



UNIVERSITÀ
degli STUDI
di CATANIA

DEPARTMENT OF BIOLOGICAL, GEOLOGICAL AND
ENVIRONMENTAL SCIENCES
Bachelor's Degree in Biology
Academic Year 2016/2017 - 1° Year

BACTERIOLOGICAL DIAGNOSTICS AND ANTIBIOTIC SUSCEPTIBILITY TESTING

BIO/19 - 6 CFU - 1° Semester

Teaching Staff

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LEARNING OBJECTIVES

To Introduce students to the main classes of human pathogens, the concept of bacteriological diagnosis in clinical practice, and to give basic information on the study of the antibiotic susceptibility testing.

DETAILED COURSE CONTENT

Introduction to diagnostic microbiology laboratory. Isolation and identification of the main microorganisms. Bacteriological diagnosis- direct diagnosis - collection of biological specimens, sending the sample, bacteriological examination, direct, staining. Bacterial culture: blood , CFS and sputum cultures. Technical identification of microorganisms: macroscopic observation, microscopic observation; evaluation of metabolic and physiological characteristics in microbial cultures, identification by API galleries. Immunological assay. Microorganisms identification based on genotype: extraction and purification of nucleic acids. In vitro amplification techniques: principles of PCR, identification by 16S rRNA. Electrophoretic techniques: for the separation of nucleic acids and, for the separation of proteins, for the study of genomic macrorestriction fragments, and for the separation of amplimers. Evaluation of the antibiotic susceptibility testing: general info on antibiotics, MIC, MBC, gradient-test and antibiograms; test execution and interpretation criteria (EUCAST and CLSI). Research of resistance genes by PCR. The main classes of microorganisms. Examples of assessment of a case: urine culture; throat swab / sputum culture, blood culture.

TEXTBOOK INFORMATION

SHERRIS - Microbiologia Medica - EMSI 2015

MILLER JM - The microbiology: bench companion - ASM 2007

A. VAUGHAN, P. BUZZINI, F.CLEMENTI, Laboratorio didattico di microbiologia, ed. Casa editrice Ambrosiana, 2008.

T.D. BROCK, M.T. MADIGAN, J.M. MARTINKO, J. PARKER, Microbiologia, Città Studi Edizioni, Milano, 1995.

PRESCOTT, J.P. HARLEY, D.A. KLEIN, Microbiologia, Zanichelli, Bologna, 1995.
