**UTCN / Computer Science Department**

**Software Design 2021-2022**

**SCHEDULE**

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| **Week** | **Course Lecture Topic** | **Laboratory activities** | **Project activities** | **Deliverables** |
| **W1** | OO Concepts Review, SOLID | Revision exercises (OOP, UML) | Discuss projects **/** choose project |  |
| **W2** | GRASP, Package Design Principles | Database connection and operations – exercises | Final deadline for choosing the project  **Project Deliverable 1** – presentation and discussion  **- Inception:** Software Requirements, Vision, Use Case Model, Supplementary Specification, Glossary | **L1\_Revision Homework:** all problems resolved |
| **W3** | Architectural Patterns (Layers, Client-server, Broker, MVC) | Package and class design principles – exercises  **Assignment pr**esentation and discussion | **Project Deliverable 1** – progress and discussion | **L2\_Database\_Operations**: Database diagram + sql script to create the database + unit tests for each DB operation |
| **W4** | BLL – **Domain** driven design (Entities, services, repositories, aggregates), Intro to Services (Soap, Rest) | Architectural patterns and styles – **A1 –** exercises  **Assignment A1 –** progress and discussion | **Project Deliverable 2** – presentation and discussion  **Elaboration – Iteration 1.1:** Domain  Models, Architectural Design (architectural patterns and styles, package design, component diagrams, deployment diagrams) | **Project Deliverable 1:** Vision, Use Case Model, Supplementary Specification, Glossary documents |
| **W5** | SOA - **Volatility** driven design (iDesign) | Architectural patterns and styles | **Project Deliverable 2** – progress and discussion | **Assignment A1** |
| **W6** | Data access (DAO, Data Mapper, Lazy load, identity map) | SOA exercises  **Assignment A2** – presentation and discussion |  | **Project Deliverable 2:** Domain Model, Architectural Design, Component and Deployment diagrams |
| **W7** | Live coding session | XML basics – exercises  **Assignment A2 –** progress and discussion | **Project Deliverable 3** – presentation and discussion  **Elaboration – Iteration 1.2:** Design Model (UML sequence, collaboration diagrams, UML class diagrams, design patterns), Data Model |  |
| **W8** | Concurrency (Optimistic/Pessimistic ) Presentation patterns (Page/Front controller, Template/Transform View) | Front-end exercises | **Project Deliverable 3** – progress and discussion | **Assignment A2** |
| **W9** | Creational DP | Creational design patterns – exercises  **Assignment A3** – presentation and discussion |  | **Project Deliverable 3:** Design Model, Data Model |
| **W10** | Structural DP (Composite, Decorator, Proxy, Bridge), | Structural design patterns – exercises  **Assignment A3** – progress and discussion | **Project** – presentation and discussion  **Elaboration – Iteration 2:** Package design refinement, Design model refinement (class design principles, more GoF patterns) |  |
| **W11** | Behavioral DP (Strategy, State, Command, Chain of Responsibility) | Behavioral design patterns – exercises | **Project** – presentation and discussion | **Assignment A3** |
| **W12** | Quality Attributes |  |  | **Project Final Presentation:** Design and Implementaon |
| **W13** | Exam Review, Q&A |  |  | **Project Final Presentation:** Design and Implementattiion |
| **W14** | De rezerva daca a fi Midterm |  |  | **Late Assignments and Projects** |

* **Laboratory policy**
  + **Laboratory sessions are compulsory – no more than 3 absences are allowed.**
  + **Assignments and project deliverables must be presented when established. One delay/semester is accepted, while the other delays are penalized as following:**
    - **You have a delay of 1 week then you lose one point of the assignment final grade. (Not applied if it is the first delay in the semester.)**
    - **You have a delay of 2 weeks then you lose two points of the assignment final grade.**
    - **You have a delay of 3 weeks then you lose four points of the assignment final grade.**
    - **You have a delay of > 3 weeks then you do not pass the assignment.**
  + **A single assignment can be presented during a laboratory session.**
  + **No migration between groups is allowed**
* **Grading**
  + **Assignment grading: 0.3 \* Documentation\_grade + 0.7 \* Implementation\_grade**
  + **Project grading: 0.1\*Deliverable1 + 0.1\*Deliverable2 + 0.1\*Deliverable3 + 0.3\*Final Design + 0.4\*Implementation**