Obuda University John von Neumann Faculty of Informatics	Software Engineering Institute

Name and code: Advanced Development Techniques (NSXHF1EBNE) **Credits:** 4
Computer Science BSc
Daytime 2022/23 year I. semester

Subject lecturers: Sipos Miklós László, Bari Zsolt

Prerequisites (with code):	Software Design and Development I., Software Design and Development II.			
Weekly hours:	Lecture: 0	Seminar.: 0	Lab. hours: 3	Consultation: 0
Way of assessment:	Mid-semester grade			

Course Description

Goal:
Familiarize the students with the advanced topics of C# programming. One lesson from the weekly three is held as a lecture.

Course description:
Advanced techniques of the C# language (Lambda expressions, LINQ, Entity Framework, Attributes, Reflection, DLL, Unit tests, Mock, Processes, Threads and Tasks)

Weekly Schedule

Education week	*Topic*
1.	Lecture: Introduction, Requirements, Delegates Lab: Delegates, Lambda
2.	Lecture: Layering/ORM Lab: LINQ, XLINQ
3.	Lecture: DLL, Reflection, Layering Lab: Reflection, DLL
4.	Lecture: Databases Lab: Code First DB, EFCore
5.	Lecture: Layering Lab: Layered project example
6.	Lecture: Unit testing theory Lab: Unit testing (NUnit)
7.	Lecture: Dependency Injection, Mock theory Lab: Mock (Moq)
8.	Lecture: Git SCM basics Lab: Exam exercise
9.	Lecture: Data Exchange Protocols (web API) Lab: **Lab exam**
10.	Lecture: DevOps basics, CI/CD Lab: API endpoint
11.	Lecture: Parallel programming I. Lab: Process
12.	Lecture: Parallel programming II. Lab: Thread, Task
13.	Lecture: Parallel programming III., **Theory exam** Lab: ThreadSync
14.	Lecture: **Theory exam retake** Lab: **Lab exam retake**

Midterm Requirements

Students write two exams, one on the 9th week during lab occasion and one on the 13th week during lecture occasion. Writing the exams is obligatory. In order to pass the lab exam, at least 50% should be reached. If the student does not write the lab exam or does not reach 50% then it can be re-written during the last lab occasion. In order to pass the lecture exam, minimum 50% should be reached. If the student does not write the lecture exam or does not reach 50% then it can be re-written during the last lecture occasion. Both of them is possible to be re-written. If there were re-writing, then the final result will be the re-written exam's result.

The student can re-write the exam (lab and lecture) even if on the first try 50% (or more) was reached. In this case the final result will be the re-written exam's result.

Students have to create a project work on their own, that shows how they mastered the semester's knowledge materials and key topics. During the creation of the project work students have to meet specific requirements and pass milestones. Project works will be evaluated on a passed/rejected binary scale by the lab teacher. Details will be described during the semester around the 4th week.

Project work has to be submitted until the given deadline. If the project work has not been submitted, or the teacher does not accept the quality of the work, or it simply does not fulfil the minimum requirements, then the project work has to be corrected and re-presented again. The first submission's date is during the 13th week of the semester. If the student was not able to submit the work or it was rejected (as previously stated) then one week later, during the 14th week of the semester, it can be fixed and re-submitted. If during the second try the project work was not submitted or was not accepted, during the exam season it can be re-presented again. For both of re-submissions fee is required. For the deadlines an exact date and time will be determined by the teacher.

By the end of the 14th week, students should have a successful lab exam and a successful lecture exam and an accepted project work. If any of these components is missing, then the student can correct the missing component only in the exam season (even all three of them can be corrected) for extra fee.

Depending on the pandemic situation's momentary state, the lecture and/or lab occasions may be held online. Even in this case, the lab exams are tried to be held in person, depending on the situation. Details will be specified accordingly to the pandemic situation.

Midterm Test Scheduling

Education week	*Topic*
9.	Written examination (lab)
13.	Written examination (theory)
14.	Written examination retake (lab and theory)

Final Grade Calculation Methods

Mid-semester grade can only be given to a student who passed both lab and lecture exams, and who has an accepted project work. One possible scale for the semester: lab exam 50 points, lecture exam 50 points. Based on this, the exams's 50% means 25 points, and the project work must be accepted. These are the minimum requirements which needs to be acquired. Note that both the lecture and the lab exam needs to reach at least 50% of the points. Considering this scale, student's grade will be calculated: excellent (86-100), good (74-85), average (63-73), satisfactory (50-62), failed (0-49).

Students will receive "Letiltva" (banned) status in the system, if they miss 30% (or more) of the lecture occasions. Students will receive "Letiltva" (banned) status in the system, if they miss 30% (or more) of the lab occasions. In this case according to the Study And Examination Regulations Of Óbuda University there is no possibility to complete the subject in the current semester.

Method of Replacement

At the 14th week of the semester both the lecture and the lab exam can be re-written.

At the 14th week the project work can be re-presented to be accepted.

During the exam season, students can correct the missing component (lab exam and/or lecture exam and/or project work) if there is any.

References

Mandatory:
The lecture and lab materials (codes, slides etc.) provided by the teacher to the students during the semester. https://users.nik.uni-obuda.hu/siposm/adt

Recommended:
Cormen, Leiserson, Rivest, Stein: Új algoritmusok, Scolar Kiadó, 2003
Bradley L. Jones: C# mesteri szinten. Kiskapu Kiadó, 2004
Kotsis et al.: Többnyelvű programozástechnika, PANEM, 2007
Reiter István: C# jegyzet, DevPortal, 2010
Microsoft official C# documentation: https://docs.microsoft.com/en-us/dotnet/csharp/