

Methods of Information Technology					AR-209
<b>Rota</b> annually SS	<b>Duration</b> 1 Semester	<b>Semester</b> 2nd (Semester)	<b>SWS</b> 6 SWS	<b>Credit Points</b> 10	<b>Workload</b> 300 h
<b>1</b>	<b>Modul structure</b>				
	<b>Course (Abbreviation)</b>	<b>Type/ SWS</b>	<b>Presence</b>	<b>Self study</b>	<b>Credits</b>
	a) Methods of Information Technology (MIT)	Lecture/ 4 SWS	60 h	120 h	6
	b) Methods of Information Technology (MIT)	Tutorial/ 2 SWS	30 h	90 h	4
<b>2</b>	<b>Language</b> English				
<b>3</b>	<b>Content</b> <ol style="list-style-type: none"> <li>1. Introduction: Positioning (GPS), Inertial Navigation System (INS),</li> <li>2. Methods based on trilateration and triangulation as well as Space Frequency Estimation)</li> <li>3. Algorithms: Non-linear least squares method, Kalman filter, iterative methods</li> <li>4. Examples: GPS, SFE, positioning in cellular systems</li> </ol> <b>Literature:</b> <ul style="list-style-type: none"> <li>• Grewal: Global Positioning Systems, Inertial Navigation, and Integration, 2<sup>nd</sup> Edition;</li> <li>• Stoica: Spectral Analysis of Signals</li> </ul>				
<b>4</b>	<b>Goals</b> The student learns to understand different methods for positioning and understands the signal models required to derive these methods. The basic methods used for positioning in global positioning systems (GPS) and in space frequency estimation (SFE) can be derived. The different possibilities for combining the methods and for using differential GPS (DGPS) and assisted GPS (AGPS) are mastered. Furthermore, recursive methods and methods, which can be applied in cellular communications systems, are also known.				
<b>5</b>	<b>Examination Requirements</b> The module is finished with an oral/written examination.				
<b>6</b>	<b>Formality of Examination</b> <input checked="" type="checkbox"/> Module Finals <span style="float: right;"><input type="checkbox"/> Accumulated Grade</span>				
<b>7</b>	<b>Module Requirements (Prerequisites)</b>				
<b>8</b>	<b>Allocation to Curriculum:</b> Program: Automation & Robotics, Field of study: <b>Cognitive Systems</b> Program: Electrical Engineering und Information Technology (ETIT-237)				
<b>9</b>	<b>Responsibility/ Lecturer</b> <i>Prof. Dr. J. Götze/Prof. Dr. J. Götze</i>				