

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		
	Radio access networks study option, basic module 40 ECTS, all obligatory										
031051S	Numerical matrix analysis	5	5								x
521348S	Statistical signal processing I	5	5							x	x
521395S	Wireless communications I	5	5								x
031025A	Introduction to optimization	5		5							x
521340S	Communications networks I	5		5							x
521324S	Statistical signal processing II	5			5						x
521349S	Wireless communications II	5			5						x
521326S	Radio engineering I	5					5				x
	Radio access networks study option, advanced module 33 ECTS, choose at least 30 ECTS + advanced practical training										
521016A	Advanced practical training	3			0	3	0				
521386S	Radio channels	5		5							x
521328A	Simulations and tools for telecommunications	5		0							
521327S	Radio engineering II	6						0			x
521377S	Communications networks II	7			5	2					x
521388S	Antennas	5				5					x
521279S	Signal processing systems	5					5				x
521322S	Telecommunication engineering project or	5					2	3			
521300S	Electronics design and construction exercise	6					0	0			
521318S	Modern topics in telecommunications and radio engineering	3-7					0	0	0	0	x
521389S	Wireless body area networks ^{*)}	5						0	0		x
521325S	Communications signal processing ^{**)}	5				5					x
521390S	Information theory ^{*)}	5	0								x
521391S	Channel coding and modulation ^{**)}	5					0				x
521392S	Convex optimization ^{*)}	7	0	0							x
521393S	Statistical communication theory ^{*)}	7	0	0							x
521394S	Multiantenna communications ^{**)}	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													
	Optional courses from language center or other units, choose so much that 120 ECTS will be fulfilled						10	5						
900017Y	Survival Finnish Course	2	0				0							
900013Y	Beginners Finnish Course I	3		0				0						
900053Y	Beginners Finnish Course II	5			0				0					
521225S	RF components and measurements	5								0				
521097S	Wireless measurements	5								0				
813621S	Research methods	5								0	0			
521273S	Biosignal processing I								0					
521282S	Biosignal processing II	5									0			
521467A	Digital image processing	5									0			
521145A	Human computer interaction	5							0					
521043S	Internet of things	5							0					
521140S	Computer graphics	5									0			
521290S	Distributed systems	5								0				
521466S	Machine vision	5								0				
521156S	Towards data mining	5					0							
521260S	Programmable web project	5								0	0			
521479S	Software project	7					0	0						
521283S	Big data processing and applications	5									0			
521158S	Natural language processing and data mining	5					0							
521289S	Machine learning	5								0				
521161S	Multi-modal data fusion	5							0					
521285S	Affective computing	5					0							
521153S	Deep learning	5							0					
521155S	Computer security	5					0							
521042S	Creative design	5					0							
521288S	Multi-processor programming	5								0	0			
521281S	Application specific signal processors	5					0							
521423S	Embedded system project	5								0	0			
	Master's thesis and studies related that	30								15	15			
521998S	Master's thesis													
521362S	Seminar													
521011S	Maturity test													
	Yhteensä opintopisteitä / periodi (15 op)		15	15	15	15	12	18	15	15		1	21	
	Yhteensä opintopisteitä / lukukausi (30 op)		30		30		30		30					
	Yhteensä opintopisteitä / lukuvuosi (60 op)		60				60							
	Tutkinnon laajuus yhteensä (120 op)		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**)

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

521318S	Modern topics in telecommunications and radio engineering	3-7					0	0	0	0		x	
521325S	Communications signal processing ^{**)}	5				0						x	
900017Y	Survival Finnish Course	2	0				0						
900013Y	Beginners Finnish Course I	3		0				0					
900053Y	Beginners Finnish Course II	5			0				0				
521097S	Wireless measurements	5							0				
521389S	Wireless body area networks ^{*)}	5							0	0		x	
813621S	Research methods	5							0	0			
521273S	Biosignal processing I	5						0					
521282S	Biosignal processing II	5								0			
521467A	Digital image processing	5								0			
521145A	Human computer interaction	5						0					
521043S	Internet of things	5						0					
521140S	Computer graphics	5								0			
521290S	Distributed systems	5							0				
521466S	Machine vision	5							0				
521156S	Towards data mining	5					0						
521260S	Programmable web project	5							0	0			
521479S	Software project	7					0	0					
521283S	Big data processing and applications	5								0			
521158S	Natural language processing and data mining	5						0					
521289S	Machine learning	5							0				
521161S	Multi-modal data fusion	5						0					
521285S	Affective computing	5					0						
521153S	Deep learning	5						0					
521155S	Computer security	5					0						
521042S	Creative design	5					0						
521288S	Multi-processor programming	5							0	0			
521281S	Application specific signal processors	5					0						
521423S	Embedded system project	5							0	0			
	^{*)} 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												
	Master's thesis and studies related that	30								15	15		
522991S	Master's thesis												
521362S	Seminar												
521011S	Maturity test												
	Yhteensä opintopisteitä / periodi (15 op)		16	16	16	15	16	11	15	15	0	15	
	Yhteensä opintopisteitä / lukukausi (30 op)		32		31		27		30				
	Yhteensä opintopisteitä / lukuvuosi (60 op)		63				57						
	Tutkinnon laajuus yhteensä (120 op)		120										