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| The title of the course | **Programming III** |
| Faculty | [Faculty of Mechanical Engineering and Computer Science](http://eng.ath.bielsko.pl/index.php/faculties/gerg) |
| The level of studies | Undergraduate (BA) |
| Semester | Winter |
| The form of classes and number of hours | Laboratory/Project (15h/30h) |
| Language of instruction | English |
| The number of ECTS | 3 |
| Teacher | Dr hab. Mirosław Kordos, prof. UBB |
| The aims of the course | The students will learn the basics of programming in C# language in Visual Studio 2013 using Console Applications and Windows Forms applications. |
| The content of the course: main topics and key ideas | 1. Data types, flow control, type casting, console input and output. 2. Arrays. 3. Methods, passing parameters by value and reference, named and default parameters. 4. Objects, classes, structures, private, public and protected fields, properties and methods, constructors, methods overriding. 5. Inheritance. Interfaces. Abstract classes and methods, polymorphism. 6. Operator overloading, extension methods, indexers, inner classes. 7. Files: reading and writing. 8. Collections and generics. (List, Dictionary, SortedSet, etc.) 9. Multithreading: Thread, Task, class Parallel. 10. String types. StringBuilder, regular expressions 11. Unmanaged code and pointers. 12. GDI graphics. |
| Didactics methods | Lectures: powerpoint presentations and live demonstrations of writing code in C#.  Labs: students create their own simple programs in C#. |
| Course requirements | Exam, attendance |
| Literature (basic and supplementary) | * Mark Michaelis: Essential C# 5.0, Addison-Wesley, 2012 * John Sharp, Microsoft Visual C# 2012 Step By Step,Microsoft Press, 2012 * [Bart De Smet](http://www.amazon.com/s/ref=ntt_athr_dp_sr_1?_encoding=UTF8&field-author=Bart%20De%20Smet&search-alias=books&sort=relevancerank), C# 5.0 Unleashed * Sams Publishing, 2013 * [www.csharp-station.com](http://www.csharp-station.com) * msdn.microsoft.com |
| The effects of the education   * knowledge * skills * social competences | * knowledge: The students will learn the syntax of C# * skills: The students will learn practical programming skills * social competences: the students will learn the group cooperation by writing some code in groups. |