1. Annotation

Course Description

The course is an introductory course in which students are expected to gain an understanding of the main principles and technological basis of the new wireless communications technologies, first of all, cellular. The course will discuss the main trends in the development of new generations of cellular communications, primarily 4G and 5G, as well as the basic prerequisites and requirements for creating a 6G system.

The course will include:
- the requirements and key drivers for new wireless technologies development
- 5G use cases, business cases, and services
- the key technologies in 5G NR (dual connectivity, small cells, CRAN, flexible numerology, massive MIMO, etc)
- 5G Radio Access Technology, network virtualization, and slicing in 5G
- the key elements/Functions in 5G Core Network
- security in 5G Mobile Networks
- 5G Air Interface channels, cell acquisition, data scheduling, paging etc.

This course is designed to provide students with the necessary functional knowledge possible in the shortest possible time.

Course Prerequisites / Recommendations

The "Introduction to Wireless Communications" course
2. Structure and Content

Course Academic Level | Master-level course suitable for PhD students
Number of ECTS credits | 3

3. Assignments

4. Grading

Grading Scale

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
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<tbody>
<tr>
<td>A</td>
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<tr>
<td>B</td>
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</tr>
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<td>F</td>
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Attendance Requirements | Mandatory with Exceptions

5. Basic Information

Course Stream | Science, Technology and Engineering (STE)
Course Term (in context of Academic Year) | Term 2
Course Delivery Frequency | Every year

Students of Which Programs do You Recommend to Consider this Course as an Elective?

<table>
<thead>
<tr>
<th>Masters Programs</th>
<th>PhD Programs</th>
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<tbody>
<tr>
<td>Advanced Manufacturing Technologies</td>
<td>Computational and Data Science and Engineering</td>
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<tr>
<td>Data Science</td>
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<tr>
<td>Information Science and Technology</td>
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<tr>
<td>Photonics and Quantum Materials</td>
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</tbody>
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6. Textbooks and Internet Resources

7. Facilities

Labs for Education  CoE Wireless & IoT Lab

8. Learning Outcomes

9. Assessment Criteria

Input or Upload Example(s) of Assignment 1:

Input or Upload Example(s) of Assignment 2:

Input or Upload Example(s) of Assignment 3:

Input or Upload Example(s) of Assignment 4:

Input or Upload Example(s) of Assignment 5:

10. Additional Notes