**UTCN / Computer Science Department**

**Software Design 2016/2017**

**LABORATORY SCHEDULE**

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| --- | --- | --- | --- | --- |
| **Week** | **Course Topic** | **Laboratory activities** | **Project activities** | **Deliverables** |
| **W1** | OO Concepts Review | Revision exercises (OOP, UML, Design Patterns, Testing techniques) | Discuss projects **/** choose project |  |
| **W2** | Structural (Layers, Pipes&filters, Blackboard), Distributed (Broker, MVC) | 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** | Patterns for Enterprise Application Architecture [Fowler] Intro, Business Logic (Transaction Script, Domain Model), Hybrid (Table Module, Active Record) | Architectural patterns and styles – exercises  **Assignment A1 –** presentation 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** | Data Source Patterns (RDG, TDG, DM), Concurrency | **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** | Class design principles (SOLID, GRASP) |  | **Project Deliverable 2** – progress and discussion | **Assignment A1** |
| **W6** | Package Design Principles, Architectural patterns [POSA] | XML basics – exercises  **Assignment A2** – presentation and discussion |  | **Project Deliverable 2:** Domain Model, Architectural Design, Component and Deployment diagrams |
| **W7** | Creational DP (Factory method, prototype, abstract factory, singleton, builder) | Design patterns – 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** | Structural DP (Composite, Decorator, Proxy, Bridge), |  | **Project Deliverable 3** – progress and discussion | **Assignment A2** |
| **W9** | Behavioral DP (Strategy, State, Command, Chain of Responsibility) | Package and class design principles – exercises  **Assignment A3** – presentation and discussion |  | **Project Deliverable 3:** Design Model, Data Model |
| **W10** | Service Oriented Design (SOAP, REST) | **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** | Designing for performance/scalability |  | **Project** – presentation and discussion | **Assignment A3** |
| **W12** | Designing for availability/maintainability/security |  |  | **Project Final Presentation:** Design and Implementation |
| **W13** | Evaluating Architectures (OO Metrics, ATAM methodology) |  |  | **Project Final Presentation:** Design and Implementation |
| **W14** |  |  |  | **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 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 starting from the second week of the semester. If somebody wants to attend the lab with another group it should:**
    - **Present good reasons for that IN THE FIRST WEEK OF THE SEMESTER**
    - **Notify both lab assistants (source and target groups) IN THE FIRST WEEK OF THE SEMESTER**
* **Grading**
  + **Assignment grading: 0.5 \* Documentation\_grade + 0.5 \* Implementation\_grade**
  + **Project grading: 0.1\*Deliverable1 + 0.1\*Deliverable2 + 0.1\*Deliverable3 + 0.3\*Final Design + 0.4\*Implementation**