***Prerequisites***
Electromagnetics for graduate students

***Credits***
3 ECTS

***Timetable (CEST, UTC+2)***
24 hours of lessons, final test

***Facilities***
(virtual) Library, Canteen, Concert Hall

## *General information:*

***E-mail: fabrizio.frezza@uniroma1.it***

***7th Edition, course reference material will be available on Google-Drive cloud***

***Previous editions held in 2005, 2008, 2011, 2014, 2017, and online in 2021; relevant material available on: YouTube, at bit.ly/lwps4aa_yt***

***Location: Frescoes' Room, Faculty of Engineering, "La Sapienza" University of Rome, via Eudossiana 18, Rome, Italy***
***Course webpage:*** *bit.ly/lwps4aa*

| | Monday 22 | Tuesday 23 | Wednesday 24 |
|---|---|---|---|
| 9:00 – 11:00 | **F. Frezza**<br>*Preliminaries*<br><br>**F. Frezza**<br>*Planar Guiding Structures*<br><br>**F. Frezza**<br>*Electromagnetic inhomogeneous waves at planar boundaries* | **P. Baccarelli**<br>*Leaky waves in 1-D periodic structures: Floquet-Bloch theory and spectral properties*<br><br>**P. Baccarelli**<br>*Introduction to two-dimensional 1-D periodic leaky-wave antennas.* | **P. Baccarelli**<br>*Spectral-domain modal analysis of 1-D periodic printed structures: Surface and spatial leaky-wave regimes*<br><br>**P. Baccarelli**<br>*1-D periodic printed leaky-wave antennas: Radiation properties and design aspects* |
| 11:00-11:15 | **COFFEE BREAK** | | |
| 11:15 – 13:00 | **F. Frezza**<br>*The Transverse-Resonance Technique (TRT)*<br><br>**F. Mangini**<br>*Interaction of inhomogeneous plane waves at the interface with dissipative media. The deep-penetration effect in the real world* | **D. Comite**<br>*Modal analysis of 1-D periodic leaky-wave antennas through the simulation of truncated structures*<br><br>**G. Valerio**<br>*Computation of periodic Green's functions for metamaterials and leaky-wave antennas* | **J. L. Gómez-Tornero**<br>*Why and how taper leaky-wave antennas? (1)*<br><br>**J. L. Gómez-Tornero**<br>*Why and how taper leaky-wave antennas? (2)* |
| 13:00-14:15 | **LUNCH BREAK** | | |
| 14:15 – 15:00 | **P. Burghignoli**<br>*Transmission-line analysis of planar radiators* | **P. Burghignoli**<br>*Fabry-Pérot Cavity Antennas (FPCAs); general properties of planar 2-D leaky-wave antennas* | **G. Valerio**<br>*Higher symmetries in periodic structures* |
| 15:00 – 16:00 | **P. Burghignoli**<br>*Planar radiators: Spectral properties and leaky modes* | **P. Burghignoli**<br>*Higher-order cylindrical leaky waves: conical and twisted beams* | **D. Comite**<br>*Multi-source leaky-wave antennas: near field and far field properties* |
| 16:00-16:15 | **COFFEE BREAK** | | |
| 16:15 – 18:00 | **D.R. Jackson**<br>*Introduction to Leaky Waves and Leaky-Wave Antennas (1)*<br><br>**D.R. Jackson**<br>*Introduction to Leaky Waves and Leaky-Wave Antennas (2)* | **D.R. Jackson**<br>*The Spectral-Domain Immittance (SDI) method in Electromagnetics for analyzing structures in layered media (1)*<br>**D.R. Jackson**<br>*The Spectral-Domain Immittance (SDI) method in Electromagnetics for analyzing structures in layered media (2)* | **T. Bertuch**<br>*Dispersion properties of periodically loaded parallel-plate waveguides: Analysis and leaky-wave antenna application*<br><br>**W. Fuscaldo**<br>*Terahertz leaky-wave antennas* |
| 18:00-19:00 | **walking tour 1 through the centre of Rome: Colosseum 1 (up), Roman Forum 1 (right), Trevi Fountain, Colonna Square** | **ANSYS Workshop**<br>*Efficient simulation of a Fabry-Perot antenna* | **ANSYS Workshop** |
| 19:00 | **Welcome Live Concert**<br>***@Basilica "SS. Ambrogio and Carlo al Corso", via del Corso 437***<br>**Alberto Pavoni's Recital: organ**<br>***(Frescobaldi, Vivaldi, Bach, tango…)*** | **walking tour 2 through the centre of Rome: Colosseum 2 (down), Roman Forum 2 (left), Venezia Square, Pantheon, Navona Square, S. Angelo Castle, S. Peter's**<br>**Social Dinner at 21:00**<br>***"Dai Miei", via delle Fornaci 75*** | **Closing Live Concert**<br>***@Frescoes' Room***<br>**Paolo Burghignoli's Recital: guitar**<br>***(Weiss, Dowland, Giuliani, Tárrega, Albéniz, Lauro)*** |