Competence coverage matrix

GHENT UNIVERSITY

International Master of Science in Textile Engineering

Academic year 2021-2022

Legend:
T=teaching methods
E=evaluation methods

		General Courses																									Master's Dissertation
		E064822 Polymer Technology	E064821 Advanced Fibre Technology	E063660 Biomaterials	E064860 Mechanics of Textile Materials	E064351 Instrumental Analysis	E064851 Computation Sciences and Engineering Principles for Textiles	E065691 Composite Materials	E064452 Advanced and Specialised Textile Processing - Dyeing	E850100 Introduction to Cocreation	E064460 Advanced and Specialised Textile Processing - Mechanical	E064453 Advanced and Specialised Textile Processing - Finishing	E063690 Biotechnology	E064370 Nanotechnology in the Textile Branch	E064681 Automation and Process Control	E064721 Garment Technology	E064730 Industrial Information Systems	E064881 Application of Technical Textiles	E064891 Technical Textile Manufacturing Technology	E064691 Innovative Methods for the Product Development Process for Garments and Technical Applications in the	E064911 Comfort and Computation of Textiles	E064701 Intelligent Textiles	E064931 Sustainable Textile Design	E064871 Management, Logistics and Distribution	E075080 Scientific Thinking	E091105 Master's Dissertation
Competences in one/more scientific discipline(s)	Master and apply advanced knowledge in the own engineering discipline in solving complex problems.	T E																									T E
	Apply Computer Aided Engineering (CAE) tools and advanced communication instruments in a creative and purposeful way.	T E					T E								T E						T E	T E					
	Apply advanced knowledge of fundamental sciences (physics, chemistry and mechanics), using an analytical way of thinking.	T E	T E	T E	T E	T E			T E		T E	T E	T E	T E									T E				
	Advanced knowledge of characteristics and application fields of textile products to develop products with specific characteristics using dedicated product design methods.	T E												T E								T E	T E				
	Advanced knowledge of and practical experience with use of techniques and methods to investigate properties of textile materials.			T E	T E	T E		T E			T E	T E	T E				T E						T E				
	Advanced knowledge of physical foundations of materials, ability to use general and physical chemistry and material science innovatively.		T E	T E					T E			T E	T E														
	Advanced knowledge of applications of fibrous materials.		T E	T E				T E										T E	T E	T E		T E					
	Advanced knowledge of use of chemical and mechanical process-technological aspects of textile materials.								T E		T E	T E	T E		T E	T E	T E		T E					T E			
	Use advanced knowledge of mathematics and statistics to develop mathematical models for the generation of textiles and textile-technological processes.						T E								T E							T E					
	Advanced knowledge of the use of and the interactions between selection of raw materials and process-parameters, keeping in mind the usage-properties of fibrous materials and derived products.	T E									T E	T E	T E	T E				T E	T E	T E	T E						
Scientific competences	Analyse complex problems and translate them into concrete research questions.	T E								T E												T E					T E
	Consult the scientific literature as part of the own research.									T E																	T E
	Select and apply the appropriate models, methods and techniques.	T E					T E													T E	T E	T E			T E		T E
	Develop and validate mathematical models and methods.	T E																									T E
	Interpret research findings in an objective and critical manner.																								T E		T E
	Thoroughly examine complex, multidisciplinary problems in material science autonomously and flexibly, also in case of limited data.	T E					T E						T									T E					
	Create an experimental set-up for textile materials to develop own models.																										T E
	Identify suitable methods and procedures and apply them accurately.																										T E
	Define and carry out research-plans, keeping in mind their chance for implementation.									T E																	T E
	Manage multidisciplinary problems in a flexible and creative way.												T E	T E				T		T	T	T E					T E
Intellectual competences	Independently form an opinion on complex situations and problems, and defend this point of view.									T E																	T E
	Apply knowledge in a creative, purposeful and innovative way to research, conceptual design and production.	T E								T E																	T E
	Critically reflect on one's own way of thinking and acting, and understand the limits of one's competences.									T E																	T E
	Stay up-to-date with the evolutions in the discipline to elevate the own competences to expert le		T E	T E										T E						T E		T E					T E
	Readily adapt to changing professional circumstances.																T E						T E	T E			
	Think about the optimisation of production processes, the development of new fibrous materials and the improvement of existing ones in a scientific, system-focused, problem-avoiding and solving way.								T E		T E	T E	T E	T E				T E	T E	T E			T E				
	Apply knowledge from other disciplines to applications in the field of textiles engineering.									T E												T E	T E	T E			
Competences in cooperation and communication	Have the ability to communicate in English about the own field of specialisation.	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E	T E		T E
	Project management: have the ability to formulate objectives, report efficiently, keep track of targets, follow the progress of the project,...									T E																	T E
	Have the ability to work as a member of a team in a multi-disciplinary working-environment, as well as being capable of taking on supervisory responsibilities.									T E																	
	Report on technical or scientific subjects verbally, in writing and using graphics.									T E																	T E
	Integrate in research activities of a department.			T E	T E	T E		T E																			
	Work in an international (European and/or global) group.									T E																	
Societal competences	Act in an ethical, professional and social way.									T E													T E		T E		T E
	Recognize the most important business and legal aspects of the own engineering discipline.																					T E	T E	T E			
	Understand the historical evolution of the own engineering discipline and its social relevance.																					T E	T E				
	Put research and development in societal context, taking into account ethical considerations.									T E																	
	Demonstrate a multicultural attitude.									T E																	
	Comprehend, accept and respect cultural values of people with different cultural backgrounds.																								T E		
Profession-specific competences	Master the complexity of technical systems by using system and process models.	T E			T E		T E										T E				T E			T E			T E
	Reconcile conflicting specifications and prior conditions in a high-quality and innovative concept or process.	T E								T E																	T E
	Synthesize incomplete, contradictory or redundant data into useful information.	T E								T E																	T E
	Possess sufficient ready knowledge and understanding to evaluate the results of complex calculations, or make approximate estimates.	T E			T E				T E		T E	T E	T E							T E	T E						
	Pay attention to entire life cycles of systems, machines, and processes.	T E																					T E	T E			
	Pay attention to sustainability, energy-efficiency, environmental cost, use of raw materials and labour costs.	T E									T E	T E	T E	T E									T E	T E			
	Pay attention to all aspects of reliability, safety, and ergonomics.	T E							T E	T E	T E	T E	T E	T E					T E	T E		T E	T E				
	Have insight into and understanding of the importance of entrepreneurship.									T E												T E		T E			
	Show perseverance, innovativeness, and an aptitude for creating added value.																										T E
	Deal successfully with problems that imply a multidisciplinary approach.									T E																	
	Estimate roughly problems and situations in a quantitative way.				T E						T E																