



"Wireless Communications Networks" Course Definition File

1. Basic Information:

Course Name	Wireless Communications Networks
Course ID	CCN401
Contact Hours (Registered Sessions)	30
Contact Hours (Synchronized Sessions)	18
Mid Term Exam	
Exam	1.5
Registered Sessions Work Load	30
Synchronized Session Work Load	18
Credit Hours	5

2. Pre-Requisites:

Course	ID
Introduction to networks	INT 101

3. Course General Objectives:

The objective of this course is to provide an overview of wireless networks and systems and their technologies, and key wireless services. It describes the basic knowledge necessary to understand wireless data communication, also describes how wireless devices share the frequency band. In this context this course describes key types of wireless networks and systems, and describes its functional parts.

The student gets introduced to the most widespread wireless services and to the new trends in wireless industry market.

4. Intended Learning Outcomes (ILO):

Code	Intended Learning Outcomes
ILO1	Overview of various wireless networks, and of network layering model. Understanding spectrum sharing principle.
ILO2	Describing functional parts of wireless networks and system.
ILO3	Describing local wireless networks Wi-Fi and broadband WiMax networks.
ILO4	Describing personal networks Bluetooth
ILO5	Describing mobile networks.
ILO6	Describing satellite networks.
ILO7	Knowing different wireless service types.

5. Course Syllabus (18 hours of total synchronized sessions)

- RS: Recorded Sessions; SS: Synchronized Sessions;

ILO	Course Syllabus	RS	SS	Type	Additional Notes
ILO2	<p>Overview:</p> <ul style="list-style-type: none"> • Wireless networks and network reference model <p>Spectrum sharing:</p> <ul style="list-style-type: none"> • Licensed and non licensed bands • Multiple access • Spread spectrum • Random access 	3	4.5	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input checked="" type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others	Discussion about spectrum and its allocation and sharing.
ILO1	<p>Description of wireless local area networks:</p> <ul style="list-style-type: none"> • Applications • Network structure • MAC frame • Standards 	3	6	<input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input checked="" type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others	Discussion of evolution of standards of WiFi

Wireless Communications Networks

<p>ILO3</p>	<p>Description of wideband wireless networks WiMAX:</p> <ul style="list-style-type: none"> ● Applications and services ● Network structure ● Standards ● Quality of service 	<p>3</p>	<p>4.5</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input checked="" type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others 	<p>Discussion of evolution of standards of WiMAX</p>
<p>ILO1 ILO2</p>	<p>Wireless personal networks Bluetooth:</p> <ul style="list-style-type: none"> ● Characteristics ● Network structure ● MAC frame ● Network initialization 	<p>3</p>	<p>4.5</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input checked="" type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others 	<p>Discussion of various applications of Bluetooth</p>
<p>ILO1 ILO4 ILO5</p>	<p>Mobile networks:</p> <ul style="list-style-type: none"> ● Second generation network structure ● Data frames structure ● Call establishment ● Structure of 2.5 generation ● Structure of third generation ● Structure of forth generation 	<p>4.5</p>	<p>7.5</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input checked="" type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others 	<p>Discussion of various trends in mobile networks</p>
<p>ILO6</p>	<p>Satellite communication:</p> <ul style="list-style-type: none"> ● Classification of satellite communications ● Satellites orbits ● Satellites configurations ● Bandwidth allocation ● Services 	<p>1.5</p>	<p>3</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Exercises <input type="checkbox"/> Assignments <input checked="" type="checkbox"/> Seminars <input type="checkbox"/> Projects <input type="checkbox"/> Practices <input type="checkbox"/> Others 	<p>Discussion of various satellites systems</p>

6. Assessment Criteria (Related to ILOs)

ISC	Interactive Synchronized Collaboration	Ex	Exams	Rpt	Reports
PF2F	Presentations and Face-to-Face Assessments	PW	Practice Work		

ILO Code	ILO	Intended Results	Assessment Type				
			ISC	PW	Ex	PF2F	Rpt
ILO1	Overview of various wireless networks, and of network layering model. Understanding spectrum sharing principle.		X		X		X
ILO2	Describing functional parts of wireless networks and system.		X		X		X
ILO3	Describing local wireless networks Wi-Fi and broadband WiMax networks.		X		X		X
ILO4	Describing personal networks Bluetooth.		X		X		X
ILO5	Describing mobile networks.		X		X		X
ILO6	Describing satellite networks.		X		X		X
ILO7	Knowing different wireless service types.		X		X		X

7. Practice Tools:

Tool Name	Description
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8. Main References

<ol style="list-style-type: none"><li data-bbox="147 512 1469 548">1. Broadband Wireless Access and Local Networks–Mobile WiFi and WiMax_Lee_Choi, 2008<li data-bbox="147 569 1179 604">2. Wireless Communications and Networks, 2e, WilliamStallings, 2002
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9. Additional References

Wireless Communications and Networking, Garg, 2007
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