

Module 2-49: Mobile Radio Networks 1: Fundamentals and Design Aspects					ETIT-407	
Rota	Duration	Semester	Credits	Presence	Self-Study Load	
annually SoSe	1 Semester	2nd	5	35 h	115 h	
<b>1</b>	<b>Module Structure</b>					
	<b>No.</b>	<b>Element / Course</b>		<b>LSF-No.</b>	<b>Type</b>	<b>SWS</b>
	1	Mobile Radio Networks 1: Fundamentals and Design Aspects: Lecture		08 0104	V	2
	2	Mobile Radio Networks 1: Fundamentals and Design Aspects: Lab Course		08 0105	P	1
<b>2</b>	<b>Language</b> English					
<b>3</b>	<b>Content</b> <ol style="list-style-type: none"> <li>1. Market aspects and historical development of mobile communications</li> <li>2. System aspects (characteristics of propagation, subscriber mobility, resource demand and spectrum allocation, network planning, protocols)</li> <li>3. TDMA- und CDMA-based cellular networks (2G GSM/GPRS/EDGE, 3G UMTS/HSPA)</li> <li>4. System architecture of OFDMA-based cellular networks (4G LTE)</li> </ol> <p>The discussion of theoretical content is complemented by practical demonstrations and by case studies on ongoing research and business aspects of mobile radio networks.</p> <p><b>Literature</b> (respective latest version)  Walke, B.: Mobile Radio Networks, Wiley  Rappaport, Theodore S. Wireless communications: principles and practice. Prentice Hall.  Dahlmann, E.; Parkvall, S.; Sköld, J.: 4G: LTE/LTE-Advanced for Mobile Broadband, Academic Press</p>					
<b>4</b>	<b>Competencies</b> After successful completion of the module, students understand the system architectures, protocols, dimensioning and operation of mobile radio networks. Students are able to evaluate the possibilities and challenges of using wireless networks in different deployment environments and fields of application, and to make a technically sound selection. In this way, they acquire the competence to attend more advanced courses or to study more advanced topics for themselves.					
<b>5</b>	<b>Examination</b> <i>Module exam: oral exam (max. 40 minutes) or written exam (max. 180 minutes)*</i> <i>Course work: successful completion of lab tasks</i> *The exact examination modalities will be announced by the 2nd event at the latest.					
<b>6</b>	<b>Forms of examination and performance</b> <input checked="" type="checkbox"/> <i>Module exam</i> <input type="checkbox"/> Part of modular exam					
<b>7</b>	<b>Participation requirements</b> None. Basic knowledge of digital communications and electromagnetic wave propagation is recommended.					
<b>8</b>	<b>Module type and usability of the module</b> Mandatory Elective Course in Master Degree Program „Electrical Engineering and Information Technology“, Major „Information and Communications Engineering“. Elective Class in Master Degree Program „Industrial Engineering“, recommended in major „Information Technology“, module reference number: MB-. Elective Class in Master Degree Program „Automation & Robotics“, recommended in major „Cognitive Systems“, module reference number: AR-234. Elective Class in Master Degree Program „Applied Computer Science“ and „Computer Science“, both with application subject „Electrical Engineering“, module reference number: INF-MSc-AF-ET-230.					
<b>9</b>	<b>Module Supervisor</b> Prof. Dr.-Ing. Christian Wietfeld		<b>Faculty in Charge</b> Faculty of Electrical Engineering and Information Technology			