVE II: PHARMACEUTICAL MICROBIOLOGY	SEMESTER III	
Course Objectives:			
The course aims			
<ul style="list-style-type: none"> To learn about the synthetic antimicrobial agents and its mechanism of action. To understand microbial contamination and spoilage of various pharmaceutical products. To study the quality assurance and validation of pharmaceutical Industry. 			
Credits: 05		Total Hours: 50	
UNIT	CONTENTS	Hrs	CO
I	Antibiotics: Definition - Classification of antibiotics - Mechanism of action of antibiotics - Inhibitors of cell wall synthesis, nucleic acid and protein synthesis- Antimicrobial resistance. Scope and recent developments of pharmaceutical microbiology.	12	CO1
II	Industrial production of microbial products: Antibiotics - Penicillin and Streptomycin, vaccines - influenza, BCG.	08	CO2
III	Microbial contamination and spoilage of pharmaceutical products: sterile injectables - Intravenous infusions and total parenteral nutrition (TPN), non injectables-non injectable water and haemodialysis solutions, ophthalmic preparations and implants.	10	CO3
IV	Pharmaceutical Drug Analysis: Biosensors and applications in Pharmaceuticals; Macromolecular, cellular and synthetic drug carriers. Assay of steroids. Methods of preservation of pharmaceutical products.	10	CO4



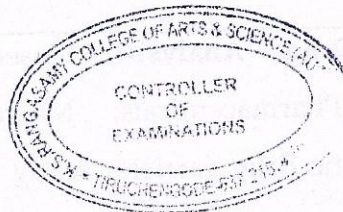
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V	Quality Assurance and Validation: Good Manufacturing Practices (GMP) and Good Laboratory Practices (GLP) in Pharmaceutical Industry. Toxicology test of antimicrobial drugs - Acute toxic category and Fixed dose procedure. Laboratory evaluation and quality testing of antimicrobial drugs.	10	CO5
Text Book:			
1.	Hugo and Russell. 2004. Pharmaceutical Microbiology . [Seventh Edition]. Wiley- Blackwell Publishers, UK.		
Reference Books:			
1.	Purohit, S.S., Saluja, A.K. and Kakrani, H.N. 2003. Pharmaceutical Microbiology . Agrobios, New Delhi.		
2.	Lansing M Prescott, John P Harley and Donald A Klein. 2010. Microbiology . [Eighth Edition]. Mc Graw Hill, New York.		

COURSE OUTCOMES (CO)

After completion of the course, the students' will be able to

CO1	Recall the basics and working mechanism of antibiotics against infectious diseases.
CO2	Optimize the production of pharmaceutical products.
CO3	Develop the pharmaceutical products without contamination and spoilage.
CO4	Apply the technology in drug delivery systems.
CO5	Follow the protocols and regulations to validate pharmaceutical products.



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MAPPING

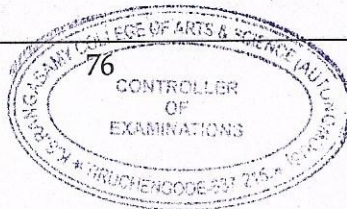
PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	H	H	H
CO2	H	H	H	H	H
CO3	H	M	H	M	H
CO4	H	H	H	H	H
CO5	M	H	H	M	H

H-High; M-Medium; L-Low



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18PMBM402	CORE XI: FOOD AND DAIRY MICROBIOLOGY	SEMESTER IV	
Course Objectives:			
The course aims			
<ul style="list-style-type: none"> • To learn the basics of recombinant DNA technology. • To acquire an idea about cloning mechanisms. 			
Credits: 05		Total Hours: 50	
UNIT	CONTENTS	Hrs	CO
I	Introduction: Importance of food and dairy Microbiology- Types of microorganisms in food - Source of contamination (primary sources) - Factors influencing microbial growth in foods (extrinsic and intrinsic).	10	CO1
II	Spoilage and preservation of different kinds of foods: cereals and cereal products- milk and milk products - vegetable and fruits-meat and meat products- fish and eggs.	10	CO2
III	Food borne infections and intoxications: bacterial, non-bacterial (<i>Staphylococcus</i> , <i>Clostridium</i> , <i>Escherichia coli</i> and <i>Salmonella</i> infections, Hepatitis, Amoebiasis and Mycotoxins)-Food borne disease outbreaks- Laboratory testing-preventive measures.	10	CO3
IV	Food preservation: Principles of food preservation-methods of preservation. Physical methods (irradiation, drying, heat processing, chilling and freezing, modification of atmosphere) and Chemical preservatives.	10	CO4
V	Fermented food products: Bread, Sauerkraut, cheese, Yoghurt, Buttermilk and Tempeh. Food sanitation and its control.	10	CO5
Text Book:			
1.	Frazier, W.C. and Westhoff, D.C. 2001. Food Microbiology . [Fourth Edition].		



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Tata McGraw-Hill Publishing Company Limited, New Delhi.

Reference Books:	
1.	Banwart, G.J.1989. Basic Food Microbiology . Chapman and Hall New York.
2.	Jay, J. M. 1987. Modern Food Microbiology . CBS Publishers and distributors, New Delhi.
3.	Adams, M.R. and Moss, M.O. 1995. Food Microbiology . The Royal Society of Chemistry, Cambridge.

COURSE OUTCOMES (CO)

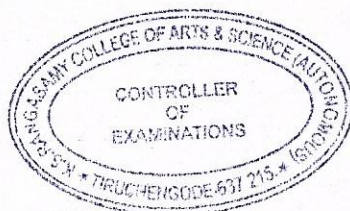
After completion of the course, the students' will be able to

CO1	Discuss importance of food in dairy microbiology.
CO2	Understand the spoilage of food products for product development.
CO3	Analyze food borne infections and intoxications for product preservation.
CO4	Evaluate different kinds of food preservation methods for product safety.
CO5	Demonstrate various fermented food products.

MAPPING

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	H	H
CO2	H	H	H	H	H
CO3	H	M	H	M	H
CO4	H	H	H	H	H
CO5	M	H	H	M	H

H-High; M-Medium; L-Low



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