

PROGRAMME OF "RETI ELETTRICHE"
"ELECTRICAL NETWORKS"

- CODE: I2E007
- TYPE OF COURSE UNIT: OPTIONAL COURSE FOR THE ELECTRONIC ENGINEERING SPECIALIZATION
- 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

1	Course objectives	<p>THE MAIN OBJECTIVE OF THE COURSE IS TO GIVE TO THE STUDENT THE MAIN INFORMATIONS:</p> <ul style="list-style-type: none"> - TO SOLVE AN ELECTRICAL PROBLEM SUCH AS TO CALCULATE ELECTROMAGNETIC FIELDS GENERATED FROM ELECTROMAGNETIC SOURCES IN SIMPLE GEOMETRICAL CONFIGURATIONS; - TO SYNTHESIZE PASSIVE FILTERS; <p>TO APPLY WAVELET TRANSFORM TO SOLVE SIMPLE PROBLEMS</p> <p>IT IS ALSO PROVIDED THE KNOWLEDGE OF TECHNIQUES SUCH AS WAVELET TRANSFORMATION TO BE APPLIED TO THE SOLUTION OF ENGINEERING PROBLEMS SUCH AS THE IDENTIFICATION OF FAULTS CABLES.</p>
2	Course content and Learning outcomes (Dublin descriptors)	<p>TOPICS OF THE MODULE INCLUDE:</p> <p>Analysis methods of electromagnetic fields: Finite difference method in the time domain Finite element method Method of moments</p> <p>Applications: Wave propagation in isotropic and anisotropic medium</p> <p>Passive filter synthesis Butterworth and Chebyshev filters EMI filter design</p> <p>Wavelet transform and applications Example to applications: small cable faults detection</p>

		<p>Applications by using Matlab and Simulink</p> <p>Laboratory experiments</p> <p>ON SUCCESSFUL COMPLETION OF THIS MODULE, THE STUDENT SHOULD</p> <ul style="list-style-type: none"> - HAVE KNOWLEDGE OF BASIC TECHNIQUES TO SYNTHESIZE A PASSIVE FILTER - DEMONSTRATE CAPACITY TO DEVELOP A SIMPLE FILTER PROTOTYPE IN LABORATORY. - HAVE KNOWLEDGE FOR THE NUMERICAL CALCULATION OF ELECTROMAGNETIC FIELD IN SIMPLE GEOMETRICAL CONFIGURATIONS
3	Prerequisites and learning activities	PREREQUISITES: MATHEMATICS; PHYSICS.
4	Teaching methods and language	<p>LECTURES AND EXERCISES. LANGUAGE: ITALIAN / ENGLISH</p> <p>REF. TEXT BOOKS</p> <p>SOME DIDACTIC MATERIALS AND SCIENTIFIC PAPERS PUBLISHED BY THE TEACHER</p>
5	Assessment methods and criteria	ORAL EXAMINATION AND REALIZATION AND DISCUSSION OF A TECHNICAL REPORT REALIZED BY STUDENTS BEFORE THE FINAL EXAMINATION