

PROGRAMME OF "ELETTROTECNICA"  
"ELECTROTECHNICAL"

- CODE: I1H021
- TYPE OF COURSE UNIT: COMPULSORY FOR THE CHEMICAL ENGINEERING
- LEVEL OF COURSE UNIT (E.G. FIRST, SECOND OR THIRD CYCLE; SUB-LEVEL IF APPLICABLE): FIRST CYCLE
- YEAR OF STUDY (IF APPLICABLE); SEMESTER: SECOND YEAR, SECOND SEMESTER

NUMBER OF ECTS CREDITS: 6 (WORKLOAD OF 90 HOURS OF TEACHING + WORK AT HOME; 1 CREDIT = 25 HOURS OF TOTAL ACTIVITIES)

**Teacher: Prof. Concettina Buccella**

<b>1</b>	<b>Course objectives</b>	<p>THE MAIN OBJECTIVE OF THE COURSE IS TO GIVE TO THE STUDENT THE MAIN INFORMATIONS ON ELECTROMAGNETIC FIELDS AND ELECTRICAL NETWORKS. IN THIS MANNER THE STUDENTS SHOULD BE ABLE TO SOLVE EXERCISES REGARDING MAGNETIC CIRCUITS, NETWORK ANALYSIS UNDER STATIONARY AND SINUSOIDAL STATE AND TRANSIENT.</p>
<b>2</b>	<b>Course content and Learning outcomes (Dublin descriptors)</b>	<p>TOPICS OF THE MODULE INCLUDE:</p> <p><b>ELECTRICAL NETWORKS IN STEADY STATE</b>          IDEAL AND REAL GENERATORS          KIRCHHOFF LAWS          THEVENIN AND NORTON THEOREMS          TELLEGEN'S THEOREM          ADAPTATION          METHOD OF NODES          METHOD OF MESHES</p> <p><b>MAGNETIC CIRCUITS</b>          MAGNETIC FIELD          MAGNETIC CIRCUITS ANALYSIS          SELF AND MUTUAL INDUCTANCES</p> <p><b>ELECTRICAL NETWORKS IN THE SINUSOIDAL STATE</b>          SYMBOLIC LANGUAGE          ADAPTATION IN THE SINUSOIDAL STATE          RESONANCE          INSTANTANEOUS POWER, ACTIVE, REACTIVE, APPARENT AND COMPLEX POWERS          POWER FACTOR CORRECTION          IDEAL AND REAL TRANSFORMER          PARALLEL CONNECTION OF TWO TRANSFORMERS          THREE-PHASE TRANSFORMER          TELLEGEN'S THEOREM          BOUCHEROT'S THEOREM</p>

		<p><b>SYMMETRICAL AND BALANCED THREE-PHASE SYSTEMS</b>  STAR-STAR CONNECTION  STAR-DELTA CONNECTION  THREE PHASE INSTANTANEOUS POWER, ACTIVE, REACTIVE, APPARENT AND COMPLEX POWERS  THREE-PHASE POWER FACTOR CORRECTION</p> <p><b>STUDY OF TRANSIENTS</b>  NETWORK ANALYSIS IN THE TIME DOMAIN  CHARGING AND DISCHARGING OF A CAPACITOR  CHARGING AND DISCHARGING OF AN INDUCTOR  LAPLACE TRANSFORM  NETWORK ANALYSIS IN THE LAPLACE DOMAIN</p> <p><b>GROUNDING SYSTEMS</b></p> <p>ON SUCCESSFUL COMPLETION OF THIS MODULE, THE STUDENT SHOULD HAVE GOOD KNOWLEDGE OF BASIC TECHNIQUES TO ANALYZE AN ELECTRICAL NETWORK IN STATIONARY, SINUSOIDAL AND DYNAMIC STATES</p>
3	<b>Prerequisites and learning activities</b>	PREREQUISITES: MATHEMATICS AND PHYSICS
4	<b>Teaching methods and language</b>	LECTURES AND EXERCISES. LANGUAGE: ITALIAN / ENGLISH  <b>REF. TEXT BOOKS</b>  P. KOTHARI, I. J. NAGRATH, BASIC ELECTRICAL ENGINEERING, TATA MCGRAW-HILL EDUCATION, 01/DIC/2001
5	<b>Assessment methods and criteria</b>	WRITTEN AND ORAL EXAMINATION.