

336C51 Medical Microbiology Summary

Course Units

Unit 1: Ing Objectives To Familiarize Students With Medical Microbiology

- 1.
- Collection and Transport of Clinical specimens.
- 2.
- Simple, Differential and Special staining of Clinical materials.
- 3.
- Culture techniques used to isolate microorganisms.

Unit 2: To Learn The Techniques For Isolation And Identification

- 4.
- Identification of bacterial pathogens by their biochemical reactions.
- 5.
- Antimicrobial susceptibility testing by disc-diffusion technique and determination of Minimum Inhibitory Concentration.

Unit 3: To Gain Expertise In Various Techniques Of Clinically

- 6.
- Isolation of Bacteriophages from Sewage and other natural sources.
- 7.
- Identification of Viruses in Slides/Smears/Spotters.
- Demonstration of Negri bodies (Staining).
- 8.
- Cultivation of Viruses in Embryonated eggs – Amniotic, Allantoic, Yolk sac routes and Chorio-allantoic membrane.

Unit 4: To Get Acquainted With Medically Important Fungi

- 9.
- Microscopic identification of medically important Fungi – KOH and Lactophenol cotton Blue staining.
- 10.
- Slide culture techniques for fungal Identification 11.
- Identification of Dermatophytes.
- 12.
- Germ tube test, Carbohydrate fermentation and assimilation tests for Yeasts.

Unit 5: To Categorize Parasites And Understand Their Role

- 13.

- Direct Examination of Faeces – wet mount and Iodine mount – Demonstration of Protozoan cysts and Helminthes eggs.
- 14.
- Concentration techniques of stool specimen – Floatation and Sedimentation methods.
- 15.
- Examination of blood for Malarial parasites – thin and thick smear preparations.
- 16.
- Identification of Medically important parasites in slides / specimens as spotters.

Course Outcomes

CO1: Demonstrate methods to observe and measure microorganisms by standard microbiological techniques

CO2: Identify pathogenic microorganisms in the laboratory set-up and interpret their sensitivity towards commonly administered antibiotics.

CO3: Understand experimental tools used to cultivate and characterize clinically important viruses and bacteriophages

CO4: Elucidate clinically important fungi.

CO5: Investigate Parasites of medical importance and identify them from clinical specimens.

Text Books

1. Dubey, R.C. and Maheswari, D.K. (2020). S. Chand Publishers. ISBN-13: 978- 8121921534, ISBN-10: 8121921538.
2. K.R. Aneja (2017). Experiments in Microbiology, Plant Pathology, Tissue Culture and Microbial Biotechnology. 5th Edition. New Age International Publishers. ISBN-10: 9386418304, ISBN-13: 978-9386418302.
3. Collee, J.G., Fraser, A.G., Marnion, B.P. and Simmons, A. (1996). Mackie & McCartney Practical Medical Microbiology. 14th Edition. Elsevier. ISBN-10: 813120393X, ISBN-13: 978-8131203934.
4. Prince CP (2009). Practical Manual of Medical Microbiology, 1st edition, Jaypee digital publishing.
5. James H. Jorgensen, Karen C. Carroll, Guido Funke, Michael A. Pfaffer, Marie Louise Landry, Sandra S. Richter, David W. Warnock (2015). Manual of Clinical Microbiology, 11th Edition, ASM press

Reference Books

1. Patricia M. Tille (2021). Bailey & Scott's Diagnostic Microbiology, 15th Edition. Elsevier. ISBN-10: 0323681050, ISBN-13: 978-0323681056.
2. Monica Cheesbrough (2006). District Laboratory Practice in Tropical Countries. Part 1. 2nd Edition. Cambridge University Press. ISBN-10: 0521171571, ISBN-13: 978-0521171571.
3. Michael A. Pfaffer (ed.) (2015). Manual of Clinical Microbiology. Vol. 1 and 2. 11th Edition. ASM Press. ISBN-10: 9781555817374, ISBN-13: 978-1555817374.
4. Josephine A. Morello, Paul A. Granato and Helen EckelMizer (2002). Laboratory Manual and Workbook in Microbiology. 7th Edition. The McGraw Hill Company. ISBN: 0-07- 246354-6.
5. Rowland, S.S., Walsh, S.R., Teel, L.D. and Carnahan, A.M. ((1994). Pathogenic and Clinical Microbiology: A Laboratory Manual. Lippincott Williams & Wilkins. ISBN-10:

Web Resources

1. <https://www.microcarelab.in/media/microcarelab.in/files/Sample-Collection-Manual.pdf>
2. http://ssu.ac.ir/cms/fileadmin/user_upload/Daneshkadaha/pezeshki/microb/file_amuzeshi/Lab_QA_Microbiology_QA.pdf
3. https://www.academia.edu/11977315/Basic_Laboratory_Procedures_in_Clinical_Bacteriology
4. <https://cmr.asm.org/content/31/3/e00062-17.full.pdf>
5. <https://microbiologyinfo.com/techniques-of-virus-cultivation/>