Supplementary material: Competency names and types

APPENDIX A. LIST OF COMPETENCIES BY TYPE AND KNOWLEDGE AREA

TABLE I: List of competencies by type for the academic programs in Information Technologies (ICT)

Competency type	Competency name
Area	Application of international standards
Area	Commitment to sustainability
Area	Data analysis in engineering and science
Area	Data analysis of chemical and biological systems
Area	Engineering problem solving
Area	Foundation of chemical and biological phenomena
Area	Foundation of computer systems
Area	Foundation of engineering and science systems
Area	Foundation of engineering systems and devices
Area	Foundation of natural phenomena
Area	Generation of computational models for data analysis
Area	Problem solution in natural and exact sciences
Area	Problem solving
Area	Problem solving with computing
Area	Solution of chemical or biological process problems
Area	Systems and Engineering Devices Data Analysis
Disciplinary	Computer algorithms development
Disciplinary	Computer infrastructure implementation
Disciplinary	Data governance management
Disciplinary	Development of business architectures
Disciplinary	Digital strategies
Disciplinary	Electronic design
Disciplinary	Embedded systems
Disciplinary	Smart Robotic and Digital Systems
Disciplinary	Smart interfaces
Disciplinary	Software systems development
General education	Communication
General education	Digital transformation
General education	Ethical and citizen commitment
General education	Innovative entrepreneurship
General education	Reasoning for complexity
General education	Self-knowledge and management
General education	Social Intelligence

TABLE II: List of competencies by type for the academic programs in Applied Sciences (ICI)

Competency type	Competency name
Area	Application of international standards
Area	Commitment to sustainability
Area	Data analysis in engineering and science
Area	Data analysis of chemical and biological systems
Area	Engineering problem solving
Area	Foundation of chemical and biological phenomena
Area	Foundation of computer systems
Area	Foundation of engineering and science systems
Area	Foundation of engineering systems and devices
Area	Foundation of natural phenomena
Area	Generation of computational models for data analysis
Area	Natural phenomena data analysis
Area	Problem solution in natural and exact sciences
Area	Problem solving
Area	Problem solving with computing
Area	Solution of chemical or biological process problems
Area	Systems and Engineering Devices Data Analysis
Disciplinary	Characterization of physical phenomena
Disciplinary	Cognitive methods
Disciplinary	Complex problem solution
Disciplinary	Data science
Disciplinary	Development of nanotechnological products
Disciplinary	Evaluation of nanomaterial properties
Disciplinary	Identification of physical phenomena
Disciplinary	Improvement of chemical processes
Disciplinary	Information communication
Disciplinary	Manufacture of nanomaterials
Disciplinary	Mathematical modeling
Disciplinary	Model construction
Disciplinary	Optimization
Disciplinary	Problem solution in nanoscale
Disciplinary	Research in Nanotechnology
Disciplinary	Scientific and Technological Communication in Nanotechnology
Disciplinary	Scientific communication
Disciplinary	Security and cryptography
General education	Communication
General education	Digital transformation
General education	Ethical and citizen commitment
General education	Innovative entrepreneurship
General education	Reasoning for complexity
General education	Self-knowledge and management
General education	Social Intelligence

TABLE III: List of competencies by type for the academic programs in Innovation and Transformation (IIT)

Competency type	Competency name
Area	Application of international standards
Area	Commitment to sustainability
Area	Data analysis in engineering and science
Area	Data analysis of chemical and biological systems
Area	Design of maintenance, analysis and fault prevention systems
Area	Engineering problem solving
Area	Foundation of chemical and biological phenomena
Area	Foundation of computer systems
Area	Foundation of engineering and science systems
Area	Foundation of engineering systems and devices
Area	Foundation of natural phenomena
Area	Generation of computational models for data analysis
Area	Problem solution in natural and exact sciences
Area	Problem solving
Area	Problem solving with computing
Area	Solution of chemical or biological process problems
Area	Systems and Engineering Devices Data Analysis
Disciplinary	Automates systems and processes
Disciplinary	Biomedical Engineering Solutions
Disciplinary	Characterization of the land
Disciplinary	Construction management
Disciplinary	Create Technological Base Solutions
Disciplinary	Design mechatronic systems
Disciplinary	Design new technological base business models
Disciplinary	Design of maintenance, analysis and fault prevention systems
Disciplinary	Development of biomedical devices
Disciplinary	Development of business architectures
Disciplinary	Development of manufacturing processes
Disciplinary	Electronic design
Disciplinary	Embedded systems
Disciplinary	Energy systems development
Disciplinary	Foundation of the functioning of living organisms
Disciplinary	Health Technology Management
Disciplinary	Hydraulic systems design
Disciplinary	Improvement of chemical processes
Disciplinary	Improvement of competitiveness in organizations
Disciplinary	Innovation of organizational processes
Disciplinary	Integrates mechanical, electronic, control and software components
Disciplinary	Make proposals for mechanical systems
Disciplinary	Manage innovation projects and programs
Disciplinary	Measurement of medical-biological systems
Disciplinary	Mechanical Engineering Projects Administration
Disciplinary	Mechanical Systems Development
Disciplinary	Multidisciplinary Project Administration
Disciplinary	Smart Robotic and Digital Systems
Disciplinary	Software systems development
Disciplinary	Solutions with systemic vision
Disciplinary	Statistics-based business intelligence
Disciplinary	Structural design
Disciplinary	Telecommunications systems design
Disciplinary	Transformation of mechanical energy
Disciplinary	Transport infrastructure design
General education	Communication
General education	Digital transformation
General education	Ethical and citizen commitment
General education	Innovative entrepreneurship
General education	Reasoning for complexity
General education	Self-knowledge and management
General education	Social Intelligence

TABLE IV: List of competencies by type for the academic programs in Bioengineering (IBQ)

Competency type	Competency name
Area	Application of international standards
Area	Commitment to sustainability
Area	Data analysis in engineering and science
Area	Data analysis of chemical and biological systems
Area	Design of maintenance, analysis and fault prevention systems
Area	Engineering problem solving
Area	Foundation of chemical and biological phenomena
Area	Foundation of computer systems
Area	Foundation of engineering and science systems
Area	Foundation of engineering systems and devices
Area	Foundation of natural phenomena
Area	Generation of computational models for data analysis
Area	Problem solution in natural and exact sciences
Area	Problem solving
Area	Problem solving with computing
Area	Solution of chemical or biological process problems
Area	Systems and Engineering Devices Data Analysis
Disciplinary	BIORREACTORS DESIGN
Disciplinary	Bioprocess design
Disciplinary	Bioproduct development
Disciplinary	Chemical process design
Disciplinary	Design corporate sustainability strategies
Disciplinary	Design of maintenance, analysis and fault prevention systems
Disciplinary	Development of manufacturing processes
Disciplinary	Development of the business plan and economic feasibility
Disciplinary	Evaluate the availability and restitution of natural resources
Disciplinary	Evaluation of sustainable technologies in biosystems
Disciplinary	Food Safety Evaluation
Disciplinary	Food process efficiency evaluation
Disciplinary	Generates comprehensive energy solutions
Disciplinary	Healthy Food Development
Disciplinary	Identify opportunities for improvement in processes
Disciplinary	Improvement of chemical processes
Disciplinary	Improvement of competitiveness in organizations
Disciplinary	Innovation Management
Disciplinary	Integration of productive biosystems
Disciplinary	Integration of technologies in productive biosystems
Disciplinary	Mechanical Engineering Projects Administration
Disciplinary	Mechanical Systems Development
Disciplinary	Personalized food design
Disciplinary	Productive biosystems management
Disciplinary	Technology integration into chemical processes
General education	Communication
General education	Digital transformation
General education	Ethical and citizen commitment
General education	Innovative entrepreneurship
General education	Reasoning for complexity
General education	Self-knowledge and management
General education	Social Intelligence