UNIVERSITY of NICOSIA

# Course Outline

| Course Code | Course Title | ECTS Credits |
|---|---|---|
| MIS-450 | Digital Transformation Management | 6 |
| **Prerequisites** | **Department** | **Semester** |
| None | Management | Fall, Spring |
| **Type of Course** | **Field** | **Language of Instruction** |
| Elective | MIS | English |
| **Level of Course** | **Lecturer(s)** | **Year of Study** |
| 1st Cycle | Prof. D. Ktoridou | 3rd and 4th |
| **Mode of Delivery** | **Work Placement** | **Corequisites** |
| Face to face | N/A | None |

**Course Objectives:**

The main objectives of the course are to:

- Iintroduce the concept and fundamental trends of Digital Transformation (DT) in relation to *Business, Technology, Data and People*
- Provide a broad overview of the common Business and Technology drivers to DT
- Highlight the common benefits, goals risks, pitfalls, and adoption considerations of DT
- Explore fundamental concepts of Data intelligence and Intelligent Decision-Making related to DT
- Provide an overview of DT Solutions
- Discuss DT Automation and Data Science Technologies
- Share real-life practical insights into the organizational, cultural, technological, and operational impacts associated with digital transformation initiatives.

**Learning Outcomes:**

After completion of the course students are expected to be able to:

1. Explain the term DT and discuss how the organizational, cultural, technological, and operational impacts associate with DT
2. Explain the common Business and Technology drivers to DT
3. Demonstrate the key common benefits, goals risks, pitfalls, and adoption considerations of DT
4. Explain Data intelligence and Intelligent Decision-Making related to DT
5. Illustrate DT Solutions: Distributed Solution Design and Data Ingress Basics

6. Have an understanding of the emerging DT Automation and Data Science Technologies
7. Practice the knowledge gained to plan, define, design and build DT solution for an industry.

**Course Content:**

**PART I: DIGITAL TRANSFORMATION FUNDAMENTALS**

**Chapter 1: Understanding Digital Transformation**

- *(What is Digital Transformation?)*
- *Business, Technology, Data and People*
  - Digital Transformation and Business
  - Digital Transformation and Technology
  - Digital Transformation and Data
  - Digital Transformation and People
  - Digital Transformation and Organizations and Solutions

**Chapter 2: Common Business Drivers**

- (*What Led to Digital Transformation?)*
- *Losing Touch with Customer Communities*
  - Inability to Grow in Stale Marketplaces
  - Inability to Adapt to Rapidly Changing Marketplaces
  - Cold Customer Relationships
  - Inefficient Operations
  - Inefficient Decision-Making

**Chapter 3: Common Technology Drivers**

- *(What Enables Digital Transformation?)*
- *Enhanced and Diverse Data Collection*
  - Contemporary Data Science
  - Sophisticated Automation Technology
  - Autonomous Decision-Making
  - Centralized, Scalable, Resilient IT Resources
  - Immutable Data Storage
  - Ubiquitous Multiexperience Access

**Chapter 4: Common Benefits and Goals**

- *(Why Undergo a Digital Transformation?)*
- *Enhanced Business Alignment*
  - Enhanced Automation and Productivity
  - Enhanced Data Intelligence and Decision-Making
  - Improved Customer Experience and Customer Confidence

- Improved Organizational Agility
- Improved Ability to Attain Market Growth

**Chapter 5: Common Risks and Challenges**

- *(What Are the Pitfalls?)*
- *Poor Data Quality and Data Bias*
  - Increased Quantity of Vulnerable Digital Data
  - Resistance to Digital Culture
  - Risk of Over-Automation
  - Difficult to Govern

**Chapter 6: Realizing Customer-Centricity**

- *What is a Product?*
- *What is a Customer?*
- *Product-Centric vs. Customer-Centric Relationships*
- *Transaction-Value vs. Relationship-Value Actions*
- *Customer-Facing vs. Customer-Oriented Actions*
- *Relationship Value and Warmth*
  - Warmth in Communication
  - Warmth in Proactive Accommodation
  - Warmth in Customer Rewards
  - Warmth in Exceeding Customer Expectations
- *Single vs. Multi vs. Omni-Channel Customer Interactions*
- *Customer Journeys*
- *Customer Data Intelligence*

**Chapter 7: Data Intelligence Basics**

- D*ata Origins (Where Does the Data Come From?)*
  - Corporate Data
  - Third-Party Data
  - Creating New Corporate Data Intelligence
- *Common Data Sources (Who Produces the Data?)*
  - Operations
  - Customer Data
  - Social Media Data
  - Public Sector Data
  - Private Sector Data
- *Data Collection Methods (How Is the Data Collected?)*
  - Manual Data Entry
  - Automated Data Entry or Collection
  - Telemetry Data Capture
  - Digitization
  - Data Ingress
- *Data Utilization Types (How Is the Data Used?)*
  - Analysis and Reporting

- Automated Decision-Making
- Solution Input
- Bot-Driven Automation
- Model Training and Retraining
- Historical Record Keeping

**Chapter 8: Intelligent Decision-Making**

- *Manual Decision-Making*
  - Computer-Assisted Manual Decision-Making
- *Conditional Automated Decision-Making*
- *Intelligent Manual Decision-Making*
- *Intelligent Automated Decision-Making*
  - Direct-Driven Automated Decision-Making
  - Periodic Automated Decision-Making
  - Realtime Automated Decision-Making
- *Intelligent Manual vs. Intelligent Automated Decision-Making*

**PART II: DIGITAL TRANSFORMATION IN PRACTICE**

**Chapter 9: Understanding Digital Transformation Solutions**

- *Distributed Solution Design Basics*
- *Data Ingress Basics*
  - File Pull
  - File Push
  - API Pull
  - API Push
  - Data Streaming
- *Common Digital Transformation Technologies*

**Chapter 10: An Introduction to Digital Transformation Automation Technologies**

- *Cloud Computing*
  - Cloud Computing in Practice
  - Common Risks and Challenges
- *Blockchain*
  - Blockchain in Practice
    - ✓ Partial Business Data Capture
    - ✓ Full Business Data Capture
    - ✓ Log Data Access Capture
    - ✓ Partial Business Data Store
    - ✓ Ledger Export
  - Common Risks and Challenges
- *Internet of Things (IoT)*
  - IoT Devices
  - IoT in Practice

- Common Risks and Challenges
- *Robotic Process Automation (RPA)*
  - RPA in Practice
  - Common Risks and Challenges

**Chapter 11: An Introduction to Digital Transformation Data Science Technologies**

- *Big Data Analysis and Analytics*
  - The Five Vs of Big Data
  - Big Data in Practice
  - Common Risks and Challenges
- *Machine Learning*
  - Model Training
  - Machine Learning in Practice
  - Common Risks and Challenges
- *Artificial Intelligence (AI)*
  - Neural Networks
  - Automated Decision-Making
  - AI in Practice
  - Common Risks and Challenges

**Chapter 12: Inside a Customer-Centric Solution**

- *Scenario Background*
  - Business Challenges
  - The Original Customer Journey
  - Business Objectives
- *The Enhanced Customer Journey*
  - Supporting Data Sources
  - Step-by-Step Business Process
- *Future Decision-Making*

**Learning Activities and Teaching Methods:**

Faculty Lectures and Guest-Lectures Seminars, Directed and Background Reading Case-studies, In-class Exercises, Student-led Presentations

**Assessment:**

Project, Assignments, Participation/Attendance, Final Exam

**Required Textbooks / Reading**

| Title | Author(s) | Publisher | Year | ISBN |
|---|---|---|---|---|
| Erl-A Field Guide to Digital Transformation,1/e | Thomas Erl<br>Roger Stoffers | Addison-Wesley Professional | 2022 | 13: 9780137571840 |

**Recommended Textbooks / Readings:**

| Title | Author(s) | Publisher | Year | ISBN |
|---|---|---|---|---|
| EDGE: Value-Driven Digital Transformation | Jim Robert Highsmith<br>Linda Luu<br>David Robinson | Addison-Wesley Professional | 2020 | 13: 9780135263617 |
| Agile IT Organization Design: For Digital Transformation and Continuous Delivery | Sriram Narayan | Addison-Wesley Professional | 2015 | 13: 9780133903355 |