



# UNIVERSITÀ DEGLI STUDI DI PALERMO

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| <b>DEPARTMENT</b>              | Biomedicina, Neuroscienze e Diagnostica avanzata                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |                  |
| <b>ACADEMIC YEAR</b>           | 2020/2021                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |                  |
| <b>BACHELOR'S DEGREE (BSC)</b> | BIOMEDICAL LABORATORY TECHNIQUES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                        |                  |
| <b>INTEGRATED COURSE</b>       | CLINICAL MICROBIOLOGY - INTEGRATED COURSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |                  |
| <b>CODE</b>                    | 09551                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                        |                  |
| <b>MODULES</b>                 | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                        |                  |
| <b>NUMBER OF MODULES</b>       | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                  |
| <b>SCIENTIFIC SECTOR(S)</b>    | MED/46, MED/07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                        |                  |
| <b>HEAD PROFESSOR(S)</b>       | FASCIANA TERESA<br>MARIA ASSUNTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Professore Associato   | Univ. di PALERMO |
| <b>OTHER PROFESSOR(S)</b>      | DE GRAZIA SIMONA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Professore Ordinario   | Univ. di PALERMO |
|                                | DISTEFANO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Professore a contratto | Univ. di PALERMO |
|                                | SALVATORE ANTONINO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                        |                  |
| <b>CREDITS</b>                 | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                  |
| <b>PROPAEDEUTICAL SUBJECTS</b> | 19314 - MICROBIOLOGY AND CLINICAL PARASITOLOGY - INTEGRATED COURSE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                        |                  |
| <b>MUTUALIZATION</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                        |                  |
| <b>YEAR</b>                    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                        |                  |
| <b>TERM (SEMESTER)</b>         | 2° semester                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                        |                  |
| <b>ATTENDANCE</b>              | Mandatory                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |                  |
| <b>EVALUATION</b>              | Out of 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                        |                  |
| <b>TEACHER OFFICE HOURS</b>    | <p><b>DE GRAZIA SIMONA</b><br/>Monday 12:00 13:30 Dpt Scienze per la Promozione della Salute e Materno infantile "G. D'Alessandro" Via del Vespro 133</p> <p><b>DISTEFANO</b><br/><b>SALVATORE ANTONINO</b><br/>Monday 13:30 14:30 Dipartimento di Scienze della Promozione della Salute, Materno-Infantile, Medicina Interna e Specialistica d'Eccellenza "G. D'Alessandro" , via del Vespro 133 (secondo piano)</p> <p><b>FASCIANA TERESA</b><br/><b>MARIA ASSUNTA</b><br/>Monday 14:00 16:00 Via del Vespro 133. Plesso di Igiene e Microbiologia. Secondo Piano</p> |                        |                  |

**DOCENTE:** Prof.ssa TERESA MARIA ASSUNTA FASCIANA

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| <b>PREREQUISITES</b>      | Students should have the basic knowledge of biology, biochemistry. You must have acquired a background of knowledge of physiology and general pathophysiology of human diseases                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>LEARNING OUTCOMES</b>  | Knowledge and ability to understand: to know the main clinical features of which microorganisms are responsible, microbial factors involved, the mechanisms that affect their expression and pathogenetic events that characterize them                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ASSESSMENT METHODS</b> | <p>Oral examination which consists of an interview aimed at verifying knowledge and full understanding of the topics addressed in the course.</p> <p>In order to pass the exam the candidate has to be evaluated with a mark between 18 and 30.</p> <p>30-30 laude: Excellent knowledge of teaching content; students demonstrate high analytical and synthetic capacity and it is able to apply the knowledge to solve problems of high complexity</p> <p>27-29: Excellent knowledge of teaching content and excellent properties of language; students demonstrate analytical and synthetic skills and able to apply their knowledge to solve moderately complex and, in some cases problems, even high</p> <p>24-26: Good knowledge of teaching content and good properties of language, the student is able to apply the knowledge to solve problems of medium complexity</p> <p>21-23: Fair knowledge of teaching content, in some cases limited to the main topic; acceptable ability to use the specific language of the discipline and independently apply the knowledge acquired</p> <p>18-20: Minimum knowledge of teaching content, often limited to the main topic; modest ability to use the specific language of the discipline and independently apply the knowledge acquired</p> <p>Insufficient: He does not have an acceptable knowledge of the main teaching content, very little or no ability to use the specific language of the discipline and independently apply the knowledge acquired</p> |
| <b>TEACHING METHODS</b>   | Frontal lessons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**MODULE**  
**LABORATORY MEDICINE TECHNICAL SCIENCES 2**

*Prof. SALVATORE ANTONINO DISTEFANO*

**SUGGESTED BIBLIOGRAPHY**

- Elementi di Tecniche microbiologiche II ed. EMSI Nicola Simonetti, Giovanna Simonetti, Marcello Lembo 2001
- Laboratorio didattico di microbiologia Ann Vaughan - 2008 - Edito da CEA
- Luigi Spandrio, Manuale di laboratorio, Vol. II, PICCIN editore, 1987
- Hoskins JM, Diagnosi virologica, Casa Editrice Ambrosiana, 1975
- Koneman's – Atlante di Microbiologia Diagnostica 6<sup>a</sup> – 7<sup>a</sup> ed. (2009) – Antonio Delfino Editore
- Appunti delle lezioni, dispense e supporti informatici forniti dal docente

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|-------------------------------|---------------------------------------------------|
| <b>AMBIT</b>                  | 10341-Scienze e tecniche di laboratorio biomedico |
| <b>INDIVIDUAL STUDY (Hrs)</b> | 45                                                |
| <b>COURSE ACTIVITY (Hrs)</b>  | 30                                                |

**EDUCATIONAL OBJECTIVES OF THE MODULE**

Acquire basic knowledge and deepen some application aspects of microbiological analysis and diagnostic techniques, with particular attention to the most advanced and innovative methods and more widespread application in the working areas of relevance of the course.

Acquire basic knowledge and deepen some application aspects of virological analysis and diagnostic techniques, with particular attention for the most advanced and innovative methods and more widespread application in the working areas of relevance of the course.

**SYLLABUS**

| <b>Hrs</b> | <b>Frontal teaching</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Objectives of the course and its subdivision                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 3          | Optical microscopes used in a diagnostic laboratory and signs of electron microscopy                                                                                                                                                                                                                                                                                                                                                                                             |
| 2          | Introduction to diagnostic techniques in bacteriology: direct and indirect microscopic diagnosis a fresh and after coloring.                                                                                                                                                                                                                                                                                                                                                     |
| 2          | Methods of cultivation of bacteria and fungi from pathological samples: <ul style="list-style-type: none"> <li>• Transportation and treatment of the sample</li> <li>• Sowing conditions and methods of samples</li> </ul>                                                                                                                                                                                                                                                       |
| 2          | Methods of bacterial counts                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 3          | Identification methods of bacteria and fungi: <ul style="list-style-type: none"> <li>• Classic and automated (macro and micromethod)</li> <li>• Metabolic and antigenic</li> </ul>                                                                                                                                                                                                                                                                                               |
| 2          | Techniques for the evaluation of drug sensitivity                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 2          | Introduction to diagnostic techniques in virology: direct diagnosis and indirect diagnosis, sensitivity and specificity of the tests                                                                                                                                                                                                                                                                                                                                             |
| 2          | Virus cultivation methods: animals, embryo chicken eggs, cell cultures: <ul style="list-style-type: none"> <li>• Preparation of cell cultures from solid and blood tissue</li> <li>• Long-term maintenance and conservation techniques of cell cultures</li> </ul>                                                                                                                                                                                                               |
| 2          | Isolation and cultivation of viruses <ul style="list-style-type: none"> <li>- preparation of the clinical sample</li> <li>- infection techniques</li> <li>- cytopathic effects</li> <li>- identification techniques (emoadsorption, neutralization, immunofluorescence, immunoperoxidase, haemagglutination activity)</li> </ul> Titration of viruses: lysis plates                                                                                                              |
| 2          | Techniques for the research of bacterial and viral antigens: <ul style="list-style-type: none"> <li>• ELISA</li> <li>• Immunofluorescence (IF)</li> <li>• immunochromatography</li> <li>• Passive agglutination</li> </ul>                                                                                                                                                                                                                                                       |
| 1          | Preparation of bacterial and viral antigens for vaccines, antisera or blotting                                                                                                                                                                                                                                                                                                                                                                                                   |
| 3          | Serological techniques for the detection of anti-bacterial and anti-viral antibodies of class IgM and class IgG by Greed and Neutralization test                                                                                                                                                                                                                                                                                                                                 |
| 3          | Molecular biology techniques applied in microbiological and virological diagnostics: <ul style="list-style-type: none"> <li>• Techniques nucleic acid extraction</li> <li>• Methods for demonstrating bacterial DNA in clinical samples</li> <li>Hybridization methods (PCR, Nested-PCR, RT-PCR, quantitative PCR, RealTime PCR)</li> <li>• Methods of amplification detection and analysis (Electrophoresis, Hybridization, Reverse-hybridization, DEIA, Sequencing)</li> </ul> |

**MODULE  
MICROBIOLOGY AND CLINICAL MICROBIOLOGY**

*Prof.ssa SIMONA DE GRAZIA*

**SUGGESTED BIBLIOGRAPHY**

Sherris Kenneth J. Ryan- Microbiologia medica. Edizione italiana a cura di P. Di Francesco, C. Favalli, e al. Edizione 6 - EMSI. ISBN: 8886669992.

"Passi scelti dal testo indicati dal docente ed eventuale integrazione con materiale didattico fornito dal docente"

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|-------------------------------|---------------------------------------------------|
| <b>AMBIT</b>                  | 10341-Scienze e tecniche di laboratorio biomedico |
| <b>INDIVIDUAL STUDY (Hrs)</b> | 45                                                |
| <b>COURSE ACTIVITY (Hrs)</b>  | 30                                                |

**EDUCATIONAL OBJECTIVES OF THE MODULE**

To understand the role of microorganisms in human pathology and the mechanisms by which they determine pathogenicity . To acquire the methodologies used for the attribution of the pathogenic role and diagnostic procedures . To know the main clinical features, the microorganisms responsible, the diagnostic tests can identify them, the laboratory tests used to evaluate the activity of the drugs.

**SYLLABUS**

| <b>Hrs</b> | <b>Frontal teaching</b>                                                              |
|------------|--------------------------------------------------------------------------------------|
| 4          | Direct and indirect microbiological diagnosis                                        |
| 4          | Dermatophytes, Coccidioides, Malassezia                                              |
| 4          | Evaluation for Cardiovascular infections and sexually transmitted infections.        |
| 4          | Evaluation for community and nosocomial infections; systemic or localized infections |
| 4          | Evaluation for Urinary tract infection and for genital infections;                   |
| 4          | respiratory tract infections                                                         |
| 4          | central nervous system infections,                                                   |
| 2          | Enteric infections and food poisoning;                                               |