

EE-525

**HF and VHF circuits and techniques II**

Dehollain Catherine

<b>Cursus</b>	<b>Sem.</b>	<b>Type</b>
Electrical and Electronical Engineering	MA2, MA4	Opt.

Language of teaching	English
Credits	2
Session	Summer
Semester	Spring
Exam	Oral
Workload	60h
Weeks	14
<b>Hours</b>	<b>2 weekly</b>
Courses	2 weekly
<b>Number of positions</b>	

**Summary**

Master the design of circuits and systems at high frequency (HF) and very high frequency (VHF) (1 MHz-6GHz). This lecture is particularly oriented towards circuit aspects of modern communications systems

**Content**

- 1) HF Power Amplifiers
- 2) Mixers
- 3) Oscillators
- 4) Frequency Synthesizers
- 5) Modulators and Demodulators (Circuit aspects)
- 6) Transceivers Architecture
- 7) Spread-Spectrum Techniques
- 8) Aspects of Mobile Communications Systems: the GSM

**Keywords**

Radio frequency wireless communication circuits  
HF and VHF wireless communication circuits

**Learning Prerequisites****Recommended courses**

HF and VHF circuits and techniques I

**Learning Outcomes**

By the end of the course, the student must be able to:

- Design an amplifier
- Design an oscillator
- Assess / Evaluate the stability of an amplifier
- Assess / Evaluate the architecture of a receiver
- Assess / Evaluate the architecture of a transmitter
- Assess / Evaluate the topology of an oscillator
- Assess / Evaluate the topology of an amplifier
- Assess / Evaluate the impedance matching circuits at the input/output of an amplifier

**Transversal skills**

- Access and evaluate appropriate sources of information.
- Assess one's own level of skill acquisition, and plan their on-going learning goals.
- Manage priorities.
- Set objectives and design an action plan to reach those objectives.
- Communicate effectively, being understood, including across different languages and cultures.
- Use both general and domain specific IT resources and tools
- Use a work methodology appropriate to the task.

### Teaching methods

Ex cathedra and exercises

### Expected student activities

To follow the courses and to do the exercises.

### Assessment methods

Ex-cathedra course

### Supervision

Office hours	Yes
Assistants	Yes
Forum	No

### Resources

#### Notes/Handbook

Polycopies and scientific articles.

#### Websites

- <http://rfic.epfl.ch>