

JSS MAHAVIDYAPEETA
JSS COLLEGE OF ARTS, COMMERCE AND SCIENCE
(An autonomous College of University of Mysore, Re-accredited by NAAC with 'A⁺⁺' grade)
B.N. Road, Mysuru-570 025, Karnataka



**CAREER ORIENTED COURSE
IN
INDUSTRIAL MICROBIOLOGY**

**INDUSTRIAL MICROBIOLOGY
SYLLABUS
(W.E.F. 2026-2027)**

Rule - 1 : A candidate for admission to the career oriented (Add on course) must have passed PUC (10+2) or equivalent examination with science subjects. The rules/regulations for admission for the course shall be in accordance with those framed by the college from time to time.

Rule - 2 : The course of study for the career oriented course is an add on course. Any graduate studying student with science subjects may be admitted.

Rule - 3 : The course of study is taught in three years under semester scheme. The first year course is entitled “**CERTIFICATE COURSE IN INDUSTRIAL MICROBIOLOGY**”. It shall be of one academic year with two semesters / terms of 16 weeks each.

The second year course is entitled “**DIPLOMA COURSE IN INDUSTRIAL MICROBIOLOGY**”. It shall be of one academic year with two semesters / terms of 16 weeks each. However, to join this course the candidate should have completed the Certificate Course.

The third year course is entitled “**ADVANCED DIPLOMA IN INDUSTRIAL MICROBIOLOGY**”. It shall be of one academic year with two semesters/terms of 16 weeks each. However, to join this course the candidate should have completed the Diploma Course.

Rule - 4 : In the sixth semester the candidate should undertake a project work / Industrial training.

Rule - 5 : A candidate is awarded with the respective certificates at the end of each course with the marks obtained.

Rule - 6 : A candidate will be permitted to appear for the examination provided he / she has attended both the semesters for each said course and has a minimum attendance of 75%, as per rules.

Rule -7 : For the purpose of awarding the certificate the theory component and practical component is 70 + 30 marks respectively. In each semester under theory paper 50 marks for

the actual examination and 20 marks for the Internal assessment. For the purpose of IA for theory, the college will conduct at least one test in each term. Out of 30 marks in the practical component 20 marks for the actual practical examination 05 marks for record and 05 marks for I.A. Internal Assessment for practicals should be based on performance of the experiments in each class. The experiments conducted by the candidate and results obtained should be taken into consideration. At the end of semester the concerned teacher shall take the average of marks awarded in each practical and submit it to the HOD / Course Coordinator.

Rule -8 : The VI Semester shall comprise exclusively a project work / industrial training to be performed by the candidate and it will be evaluated at the end for 100 marks.

J.S.S COLLEGE OF ARTS, COMMERCE AND SCIENCE, OOTY ROAD, MYSORE-25
(Autonomous)

Scheme of Study and Examination for the Career Oriented Course in Industrial Microbiology
(Add on course)

FIRST YEAR : Certificate Course in Industrial Microbiology

SEM	Paper	Title of the paper	Teaching hours per weeks		Marks for examination Maximum 100 marks				
Scheme			Theory	Practical	Theory max. 50		Practical max.50		
					Ex.	IA	Ex.	IA	REC
I Paper code	1 IMA010	Tools and techniques in Industrial Microbiology	02	02	40	10	35	05	10
II Paper code	2 IMB010	Microbial Physiology and Genetics	02	02	40	10	35	05	10

SECOND YEAR : Diploma Course in Industrial Microbiology

SEM	Paper	Title of the paper	Teaching hours per weeks		Marks for examination Maximum 100 marks				
Scheme			Theory	Practical	Theory max. 70		Practical max. 30		
					Ex.	IA	Ex.	IA	REC
III Paper code	3 IMC010	Fermentation technology	02	02	40	10	35	05	10
IV Paper code	4 IMD010	Environmental Microbiology	02	02	40	10	35	05	10

THIRD YEAR: Advanced Diploma Course in Industrial Microbiology

SEM	Paper	Title of the paper	Teaching hours per weeks		Marks for examination Maximum 100 marks				
Scheme			Theory	Practical	Theory max. 70		Practical max. 30		
					Ex.	IA	Ex.	IA	REC
V Paper code	5 IME010	Gene Technology and Patents	02	02	40	10	35	05	10
VI Paper code	6 IMF010	Industrial Training / Project	NIL	NIL	Max.Marks 100		Report: 60 20 : Presentation 20 : viva-voce		

Total: 200 + 200 + 200 = 600 Marks

CERTIFICATE COURSE IN INDUSTRIAL MICROBIOLOGY

I SEMESTER

PAPER - I: TOOLS AND TECHNIQUES IN INDUSTRIAL MICROBIOLOGY

Paper code: GIM101

THEORY

28 Hours

COURSE OUTCOME:

After successful completion of the course students are able to:

CO1. Gain basic knowledge about Industrial Microbiology starting from history and learn the over view of scope and importance of industrially important microbes.

CO2. Learn about the taxonomical classification of Microbes.

CO3. Demonstrate theory and practical skills in microscopy, their handling techniques.

CO4. Gain skills of isolation, culturing, strain improvement and maintenance of pure culture.

Unit –I

7Hours

1. General introduction, Scope of industrial microbiology. History and development of industrial microbiology. Experiments of Louis Pasteur, Robert Koch and Alexander Fleming.
2. Isolation, identification and characteristics of microbes of industrial importance. Classification of bacteria, fungi, actinomycetes and viruses.

Unit –II

7Hours

3. Microscopy - Construction and working principles of bright field, phase contrast, Fluorescent microscope. A brief account on Electron Microscopy
4. Principles of sterilization: Sterilization equipments, sterilization of media, air and other ancillary equipments.

Unit –III

7Hours

5. Substrates for industrial fermentation- Raw materials, Energy sources, Mineral sources, Antifoam agents and Media formulations.
6. Batch and Continuous Fermentations, Surface, Submerged and Solid-substrate fermentations, Scale-up of Fermentation.

Unit –IV

7Hours

7. **Strain development** : Isolation, screening techniques, improvement of strains by mutation; recombination, gene regulation, technology and other genetic methods.
8. Preservation and maintenance of industrial microorganisms.

Total Marks 70: 60(Theory + 10 (Internal Assesment-Test))

**I SEMESTER
PRACTICAL: I
PAPER - I: TOOLS AND TECHNIQUES IN INDUSTRIAL MICROBIOLOGY
10 Practicals(1 Practical of 2 hours per week)**

1. Laboratory safety : Good laboratory practices.
2. Study of simple and compound microscopes, their handling, including oil immersion objective.
3. Demonstration of laboratory equipments: Pressure cooker, Autoclave, Hot-air oven, Incubator, Inoculation chamber / Inoculation hood, Inoculation loop, Inoculation needle, Membrane filter and Colony counter.
4. Demonstration of pH meter, Colorimeter, Absorption and emission spectroscopy and Turbidometer.
5. Preparation of media: Nutrient agar and Potato Dextrose Agar.
6. Cultivation of microorganisms on agar plate (point inoculation), broth, anaerobic cultivation (candle jar / gas pack method).
7. Isolation of microorganisms by spread plate, pour plate and streak plate methods.
8. Maintenance of stock culture on fresh agar slants; overlaying with mineral oil and stab culture.
9. Staining and mounting of algae (*Chlorella*) and fungi (*Pencillium*).
10. Staining of bacteria (simple and differential staining).

Total Marks 30:20 (Practicals)+05 (Internal Assesment-Test)+05(Record)

PAPER - II: MICROBIAL PHYSIOLOGY AND GENETICS
Paper code: GIM201 THEORY 28hours

After successful completion of the course students are able to:

- Unit-I 7Hours

- Unit-II 7Hours

- Unit-III 7Hours

- Unit-IV**
- 7Hours**

- Total Marks 70:20(Theory)+10(Internal Assesment-Test)**

**II SEMESTER
PRACTICAL:II
PAPER - II : MICROBIAL PHYSIOLOGY AND GENETICS
10 Practicals(1 Practical of 2 hours per week)**

1. Acid and gas production from Carbohydrates - demonstration of fermentation of Lactose.
2. Starch hydrolysis.
- 3-5. Qualitative tests for the detection of macromolecules.
 - Glucose - Benedict's test, Molisch's test, Fehlings test, Picric acid test.
 - Protein - Biurette test, Ninhydrin test, Millon's test, Xanthoproteic test.
 - Lipids - Acrolein test, Sudan III test, Emulsification test and Solubility test.
6. Effect of temperature on growth of microorganisms.
7. Effect of pH on growth of microorganisms.
8. Measurement of growth by cell number using Haemocytometer and cell mass by turbidometer/ spectrophotometer method.
9. Isolation of DNA.
10. Demonstration of the following models / photographs of DNA, Transcription and Translation, DNA replication, t-RNA.

Total Marks 30: 20(Practicals)+05 (Internal Assesment-Test)+05(Record)

**DIPLOMA COURSE IN INDUSTRIAL MICROBIOLOGY
III SEMESTER**

PAPER-III: FERMENTATION TECHNOLOGY

Paper code: GIM301

THEORY

28hours

COURSE OUTCOME:

After successful completion of the course students are able to:

- CO1.** Acquaint with different types of fermentation processes and equipment and underlying principles in downstream processing
- CO2.** Understand how microbiology is applied in manufacture of industrial products
- CO3.** Understand the beneficial role of microorganisms in fermented dairy products & in alcoholic beverages
- CO4.** Gain knowledge about biofertilizers and biopesticide in agriculture and understand various plant microbes interactions and their applications

Unit-I

7Hours

- 1. **Introduction to Fermentations:** Design of typical fermenters, devices for aeration and agitation, Seed and Pilot Scale fermenters.
- 2. **Down Stream Processing :** Recovery of fermentation products-precipitation, filtration, centrifugation, distillation, cell disruption, solvent recovery, drying and crystallization.

Unit-II

7Hours

- 3. **Industrial production and their uses :**
 - Enzymes :** Amylase
 - Vitamins -** Vitamin B-12
 - Antibiotics:** Penicillin.
 - SCP :** *Spirulina*
 - Organic acids :** Citric acid.
 - Production of fuels :** Ethanol
 - Health care products :** Steroid transformation, Monoclonal antibodies.

Unit-III

7Hours

- 4. **Food fermentations :** Alcoholic beverages, Cheese making, Bread making, Fermented soya based foods. Meat fermentation, Fermented milk and mushroom cultivation.

Unit-III

7Hours

- 5. **Microbes-Plant interaction-** Mycorrhizae-Biology and applications, **Biofertilizers**, microbial inoculants, Brief account of production and application of *Rhizobium*, *Azotobacter*, *phosphobacteria* and *Cyanobacteria*.
Biopesticides : Fungal, Bacterial and Viral Biopesticides and their applications.

Total Marks 70:60(Theory)+10(Internal Assesment-Test)

III SEMESTER
PRACTICAL: III
PAPER-III: FERMENTATION TECHNOLOGY
10 Practicals (1 Practical of 2 hours per week)

1. Isolation and identification of microorganisms of spoiled fruits (fungi and bacteria).
2. Isolation of *Aspergillus flavus* from spoiled food.
3. MBRT test for microbial contamination of milk.
4. Isolation of *Lactobacilli* and *Streptococcus* from curds.
5. Production of citric acid from *Aspergillus niger*.
6. Production of wine from grapes.
7. Production of alcohol from jaggery / Molasses.
8. Estimation of Percentage alcohol in a given sample by specific gravity bottle method.
9. Mushroom cultivation.
10. Antibiotic sensitivity test.

Total Marks 30:20(Practicals) + 05 (Internal Assesment-Test)+05(Record)

IV SEMESTER
PAPER - IV: ENVIRONMENTAL MICROBIOLOGY
Paper code:GIM401 **THEORY** **28hours**

COURSE OUTCOME:

After successful completion of the course students are able to:

- CO1.** Know the role of microorganisms in soil, air, water, waste water and bioremediation
- CO2.** Learn the occurrence, abundance and distribution of microorganisms in the environment and their role in the environment
- CO3.** Know about bioaerosols, air sample collection and analysis and control measures of air borne microbes
- CO4.** Understand the basic principles of bioremediation

Unit-I 7Hours

1. Marine and freshwater microorganisms. The microbial community in marine and freshwater environments. Water purification, Microbiological analysis of water. Waste water and effluent treatment - treatment methods – Primary, Secondary and tertiary treatment. Sludge treatment and disposal, Composting and Ensiling.

Unit-II 7Hours

2. **Nutrient cycling processes:** Biogeochemical cycles: Nitrogen cycle, Phosphorous cycle and Carbon cycle.
3. **The environments of soil microorganisms:** Associated soil microorganisms with plants. Microbial interaction: Neutralism, Mutualism, Parasitism, Antagonism, Comensalism, Predation, Synergism, and competition. Rhizosphere, Actinorrhizae and Mycorrhizae.

Unit-III **7Hours**

4. **Aerobiology** : Air-borne microbes, Sampling techniques-Andersen sampler, Rotorod sampler, Hirst spore trap and Vertical cylinder spore trap. Aerobiology and Human health.
5. **Microbes and degradation of wastes:** Treatment of solid and liquid industrial wastes, Microbial degradation of pesticides and Xenobiotics, Bioremediation.

Unit-IV **7Hours**

6. **GeoMicrobiology:** Microbes in metal extraction, Mineral leaching and mining.
7. **Production of biopesticides** (microbial insecticides)
 - Bacterial, Viral, Fungal and protozoa.
 - Production of microbial herbicides.

Total Marks 70: 60(Theory)+10(Internal Assesment-Test)

IV SEMESTER
PRACTICAL:IV
PAPER - IV: ENVIRONMENTAL MICROBIOLOGY
10 Practicals(1 Practical of 2 hours per week)

1. Microscopic observations of different water samples for biological indicator of water pollution.
2. a) Standard analysis of water.
b) Determination of MPN.
3. IMViC tests.
4. Viable count – SPC and Membrane Filter Technique.
5. Determination of BOD
6. Estimation of total solids in sewage.
7. Measurement Cl_2 , PO_4 and NO_3 in water.
8. Demonstration of - Production of Vermicompost.
9. Isolation of free-living N_2 fixers from soil.
10. Visit to Effluent treatment plant.

Total Marks 30: 20 (Practicals) + 05 (Internal Assessment-Test) + 05(Record)

**ADVANCED DIPLOMA COURSE IN INDUSTRIAL MICROBIOLOGY
V SEMESTER**

PAPER - V: GENE TECHNOLOGY AND PATENTS

Paper code: GIM501

THEORY

28Hours

COURSE OUTCOME:

After successful completion of the course students are able to:

- CO1.** Know genetics of microorganisms and recombinant DNA technology used in microbiological research
- CO2.** Understand the properties, structure and function of genes in microorganisms
- CO3.** Understand techniques, social and ethical issues concerning genetic engineering. Applications of genetic engineering in various fields.
- CO4.** Gain knowledge about Patent.

Unit-I

7 hours

- 1. **Genetic Engineering:** Definition, concept and scope of genetic engineering; Milestones in Recombinant DNA Technology. Gene technology and industrial microbiology.
- 2. **Recombinant DNA Technology:** Restriction enzymes; Isolating and cloning fragments; Isolating and purifying cloned DNA, Genomic and C-DNA Libraries and Cloning vectors.

Unit-II

7 hours

- 3. **Selection of recombinants:** Expression of foreign genes in cloned organisms.
- 4. **Analysis of gene products :** (a) Nucleic acid hybridization, (b) Sequencing of proteins, and nucleic acids, Southern, Northern and Western blotting techniques, PCR and DNA finger printing.

Unit-III

7 hours

- 5. **Genetic engineering :** Safety, Social, Legal and Ethical considerations. Risk in genetic engineering. Microbial transformation: Types of bioconversion reactions, procedure for biotransformation and transformation of antibiotics.
- 6. **Applications of genetic engineering :**
 - a) Medical,
 - b) Industrial,
 - c) Environmental and
 - d) Agricultural Applications – in brief

Unit-IV

7 hours

- 7. **Patents;** patent regulations of processes, products and microorganisms, Entrepreneurship and marketing of products.

Total Marks 70: 60(Theory) + 10(Internal Assesment-Test)

V SEMESTER
PRACTICAL: V
PAPER - V: GENE TECHNOLOGY AND PATENTS
10 Practicals(1 Practical of 2 hours per week)

1. Isolation of genomic DNA and its quantification.
2. Isolation of RNA and its quantification.
3. Salt fractionation of yeast proteins and quantification.
4. Separation of proteins by SDS-PAGE.
5. Isolation of Streptomycin resistant mutant of *E. coli*.
6. Isolation of plasmid from bacteria purification by agarose gel electrophoresis.
7. Preparation of competent *E. coli* cells.
8. Transformation and recovery of plasmid clones.
9. Demonstration of Southern blotting and Northern blotting.
10. Demonstration of PCR Technology.

Total Marks 30: 20(Practicals) + 05 (Internal Assesment-Test) + 05(Record)

Paper code: GIM601

VI SEMESTER

PAPER-VI: INDUSTRIAL TRAINING / PROJECT WORK

The candidate need to work for a period of 16 weeks in any recognized Industry / University, under the guidance of an expert in the field of Industrial Microbiology. At the end of the semester candidate need to submit a report duly certified by the authority of the industry / Academic institution. The same should be certified by the HOD / Co-ordinator. The project work will be evaluated for 100 marks (60 for report and 20 for presentation and 20 for Viva-Voce examination)

**SCHEME OF THEORY EXAMINATION FOR UGC CAREER ORIENTED
COURSE IN INDUSTRIAL MICROBIOLOGY**

(Applicable to Semester I to V)

Time: 02 Hrs

Max. Marks:40

1. Answer any EIGHT of the following : 1 x 8 =8
(10 questions to be given and 8 to be answered)
 - a)
 - b)
 - c)
 - d)
 - e)
 - f)
 - g)
 - h)
 - i)
 - j)

2. Answer any FOUR of the following 3 x 4 = 12
(6 questions to be given and 4 to be answered) – short answer type
 - a)
 - b)
 - c)
 - d)
 - e)
 - f)

3. (3 & 4 essay type questions – Each with internal choices) 10x 2 = 20

**SCHEME OF PRACTICAL EXAMINATION FOR CAREER ORIENTED COURSE IN
INDUSTRIAL MICROBIOLOGY**

(Applicable to Semester I, II, III, IV and V)

Time : 03 Hrs

Max. marks : 45(35 +10)

- | | |
|--|-------------|
| 1. Conduct experiment 'A' assigned, tabulated data, analyse and draw conclusions | 10 |
| 2. Write a critical notes on B, C and D. | (4 x3) = 12 |
| 3. Identify E, F and G with reasons. | (3 x3) = 09 |
| 4. Class Record | 10 |
| 5 VIVA | 4 |

Internal assessment-05

REFERENCES

1. Adams MR and Moss - 1995. Food Microbiology. The Royal Society of Chemistry, Cambridge.
2. Agashe SN – 1994. Recent Trends in Aerobiology, Allergy and Immunology. Oxford and IBH Pub. New Delhi.
3. Alexander M – 1971. Microbial Ecology, John Wiley and Sons Inc. NY.
4. Alexander M – 1977. Introduction to Soil Microbiology John Wiley Sons, Inc. NY.
5. Alexopoulos CJ & Mims CW – 1979. Introductory Mycology III edition. Wiley Eastern Ltd., New Delhi.
6. Atlas RM – 1986. Basic and Practical Microbiology Mac Millan Co. NY.
7. Benjamin L – 1990. Gene IV Edn. Oxford Univ. Press, Oxford.
8. Board RG – 1983. A Modern Introduction to Food Microbiology. Blackwell Scientific Pubs. Oxford.
9. Drown TA – 1991. Essential Molecular Biology – A Practical approach Vol. I and Vol. II, Oxford Univ. Press. Oxford.
10. Cappuccino JG and Sherman N – 1999. Microbiology. A Laboratory Manual 4th Edn. Addison – Wesley.
11. Casida LE – 1964. Industrial Microbiology. Wiley Eastern Ltd. New Delhi.
12. Desmond ST, and Nicholl – 1994. An Introduction to Genetic Engineering, Cambridge Univ. Press. Cambridge.
13. Dewes IW and Southerland JW – 1976. Microbial Physiology, Halsted Press, NY.
14. Fletcher M. and Gray TRG – 1987. Ecology of Microbial Communities. Cambridge Univ. Press, Cambridge.

15. Frazier WC and Westhoff DC – 1978. Food Microbiology TATA Mc Graw Hill Pub. Co. Ltd. New Delhi.
16. Gardner EJ – 1984. Principles of Genetics, 7th Edn. John Wiley & Sons. Inc. NY.
17. Ghosh TK – 1990. Bioprocesses, Computation in Biotechnology. Vol. I; Ellis Harwood NY.
18. Gunashekar – 2000. The Genetics of Bacteria and their Viruses 2nd Edn. Wiley, NY.
19. Hoch JA, Chang S and Ganesan AT – 1982. Molecular cloning and Gene Regulation in Bacilli Academic Press. NY.
20. Jay JM – 1987. Modern food Microbiology CBS Pub. And Distributors, New Delhi.
21. Kushner D – 1978. Microbial Life in Extreme Environment. Academic Press. NY.
22. Lehninger AL – 1971. Bioenergetics : The molecular Basis of Biological Energy, Transformation, 2nd Edn. Benjamin, USA.
23. Lehninger AT – 1984. Principles of Biochemistry. I Indian Edn. CBS Pub. and Distributors Pvt. Ltd. NY.
24. Lesinger T. et al., -1985. Microbial Degradation of Xnobiotic and Recalcitrant Compounds. Academic Press NY.
25. Lewin B – 2000. Genes VII. Oxford Univ. Press.
26. Mitchell R – 974. Introduction to Environmental Microbiology. Prentice Hall. Inc. NY.
27. Old RW and Primrose SB – 1089. Principles of gene Manipulation 4th Edn. Block Well Scientific Pub. London.
28. Paul, EH and Clark FE – 1989. Soil Microbiology and Biochemistry. Academic Press, London and NY.
29. Peiczar (Jr.) MJ, Chan ECS and Kreig NR – 1993. Microbiology, Mc Graw Hill Intl. Newyork.

30. Peppler HJ and Prelman D – 1979. Microbial Technology and Fermentation Technology. Vol. I and Vol. II, Academic Press. NY.
31. Prescott LM, Harley JP and Klem DA – 1990. Microbiology Wm-C Brown Pub. USA.
32. Reed G – 1982. Industrial Microbiology. Mac Millan Pub. Ltd. Wiosconsin.
33. Schlegel HG – 1999 General Microbiology Cambridge Univ. Press. Cambridge CB-2 2RU, UK.
34. Seeley HW, Jr and Demark JV – 1972. Microbes in Action – A Laboratory Manual of Microbiology DB. Taraporevaia Sons and Co. Ltd., Bombay.
35. Strickberger MW – 1985. Generics, 3rd Edn. Mac. Millian Pub. Co. Inc. NY.
36. Subbarao, NS – 1981. Soil Microorganisms and Plant Growth. Oxford and IBH Pub. Co. New Delhi.
37. Sullia S.B. – 2000. General Microbiology, Oxford and IBH Pub. Co. New Delhi.
38. Ward OP – 1989. Formation Biotechnology; Principles, Processes and Products. Prentice Hall Engle Wood Cliffs New Jersey.
39. Watson JD, Gilman M, Witkowski J and Zoller M – 1992. Recombinant DNA 2nd Edn. Scientific American Books.
40. Watson JD, Hopkins NH, Roberts JW, Steitz JA and Weiner AM – 1987. Molecular Biology of the gene 4th Edn. The Benjamin/Cummings Pub. Co. Inc. NY.
41. Michael J Waites; Noil L Morgan; John S Rockey; Gary Higton 2001. Industrial Microbiology – An introduction, Blackwell Science Publication, USA.
42. Owen P Ward – 1989. Fermentation Biotechnology. Prentice Hall New Jersey.
43. Wulf Crueger and Anneliese Crueger - 2000. Biotechnology – A text book of industrial Microbiology II edn. Panima Publishing Comp. New Delhi.

Annexure-1**Approved list of Paper setters and valuers**

Sl No.	Name	College address
1	Dr.M.Seema	Assistant professor & Chairperson Dept. of Microbiology JSS College ,Ooty road, Mysuru-25
2	Dr. H.P.Spoorthy	Assistant professor Dept.of Microbiology JSS College, Ooty road, Mysuru-25
3	Dr. Santhosh	Assistant Professor Dept.of Microbiology Yuvaraja's college,Mysuru
4	Dr. Girish K	Professor Dept. of Microbiology Government College for women,Mandya.
5	Dr.H.S.Jayanth.	Professor Dept. of Microbiology Yuvaraja's college Mysuru.
6	Dr.Uma Maheshwari	Assosiate professor JSS University, JSS AHER, Mysuru
7	Sri.M. Girish	Assistant professor Dept .of Microbiology JSS College for women,Saraswathipuram,Mysuru
8	Dr.P.K. Maheshwar	Professor Dept. of Microbiology Yuvaraja's college, Mysuru.
9	Smt. M.S.Shobha	Professor Dept.of Microbiology Maharani's Science College, Mysuru
10	Sri.R.A. Manjunath	Assistant professor. Dept .of Microbiology Sarada vilas College, Mysuru
11	Dr.M.P.Ragavendra	Professor Dept .of Microbiology Government Science college,Hassan.
12	Dr.M.S.Shobha	Professor Dept.of Microbiology Maharani's Science College, Mysuru
13	Sri. G.S.Siddegowda	Associate professor Dept.of Microbiology Sir M V Government Science College Bhadravathi

14	Nataraju	Associate professor Dept. of Microbiology Maharani's Science College, Mysuru
15	Syeda Farahna Parveen	Assistant professor Dept.of Microbiology St.Philomina's College, Mysuru
16	Dr. Suresh M G	Associate Professor, Dept. of Microbiology Maharani's Science College, Mysuru
17	Mahadevaprasad G	Assistant professor. Dept. of Microbiology JSS College for Women Saraswathipuram, Mysuru
18	Dr.Nagalambika	Assistant professor JSS University, JSSAHER,Mysuru
19	Raja Rajeshwari.R	Assistant professor Dept.of Microbiology SDM College JLBRoad,Mysuru
20	Uzma Bathool	Assistant professor Dept.of Microbiology St.Philomina'sCollege, Mysuru
21	Athiya sultan	Assistant professor Dept.of Microbiology SDM College, JLBRoad,Mysuru
22	C.Poornima Devi	Assistant professor Dept.of Microbiology Yuvaraja'scollege, Mysuru
23	Vasundara Devi R	Assistant professor Dept.of Microbiology Maharani's Science College, Mysuru
24	Niveditha Prakash	Assistant professor Dept. of Microbiology JSS College for Women Saraswathipuram, Mysuru
25	Dr. K .Sumana	Associate professor JSS University,JSS AHER,Mysuru
26	Spandhana	Assistant professor Dept.of Microbiology SBRR Mahajana's College,Mysuru
27	Dr.Kiran B	Assistant professor Dept.of Microbiology SBRR Mahajana's College,Mysuru

