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| The title of the course | **Programming Database Applications (Programming IV)** |
| Faculty | [Faculty of Mechanical Engineering and Computer Science](http://eng.ath.bielsko.pl/index.php/faculties/gerg) |
| The level of studies | Undergraduate (BA) |
| Semester | Summer |
| 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 performing operations on SQL data bases using C# language (ADO.NET and LINQ) and creating WPF (Windows Presentation Foundation) applications in Visual Studio 2013. |
| The content of the course: main topics and key ideas | 1. Configuring SQL Server. Connection strings. SQLConnection, SQLCommand, SQLDataReader. Select, Insert, Update, Delete commands. SQL injection, SQLCommand parameters. 2. Stored procedures. Factory Provider, MARS, configuration files. 3. Disconnected Class: SqlDataAdapter, DataSet, DataTable. 4. LINQ to Objects. LINQ statements and LINQ lambda expressions. 5. LINQ to SQL. LINQ to Stored Procedures. 6. Joining, groupping, aggregates and sorting in LINQ. 7. SQL Transactions, transaction isolation levels. Dynanamic LINQ. 8. Entity Framework. 9. LINQ to XML. 10. WPF applications, XAML, panels, events. 11. Transformations, Resources, Styles, Templates w WPF. 12. WPF Controls. Creating User Controls. Data Binding. 13. 2D Graphics WPF. 14. 3D Graphics WPF. 15. Animations, Audio and Video in WPF. |
| 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) | * Adam Nathan: WPF 4.5 Unleaashed, Sams Publishing, 2013 * Glenn Johnson, Accessing Data with Microsoft .NET Framework 4. MCTS Exam 70-516 Training Kit, Mocrosoft Press, 2011 * Andrew Troelsen, Pro C# 5.0 and the .NET 4.5 Framework, Apress, 2012 * Microsoft Visual C# 2012 Step By Step, Microsoft Press, 2012 * [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 concepts of SQL operations * knowledge: the students will learn the concepts of XAML * skills: The students will learn accesing SAL databases from .NET environment * skills: The students will learn creating WPF applications * social competences: the students will learn the group cooperation by writing some code in groups. |