



**GOVERNMENT DEGREE COLLEGE SIDDIPET(AUTONOMOUS)**  
**Department of Microbiology**  
**Brochure for**  
**CERTIFICATE COURSE IN**  
**MICROBIAL INSTRUMENTATION TECHNIQUES**



**Objectives:** To study different techniques and instruments used in Microbiology.

**Course content (Syllabus in brief):**

1. Microscopy.
2. pH and Buffers
3. Spectroscopy
4. Chromatography
5. Electrophoresis.
6. Centrifugation.

**Course level learning outcomes:**

1. Students will learn about the principle, working and applications of commonly used instruments in microbiology.
2. Students will also learn applications of different separation techniques such as electrophoresis, centrifugation, chromatography, etc.
3. Students will be able to handle, calibrate and use the instruments.

**Theory syllabus**

UNIT – I (15 Hours)

UNIT – II (15 Hours)

**Practical (10 hours)**

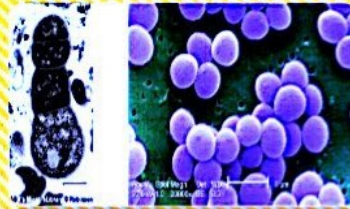


**SCHEME OF EVALUATION OF PAPER**

**THEORY: EXAMS MAX. MARKS: 35**

**SPLIT:**

- |                              |                 |
|------------------------------|-----------------|
| 1.Theory Exam (MCQs)         | : 30MARKS       |
| 2.Co-Curricular (Assignment) | : 05 MARKS      |
| <b>TOTAL</b>                 | <b>:35MARKS</b> |



**REGISTRATIONS**

**MARCH 2021**



CONVENER  
Dr. P. PALLAVI  
HEAD & BoS CHAIRPERSON  
DEPT OF MICROBIOLOGY



CHAIRMAN  
Dr.CH PRASAD  
PRINCIPAL

# MICROBIAL INSTRUMENTATION TECHNIQUES

Theory syllabus

HPW:03hours

## UNIT - I (15 Hours)

1. Microscopy: Brightfield and darkfield microscopy, Fluorescence Microscopy, Phase contrast Microscopy, Electron Microscopy (Scanning and Transmission Electron Microscopy).
2. Chromatography: Principles and applications of paper chromatography (including Descending and 2-D), Thin layer chromatography, Column packing and fraction collection.
3. GLC, HPLC.

## UNIT - II (15 Hours)

1. Electrophoresis: Principle and applications of native polyacrylamide gel electrophoresis.
2. SDS- polyacrylamide gel electrophoresis, 2D gel electrophoresis, Agarose gel electrophoresis.
3. Spectrophotometry: Principle and use of study of absorption spectra of biomolecules. Analysis of biomolecules using UV and visible range.

Certificate course practical paper

# MICROBIAL INSTRUMENTATION TECHNIQUES

## Practicals: (10 hours)

1. Paper chromatography- Separation of aminoacids
2. Thin layer chromatography
3. Column chromatography
4. Spectrophotometry- Verification of Beer's Law
5. Spectrophotometry- Verification of Lambert's Law

## References:

1. Gopal Reddy, M., Reddy, M.N., Saigopal, DVR and Mallaiiah, K.V. (2007). Laboratory Experiments in Microbiology, 2nd edition. Himalaya Publishing House, Mumbai.
2. Aneja, K.R. (2001). Experiments in Microbiology, Plant pathology, Tissue culture and Mushroom Production Technology, 3rd Edition, New Age International (P) Ltd., New Delhi.
3. Dubey, R.C. and Maheswari, D.K. (2002). Practical Microbiology, S. Chand & Co., New Delhi.



**GOVERNMENT DEGREE COLLEGE SIDDIPET (A)**

(Re accredited with "A" Grade by NAAC)



**ವಿಜ್ಞಾನ ಪದವಿ**

This is to certify that Sri/Smt/Kum \_\_\_\_\_

S/o,D/o \_\_\_\_\_ completed certificate course on

“*Microbial Instrumentation Techniques*” conducted by Department  
of Microbiology.

  
Convener

  
Principal

GDC (A) Siddipet.

Department of Microbiology

March: 2021. Certificate Course in Microbial Instrumentation Techniques.  
 List of students enrolled & Completed  
 HTNO. - A.P. 2020-21.

| SNO | Name of the student | HTNO.            |
|-----|---------------------|------------------|
| 1.  | A. Rajnikanth       | 6025-457-18-002  |
| 2.  | B. Kiranmayi        | 6025-457-18-004. |
| 3.  | Ch. Rameya          | 6025-457-18-007. |
| 4.  | Ch. Srinivas        | 6025-457-18-008  |
| 5.  | G. Spandana         | 6025-457-18-013  |
| 6.  | K. Kiranmai         | 6025-457-18-015  |
| 7.  | K. Tejaswini        | 6025-457-18-016. |
| 8.  | K. Latha            | 6025-457-18-017. |
| 9.  | M. Venu             | 6025-457-18-017  |
| 10. | M. Syothi           | 6025-457-18-022  |
| 11. | T. Sunayana         | 6025-457-18-028  |
| 12. | U. Srikanth         | 6025-457-18-029. |
| 13. | A. Venneela         | 6025-458-18-002  |
| 14. | B. Rakesh           | 6025-458-18-003  |
| 15. | B. Raghavender      | 6025-458-18-004. |
| 16. | B. Anusha           | 6025-458-18-005. |
| 17. | N. Vishal           | 6025-458-18-010  |
| 18. | P. Ajey             | 6025-458-18-011  |