COURSE SYLLABUS AND COURSE REQUIREMENTS
ACADEMIC YEAR 2024/15 SEMESTER 2

Course title	*Programming 3*
Course Code	IVB055ANMI
Hours/Week: le/pr/lab	2 / 0 / 2
Credits	5
Degree Programme	IVB055ANMI
Study Mode	*Full-time*
Requirements	Term mark
Teaching Period	2025-26 / 2
Prerequisites	Programming 2
Department(s)	Systems and Software Technologies
Course Director	*Dr. Storcz, Tamas*
Teaching Staff	*Dr. Storcz, Tamas*

COURSE DESCRIPTION

A short description of the course (max. 10 sentences).
Neptun: Instruction/Subjects/Subject Details/Basic data/Subject description

Students can observe how transferable their previously acquired object-oriented programming knowledge is. Compared to Java, they can see how OOP principles are expressed in C#. Building on this, they learn to create console and event-driven desktop applications, and to use databases and other technological components in the Microsoft .NET environment.

SYLLABUS

Neptun: Instruction/Subjects/Subject Details/Syllabus

1. GOALS AND OBJECTIVES

Goals, student learning outcome.
Neptun: Instruction/Subjects/Subject Details/Syllabus/Goal of Instruction

Through the specifics of C# and the differences between Java and C#, students apply and expand their general object-oriented programming knowledge. They learn the structure of the .NET architecture and how to develop for it in C# within the Visual Studio environment. As a result, they gain the ability to create complex Windows applications in the Microsoft .NET environment.

2. COURSE CONTENT

Neptun: Instruction/Subjects/Subject Details/Syllabus/Subject content

	TOPICS
LECTURE	1. *Source code management, .NET environment* 2. *Object-oriented programming in C#* 3. *Developing Windows Forms applications* 4. *Using advanced technologies (databases, threads, networking)*
LABORATORY PRACTICE	1. *Source code management, .NET environment* 2. *Object-oriented programming in C#* 3. *Developing Windows Forms applications* 4. *Using advanced technologies (databases, threads, networking)*

DETAILED SYLLABUS AND COURSE SCHEDULE

ACADEMIC HOLIDAYS INCLUDED

LECTURE

week	**Topic**	**Compulsory reading; page number (from … to …)**	**Required tasks (assignments, tests, etc.)**	**Completion date, due date**
1.	The .NET platform, Visual Studio IDE, C# fundamentals. Encapsulation, properties, methods	[1]/1 [2]:7-30 [1]/2, [2]: 31-59		
2.	Static components, arrays, commonly used classes, data formatting, exceptions	[1]/3, [2]:60-80, [3]: 24-27		
3.	Inheritance, polymorphism, abstract classes	[1]/4, [2]: 81-88		
4.	Interfaces, enums, method pointers (delegates)	[1]/5, [2]: 88-115		
5.	Event-driven programming, Windows Forms applications, basic controls	[1]/6, [3]: 1-14	Theoretical test	Week #10
6.	Windows Forms input controls and their usage, containers	[1]/7, [3]: 15-23, [3]: 27-30, [3]: 55-57		
7.	Dialog windows, event handling, dynamic control management, menus, Timer, MDI	[1]/8, [3]: 31-54, [3]: 58-90, [3]: 91-130		
8.	Multimedia, thread management	[1]/9,		
9.	Spring break			
10.	Database access, data presentation	[1]/10		
11.	Entity Framework, WCF, WPF	[1]/11		
12.	MAUI			
13.	Frameworks			
14.	Questions and answers			

PRACTICE, LABORATORY PRACTICE

week	**Topic**	**Compulsory reading; page number (from … to …)**	**Required tasks (assignments, tests, etc.)**	**Completion date, due date**
1.	Visual Studio and console applications; creating classes and objects			
2.	Reading text files, storing data in arrays, exception handling			
3.	Inheritance, polymorphism, abstract classes			
4.	Interfaces, enums, method pointers (delegates)			
5.	Creating Windows Forms applications; using basic controls		Practical test	Week #10
6.	Using Windows Forms input controls			
7.	Dialog windows; dynamic control management			
8.	Multimedia and thread management			
9.	Spring break			
10.	Managing database connections		Practical exam test	In class
11.	MAUI		Theoretical exam test	In class
12.	Solving a complex programming task		Test retake	In class
13.	Programming exam		Programming exercise	In class
19.	Programming exam retake		Programming retake	In class

3. ASSESSMENT AND EVALUATION

(Neptun: Instruction/Subjects/Subject Details/Syllabus/Examination and Evaluation System)

ATTENDANCE

In accordance with the Code of Studies and Examinations of the University of Pécs, Article 45 (2) and Annex 9. (Article 3) a student may be refused a grade or

qualification in the given full-time course if the number of class absences exceeds 30% of the contact hours stipulated in the course description.

Method for monitoring attendance *(e.g.: attendance sheet / online test/ register, etc.)*

on-line test

ASSESSMENT

Cells of the appropriate type of requirement is to be filled out (course-units resulting in mid-term grade or examination). Cells of the other type can be deleted.

Course resulting in mid-term grade *(PTE TVSz 40§(3))*

Mid-term assessments, performance evaluation and their ratio in the final grade *(The samples in the table to be deleted.)*

The results of the attendance-checking online quizzes do not count toward the mid-semester assessment; they can only earn bonus points, depending on performance and completion time.
Completing the mid-semester practice tests with at least 70% is a requirement for passing the course. The number of attempts is unlimited, and the best result counts. The practice test scores themselves do not count toward the mid-semester grade.

None of the assessments is mandatory; the result of the programming exercise replaces the result of the practical test. A 100% overall result is possible by choosing the theoretical test AND the programming exercise.

Type	Assessment	Ratio in the final grade
Theoretical practice test min. 70%	*100%*	*0%*
Practice test min. 70%	*100%*	*0%*
Theoretical exam	*100%*	*40%*
Practical exam OR programming exercise	*100%*	*30% OR 60%*
Total		*70% OR 100%*

Opportunity and procedure for re-takes (PTE TVSz 47§(4))

The specific regulations for improving grades and resitting tests must be read and applied according to the general Code of Studies and Examinations. E.g.: all tests and assessment tasks can be repeated/improved at least once every semester, and the tests and home assignments can be repeated/improved at least once in the first two weeks of the examination period.

Attendance-check quiz: cannot be made up
Theoretical and practical midterm exam: in Week 12, during the lab session
Programming assignment: in Week 14, during the lab session

Grade calculation as a percentage

based on the aggregate performance according to the following table

Course grade	Performance in %
excellent (5)	85 % …
good (4)	70 % ... 85 %
satisfactory (3)	55 % ... 70 %
pass (2)	40 % ... 55 %
fail (1)	below 40 %

The lower limit given at each grade belongs to that grade.

4. SPECIFIED LITERATURE

In order of relevance. (In Neptun ES: Instruction/Subject/Subject details/Syllabus/Literature)

COMPULSORY READING AND AVAILABILITY

[1] Storcz, Tamás: Programming 3: lecture notes

RECOMMENDED LITERATURE AND AVAILABILITY

[2] Microsoft Learn: https://docs.microsoft.com/en-us/learn/
[3] Microsoft developer: https://developer.microsoft.com
[4] Knowledge documents: https://docs.microsoft.com
[5] Microsoft Virtual Academy