TEACHING GUIDE

1. BASIC INFORMATION

Subject	**Infrastructure Management and Business Continuity**
Degrees	**Business Engineering (GIE)**
Faculties	**Faculty of Engineering and Business Technology**
ECTS	**6**
Character	**Mandatory**
Language	**English**
Mode	**In-person/Synchronous In-person**
Semester	**Fifth**
Subject Coordinator	**Rafael M. Carreño Morales**

2. PRESENTATION

Business Continuity Management (BCM) and Infrastructure Management gained significant recognition around 2000, and they are the main topics discussed in this subject. BCM proactively manages risks, enabling swift recovery of critical functions after disruptions. This requires a holistic view of infrastructure, emphasizing strategic asset management. Asset Management, including IT Asset Management (ITAM), focuses on identifying critical assets for vulnerability assessment and recovery strategy development within BCM. Maintenance Management ensures the reliability and optimal performance of this critical infrastructure.

3. COMPETENCIES AND LEARNING OUTCOMES

Competencies	Code	Description
Basic Competencies	**BC02**	That students are able to apply their knowledge to their work or vocation in a professional manner and possess the competencies that are usually demonstrated through the development and defence of arguments and problem-solving within their area of study.
General Competencies	**GC01**	Resolve complex and unpredictable situations systematically, creatively, and with critical judgment, making decisions with incomplete information and taking risks in the field of engineering and business.
	GC02	Effectively determine the objectives, priorities, methods, and controls to perform tasks by organizing activities with the available timeframes and resources in the field of engineering and business.
	GC03	Demonstrate the ability to analyse, synthesize, and evaluate data and information in the field of engineering and business.
	GC04	Work in an international and intercultural context in the field of engineering and business.
	GC05	Utilize the potential of cutting-edge technologies to contribute to improving the competitiveness of the company or organization in the field of engineering and business.
	GC06	Know and apply local, regional, national, and international regulations in the field of engineering and business.
Transversal Competencies	**TC03**	Demonstrate oral and written communication skills in a foreign language.
	TC05	Solve problems and make decisions by applying knowledge, methods, and tools in their academic and professional field.

Competencies	Code	Description
	TC07	Demonstrate skills and attitudes for autonomous work and teamwork.
	TC08	Use knowledge, skills, abilities, and attitudes to communicate in digital environments.
Specific Competencies	**SC18**	Develop plans and projects for management in the different functional and operational areas in the business field within the framework of national and international legislation and standards of occupational and ecological safety.

Code	Description
LO01	Apply the principles of enterprise asset management to structure maintenance plans.
LO02	Design corrective, preventive, predictive, and Total Productive Maintenance (TPM) plans.
LO03	Integrate artificial intelligence and Internet of Things technologies into maintenance plans.
LO04	Identify various types of information technology (IT) assets within organizations and demonstrate the ability to design and implement plans for their effective management.
LO05	Develop business protection and recovery plans in the event of business continuity disruptions.
LO06	Ensure adherence to quality criteria in infrastructure management and business continuity.
LO07	Apply relevant legislation and international standards to design security, safety and risk prevention strategies.
LO08	Utilize relevant software tools within the scope of the module/course.
LO09	Develop a final project.

4. CONTENT

Unit I Asset Management

1.1. Maintenance Management and Asset Types.

1.2. IT Asset Management (ITAM).

1.3. Benefits of ITAM.

1.4. ITAM Process.

1.5. Enterprise Asset Management Platforms.

Unit II Maintenance Management

2.1. Maintenance Organization and Maintenance Plan.

2.2. Maintenance Lifecycle Management.

2.3. Reliability of plant and machinery.

2.4. Total Productive Maintenance (TPM).

2.5. Use of IoT in Predictive Maintenance.

2.6. Use of Artificial Intelligence in Predictive Maintenance.

2.7. Reliability-Centred Maintenance (RCM).

Unit III Business Continuity Management

3.1. Introduction to Industrial Safety and Risk Prevention.

3.2. Standards in Security, Safety and Risk Management.

3.3. The Business Continuity Management Approach.

3.4. Quality Criteria for Maintenance and Business Continuity.

3.5. Project.

5. TEACHING AND LEARNING METHODOLOGIES

UIE develops an innovative academic model centered on the learner, combining different philosophical approaches to Teaching-Learning (T-L), a wide variety of learning activities—especially those in which students take an active role in knowledge construction—continuous guidance, and the intensive use of technology as a facilitating tool, creating a unique and innovative learning ecosystem.

The training is conducted in an in-person modality, including synchronous virtual learning, supported by a cutting-edge virtual campus that provides flexibility and personalization within a ubiquitous learning (U-Learning) model.

Additionally, in alignment with its founding and corporate principles of social responsibility, UIE not only encourages the participation of its entire university community in volunteer and social service activities but also incorporates the Service-Learning (ApS) approach as a formal component of its teaching-learning strategies.

Code	Activity	Type	Teaching Modalities	Mode
MD01	First Contact and Motivation	**I**	Introductory	PR
MD02	Presentation, Course Plan and Commitment	**I**		
MD03	Lecture	**T**	Expository and Participatory	PR
MD04	Guest Lectures by Experts	**T**		
MD07	Activity in the Virtual Campus UIE	**T/P**	Guided / Autonomous	PR / NP
MD08	Content Study	**T**	Guided / Autonomous	NP
MD16	Use of Software Tools	**P**	Guided	PR
MD20	Tutoring	**T/P**	Personalized (Individual/Group)	PR
MD21	Learning Agreement	**I/T/P**		
MD24	Analysis and Synthesis of Documentary Material	**T**	Autonomous	NP
MD25	Monitoring and Completion	**C**	Continuous Self-Assessment	NP

I: Informative **T**: Theoretical **P**: Practical **C**: Complementary

PR: In-person **NP**: Non-in-person

6. TRAINING ACTIVITIES

The following identifies the types of educational activities that will be carried out:

Code	Name	Modality	Type of activity
AF01	Introductory	IP	Motivational/Informative
AF02	Expository and Participatory	IP	Theoretical
AF03	Guided	IP	Theoretical / Practical
AF04	Personalized (Individual / Group)	IP	Theoretical / Practical
AF05	Autonomous	NP	Theoretical / Practical
AF06	Service-Learning	IP	Service-Learning
AF07	Continuous self-assessment	NP	Quality Assessment

IP: In-person NP: Non-in-person

7. EVALUATION

The model also includes the continuous assessment process as an essential part of verifying the competencies acquired. For UIE, and in line with the proposed improvement of the teaching-learning process for the European Higher Education Area (EHEA), the assessment system, called Learning Outcomes Review (LOR), is developed as a more humanized process, distancing itself from traditional systems where students risk their fate in exams (sessions), sometimes with high and decisive percentage weights, leading to stress, frustration, and occasionally, dropout.

The UIE LOR system is continuous, shared, and progressive, allowing for the monitoring of learning throughout the entire period, making it a natural process to which students turn without negative emotions and aware of the need to understand their own progress.

Code	Evaluation Activity	Weighting %	Type	Mode
AE01	Partial Tests	45	Discrete	W
AE03	Projects	20	Discrete	W
AE05	Participation in the Virtual Campus	15	Discrete	W
AE06	Participation, Daily Activities and Volunteering	5	Discrete (Pass/ Fail)	O/W
AE08	Service-Learning			
AE09	Digital Portfolio	15	Continuos	E/DF
		100		

Mode: O: Oral W: Written O/W: Both DF: Digital Folder

8. BIBLIOGRAPHY

- An Introduction to Software Asset Management (2015, January). The ITAM Review. https://www.itassetmanagement.net/wp-content/uploads/2010/09/An-introduction-to-SAM.pdf
- Borris, S. (2006). *Total productive maintenance*. McGraw-Hill.
- Business Continuity Management (2019, November). FFIEC Information Technology Examination Handbook. https://ithandbook.ffiec.gov/media/2nifgh2b/ffiec_itbooklet_businesscontinuitymanagement_v3.pdf
- Everest, D., Garber, R. E., Keating, M., & Peterson, B. (2008). *Business Continuity Management*. Institute of Internal Auditors.
- Explained Business Continuity Management. A short guide (2017). Business Continuity Institute. https://www.airmic.com/sites/default/files/technical-documents/EXPLAINED-business-continuity-management.pdf
- Guide to Business Continuity and Recovery Planning (2016, November). Yale Office of Emergency Management. https://emergency.yale.edu/sites/default/files/files/Guide-BCP-General-Audience.pdf
- Hastings, N. (2010). Physical Asset Management. Springer.
- Heizer, J., Render, B., & Munson, C. (2020). *Operations management: sustainability and supply chain management*. Pearson.
- New Hampshire Department of Environmental Services (2023). Asset Management Handbook and Toolkit. https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/wd-21-04.pdf
- Sacristán, F. R. (2001). Manual del mantenimiento integral en la empresa. Fundación Confemetal.
- Stone, M., Irrechukwu, C., Perper, H., & Wynne, D. (2018). IT Asset Management. *NIST special publication*, *1800-5*. National Institute of Standards and Technology.
- The basics of IT asset management (n.d.). Flexera. https://info.flexera.com/ITAM-GUIDE-Basics-of-IT-Asset-Management
- Ucar, A., Karakose, M., & Kırımça, N. (2024). Artificial intelligence for predictive maintenance applications: key components, trustworthiness, and future trends. *Applied Sciences*, *14*(2), 898. MDPI. https://doi.org/10.3390/app14020898

9. TUTORIALS

MD20 Tutorial (2%): Students must attend at least three personalized tutorials throughout the semester. This is an all-or-nothing activity ("Pass-Fail"), meaning that all three tutorials must be completed.

10. QUALITY SURVEYS

MD25 Quality Management (2%): Students must complete four forms throughout the semester related to UIE's quality management. This is an all-or-nothing activity (“Pass-Fail”), meaning that all four forms must be completed within the deadlines specified in the course activity plan. The activity aims to timely assess the development of the teaching-learning process and the transversal competence related to critical and self-critical thinking.