

Code and link to the WebOodi	Name of the course, ECTS Credits	Recommended timing								Partly carried out as network studies (x)	Carried out with English language (x)
		1. study year				2. study year					
		autumn		spring		autumn		spring			
		1P	2P	3P	4P	1P	2P	3P	4P		
	<b>Radio access networks study option, basic module 40 ECTS, all obligatory</b>										
<a href="#">031051S</a>	Numerical matrix analysis	5	5								x
<a href="#">521348S</a>	Statistical signal processing I	5	5							x	x
<a href="#">521395S</a>	Wireless communications I	5	5								x
<a href="#">031025A</a>	Introduction to optimization	5		5							x
<a href="#">521340S</a>	Communications networks I	5		5							x
<a href="#">521324S</a>	Statistical signal processing II	5			5						x
<a href="#">521349S</a>	Wireless communications II	5			5						x
<a href="#">521326S</a>	Radio engineering I	5					5				x
	<b>Radio access networks study option, advanced module 33 ECTS, choose at least 30 ECTS + advanced practical training</b>										
<a href="#">521016A</a>	Advanced practical training	3			0	3	0				
<a href="#">521386S</a>	Radio channels	5		5							x
<a href="#">521328A</a>	Simulations and tools for telecommunications	5		0							
<a href="#">521327S</a>	Radio engineering II	6						0			x
<a href="#">521377S</a>	Communications networks II	7			5	2					x
<a href="#">521388S</a>	Antennas	5				5					x
<a href="#">521279S</a>	Signal processing systems	5					5				x
<a href="#">521322S</a>	Telecommunication engineering project <b>or</b>	5					2	3			
<a href="#">521300S</a>	Electronics design and construction exercise	6					0	0			
<a href="#">521318S</a>	Modern topics in telecommunications and radio engineering	3-7					0	0	0	0	x
<a href="#">521389S</a>	Wireless body area networks <sup>*)</sup>	5						0	0		x
<a href="#">521325S</a>	Communications signal processing <sup>**)</sup>	5				5					x
<a href="#">521390S</a>	Information theory <sup>*)</sup>	5	0								x
<a href="#">521391S</a>	Channel coding and modulation <sup>**)</sup>	5					0				x
<a href="#">521392S</a>	Convex optimization <sup>*)</sup>	7	0	0							x
<a href="#">521393S</a>	Statistical communication theory <sup>*)</sup>	7	0	0							x
<a href="#">521394S</a>	Multiantenna communications <sup>**)</sup>	5					0				x

	*) will be lectured in even years (2020, 2022,...)													
	**) will be lectured in odd years (2021, 2023,...)													
	0 = period when course is taught/can be taken/is suggested to be taken													
	<b>Optional courses from language center or other units, choose so much that 120 ECTS will be fulfilled</b>						10	5						
<a href="#">900017Y</a>	Survival Finnish Course	2	0				0							
<a href="#">900013Y</a>	Beginners Finnish Course I	3		0				0						
<a href="#">900053Y</a>	Beginners Finnish Course II	5			0				0					
<a href="#">521225S</a>	RF components and measurements	5									0			
<a href="#">521097S</a>	Wireless measurements	5								0				
<a href="#">813621S</a>	Research methods	5								0	0			
<a href="#">521273S</a>	Biosignal processing I								0					
<a href="#">521282S</a>	Biosignal processing II	5									0			
<a href="#">521467A</a>	Digital image processing	5									0			
<a href="#">521145A</a>	Human computer interaction	5							0					
<a href="#">521043S</a>	Internet of things	5							0					
<a href="#">521140S</a>	Computer graphics	5									0			
<a href="#">521290S</a>	Distributed systems	5								0				
<a href="#">521466S</a>	Machine vision	5								0				
<a href="#">521156S</a>	Towards data mining	5					0							
<a href="#">521260S</a>	Programmable web project	5								0	0			
<a href="#">521479S</a>	Software project	7					0	0						
<a href="#">521283S</a>	Big data processing and applications	5									0			
<a href="#">521158S</a>	Natural language processing and data mining	5					0							
<a href="#">521289S</a>	Machine learning	5								0				
<a href="#">521161S</a>	Multi-modal data fusion	5							0					
<a href="#">521285S</a>	Affective computing	5					0							
<a href="#">521153S</a>	Deep learning	5							0					
<a href="#">521155S</a>	Computer security	5					0							
<a href="#">521042S</a>	Creative design	5					0							
<a href="#">521288S</a>	Multi-processor programming	5								0	0			
<a href="#">521281S</a>	Application specific signal processors	5					0							
<a href="#">521423S</a>	Embedded system project	5								0	0			
	<b>Master's thesis and studies related that</b>	30								15	15			
<a href="#">521975S</a>	Master's thesis													
<a href="#">521362S</a>	Seminar													
<a href="#">521011S</a>	Maturity test													
	<b>Yhteensä opintopisteitä / periodi (15 op)</b>		15	15	15	15	12	18	15	15		1	21	
	<b>Yhteensä opintopisteitä / lukukausi (30 op)</b>		30		30		30		30					
	<b>Yhteensä opintopisteitä / lukuvuosi (60 op)</b>		60				60							
	<b>Tutkinnon laajuus yhteensä (120 op)</b>		120											

University of Oulu

Degree structure diagram 2020 - 2022

International Master's Degree Programme in Wireless Communications Engineering (WCE)

Engineering, 120 ECTS credits

Study option: Radio engineering (**WCE-RF**)

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		autumn		spring		autumn		spring			
		1P	2P	3P	4P	1P	2P	3P	4P		
	<b>Radio engineering study option, basic module 36 ECTS, all obligatory</b>										
<a href="#">521401S</a>	Electronics design II	6	6								
<a href="#">521348S</a>	Statistical signal processing I	5	5								x
<a href="#">521395S</a>	Wireless communications I	5	5								x
<a href="#">521326S</a>	Radio engineering I	5		5							x
<a href="#">521324S</a>	Statistical signal processing II	5			5						x
<a href="#">521225S</a>	RF components and measurements	5				5					
<a href="#">521405A</a>	Electronic system design	5					5				
	<b>Radio engineering study option, advanced module 36/37 ECTS, all obligatory</b>										
<a href="#">521435S</a>	Electronics design III	6		6							
<a href="#">521327S</a>	Radio engineering II	6			6						x
<a href="#">521075S</a>	Microelectronics packaging technologies	5			5						
<a href="#">521388S</a>	Antennas	5				5					x
<a href="#">521402S</a>	Telecommunications circuit design	6					6				x
<a href="#">521322S</a>	Telecommunication engineering project <b>or</b>	5					0	5			x
<a href="#">521300S</a>	Electronics design and construction exercise	6					0	0			x
<a href="#">521016A</a>	Advanced practical training	3			0	3	0				
	<b>Optional courses from language center or other units, choose so much that 120 ECTS will be fulfilled</b>			5		2	5	6			
<a href="#">521386S</a>	Radio channels	5		0							
<a href="#">521328A</a>	Simulations and tools for telecommunications	5		0							x
<a href="#">521340S</a>	Communications networks I	5		0							x
<a href="#">521349S</a>	Wireless communications II	5			0						x

<a href="#">521318S</a>	Modern topics in telecommunications and radio engineering	3-7					0	0	0	0		x	
<a href="#">521325S</a>	Communications signal processing <sup>**)</sup>	5				0						x	
<a href="#">900017Y</a>	Survival Finnish Course	2	0				0						
<a href="#">900013Y</a>	Beginners Finnish Course I	3		0				0					
<a href="#">900053Y</a>	Beginners Finnish Course II	5			0				0				
<a href="#">521097S</a>	Wireless measurements	5							0				
<a href="#">521389S</a>	Wireless body area networks <sup>*)</sup>	5							0	0		x	
<a href="#">813621S</a>	Research methods	5							0	0			
<a href="#">521273S</a>	Biosignal processing I	5						0					
<a href="#">521282S</a>	Biosignal processing II	5								0			
<a href="#">521467A</a>	Digital image processing	5								0			
<a href="#">521145A</a>	Human computer interaction	5						0					
<a href="#">521043S</a>	Internet of things	5						0					
<a href="#">521140S</a>	Computer graphics	5								0			
<a href="#">521290S</a>	Distributed systems	5							0				
<a href="#">521466S</a>	Machine vision	5							0				
<a href="#">521156S</a>	Towards data mining	5					0						
<a href="#">521260S</a>	Programmable web project	5							0	0			
<a href="#">521479S</a>	Software project	7					0	0					
<a href="#">521283S</a>	Big data processing and applications	5								0			
<a href="#">521158S</a>	Natural language processing and data mining	5						0					
<a href="#">521289S</a>	Machine learning	5							0				
<a href="#">521161S</a>	Multi-modal data fusion	5						0					
<a href="#">521285S</a>	Affective computing	5					0						
<a href="#">521153S</a>	Deep learning	5						0					
<a href="#">521155S</a>	Computer security	5					0						
<a href="#">521042S</a>	Creative design	5					0						
<a href="#">521288S</a>	Multi-processor programming	5							0	0			
<a href="#">521281S</a>	Application specific signal processors	5					0						
<a href="#">521423S</a>	Embedded system project	5							0	0			
	<sup>*)</sup> will be lectured in even years (2020, 2022,...)												
	<sup>**)</sup> will be lectured in odd years (2021, 2023,...)												
	0 = period when course is taught/can be taken/is suggested to be taken												
	<b>Master's thesis and studies related that</b>	30								15	15		
<a href="#">521975S</a>	Master's thesis												
<a href="#">521362S</a>	Seminar												
<a href="#">521011S</a>	Maturity test												
	<b>Yhteensä opintopisteitä / periodi (15 op)</b>		16	16	16	15	16	11	15	15	0	15	
	<b>Yhteensä opintopisteitä / lukukausi (30 op)</b>		32		31		27		30				
	<b>Yhteensä opintopisteitä / lukuvuosi (60 op)</b>		63				57						
	<b>Tutkinnon laajuus yhteensä (120 op)</b>		120										