## COURSE SYLLABUS AND COURSE REQUIREMENTS
## ACADEMIC YEAR 2023/2024 SEMESTER 2

| | |
|---|---|
| *Course title* | *Programming 3* |
| *Course Code* | IVB055MNMI |
| *Hours/Week: le/pr/lab* | 2 / 0 / 2 |
| *Credits* | 5 |
| *Degree Programme* | Computer science engineering BSc |
| *Study Mode* | *Full-time* |
| *Requirements* | Term mark |
| *Teaching Period* | 2023/2024-2 |
| *Prerequisites* | Programming 2 |
| *Department(s)* | Systems and Software Technologies |
| *Course Director* | *Tamás STORCZ* |
| *Teaching Staff* | *Tamás STORCZ* |

## COURSE DESCRIPTION

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

Student can see portability of generic object-oriented knowledge between programming languages.

They can see the appearance of OOP concepts and tools in C#. They can compare these languages to see possibilities and restrictions and the difference in OOP implementations.

Applying their knowledge students learn to create .Net Console Applications and event driven Windows Forms applications. In the second part of the course, students see how applications can connect to databases and other advanced development tools in .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 C# language syntax, students apply and extend generic object-oriented programming knowledge. They would know the main components of .Net infrastructure and programming in C# language, using Visual Studio IDE.

They would have an ability to create .Net applications with console- or graphical user interface, using advanced development tools to consume advanced system resources like databases, network communication, etc.

### 2. COURSE CONTENT

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

| TOPICS | |
|---|---|
| **LECTURE** | 1. *.Net environment and the Visual Studio* |
| | 2. *Object oriented programming in C#* |
| | 3. *Building Windows Forms applications* |
| | 4. *Advanced programming (databases, threads, network, git)* |
| **PRACTICE** | 1. *.Net environment and the Visual Studio* |
| | 2. *Object oriented programming in C#* |

|  | 3. | Building Windows Forms applications |
|---|---|---|
|  | 4. | Advanced programming (databases, threads, network, git) |

| **LABORATORY PRACTICE** | - |
|---|---|

# 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. | A .Net platform, Visual Studio IDE, C# basics | [1]/1 | | |
| 2. | Encapsulation, properties, methods | [1]/2 | | |
| 3. | Static components, arrays, commonly used classes, exceptions | [1]/3 | | |
| 4. | Inheritance, polymorphism, abstract classes | [1]/4 | | |
| 5. | Interface, enum, method reference | [1]/5 | | |
| 6. | Events, WindowsForms application, basic controls | [1]/6 | | |
| 7. | WindowsForms input controls and containers | [1]/7 | | |
| 8. | DialogWindows, Event handling, dynamic control management, Menu, Timer, MDI | [1]/8 | | |
| 9. | Multimedia, threads | [1]/9 | | |
| 10. | Database access, data presentation | [1]/10 | | |
| 11. | EntityFramework, WCF, WPF | [1]/11 | | |
| 12. | **Theoretical ecam** | | **Th. exam** | Practice of week 14 |
| 13. | National holliday | | | |
| 14. | **Theoretical exam retake** | | **Complex exam** | Practice of week 15 |

## *PRACTICE, LABORATORY PRACTICE*

| week | Topic | Compulsory reading; page number (from … to …) | Required tasks (assignments, tests, etc.) | Completion date, due date |
|---|---|---|---|---|
| 1. | VisualStudio and Console Application | [1]/1 | | |
| 2. | C# class and object creation | [1]/2 | | |
| 3. | Read text file, store in array, exception handling | [1]/3 | | |
| 4. | Inheritance, polymorphism, abstract classes | [1]/4 | Homework publication | week 8 |
| 5. | Interface, enum, method reference | [1]/5 | | |
| 6. | Creating WindowsForms application, usage of basic controls | [1]/6 | | |
| 7. | Utilization of Windows Forms input controls | [1]/7 | | |
| 8. | Dialog windows, dynamic control management | [1]/8 | | **Homework deadline** |
| 9. | Multimedia, threads | [1]/9 | | Homework resubmission |
| 10. | Database access, data presentation | [1]/10 | | |
| 11. | **Practical exam** | | Pr. exam | Practice of week 13 |
| 12. | Recap, git | | | |
| 13. | National holliday | | | |
| 14. | **Practical exam retake** | | Complex exam | Practice of week 15 |

### 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.)*

| Type | Assessment | Ratio in the final grade |
|---|---|---|
| *Homework* | *100 points* | *60%* |
| *Theoretical exam (test)* | *100 points* | *20%* |
| *Practical exam (programming), replaces homework* | *100 points* | *80%* |

**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.*

Participation inspection:
- NO RETAKE

Homework:
- Modified solution can be submitted until week 9.

Theoretical and practical exam:
- on week 13. complex (theory and practice)
- on 1st week of exam period, complex (theory and practice)

**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