

**MODULE SPECIFICATION**

<b>Name of Module</b>		Database Systems					
<b>Parent School/Dept</b>		Computer Science/Information Systems					
<b>Programme(s) where module is offered</b>		BSc Computer Science with Electrical Engineering; BSc Computer Science with Economics; BSc Computer Science with Business; BSc Computer Science with International Relations; BSc Computer Science with Political Science; BSc Information Systems with Electrical Engineering; BSc Information Systems with Economics; BSc Information Systems with Business; BSc Information Systems with International Relations; BSc Information Systems with Political Science;					
<b>Status</b> (core, option, free choice)		Core		<b>Pre-Requisite Modules or Qualifications</b>		None	
<b>FHEQ Level</b>	5	<b>Unit Value</b>	6 ECTS	<b>Module Code</b>	<b>CS240</b>	<b>Module coordinator</b>	Amer Hadžikadić
<b>Term taught</b>		Spring		<b>Applicable From</b>		2016	

**Educational Aims of the Module**

The aim of this module is to introduce students to the fundamental concepts and principles of databases, particularly relational databases. It leads students through the process and techniques of database modelling, design, implementation and management. It also provides students with hands-on practice and skills in developing a database system using a commercial DBMS software, specifically Oracle. This module also serves as a good foundation for the data warehousing and data mining module that follow.

**Module Outline/Syllabus**

- Introductory knowledge of the underlying concepts associated with databases: data, file and database concepts; database management system (DBMS); types of databases; database life-cycle;
- Relational database: tables; keys; relationships; basic relational algebra;
- Data modelling: basic data abstraction; introductory conceptual data models; entity; attribute; relationship; entity-relationship (E-R) modelling technique; E-R diagram;
- Database design: basic design problems; first, second and third normal forms; normalisation process;
- Database implementation: introduction to structured query language (SQL), data definition and manipulation commands; queries and reports;
- Database management: policies and strategies;
- Basic database trends: object-orientated databases, data warehouses, web databases, distributed databases.

**Student Engagement Hours**

Type	Number per Term	Duration	Total Time
Lectures	30	2 hours	60 hours
Laboratory sessions	15	2 hours	30 hours
Total Guided/Independent Learning Hours			<b>60</b>

Total Contact Hours	90
Total Engagement Hours	150

### Assessment Method Summary

Type	Number Required	Duration / Length	Weighting	Timing/Submission Deadline
Final exam	1	180 minutes	50%	End of semester
Mid-term exam	1	90 minutes	15%	Week 10
Project (group)	1	2,500 words	15%	Week 15
Test	2	90 minutes	20%	Weeks 4 and 13

### Module Outcomes

<p><b><u>Intended Learning Outcomes:</u></b></p> <ol style="list-style-type: none"> <li>Demonstrate an understanding of basic database concepts and principles</li> <li>Build conceptual data models for a variety of business scenarios</li> <li>Data modelling using ERD with Crow Foot Notation</li> <li>Develop a working database application using a commercial DBMS software</li> <li>Produce basic SQL based reports and visualizations on the selected database</li> </ol>	→	<p><b><u>Teaching and Learning Strategy:</u></b></p> <ol style="list-style-type: none"> <li>Lectures provide core information on specific topics (ILO: 1, 2, 5)</li> <li>Laboratory sessions use examples and solutions to illustrate the theory (ILO: 2, 3, 4)</li> <li>Laboratory sessions provide a series of development exercises to apply the theory (ILO: 4)</li> <li>Independent study is based on the recommended text (ILO: 1-5)</li> <li>Group project enables students to develop communication skills and apply what they have learnt in the module to a practical problem (ILO 3, 4)</li> </ol>
	→	<p><b><u>Assessment Strategy</u></b></p> <ol style="list-style-type: none"> <li>Test (ILO: 1-3)</li> <li>Mid-term exam (ILO:1-3)</li> <li>Final exam (ILO:1-5)</li> <li>Project (group) (ILO: 1-5)</li> </ol>
<p><b><u>Practical Skills</u></b></p> <ol style="list-style-type: none"> <li>Create database from scratch including ERD and SQL</li> <li>Use one major DBMS</li> <li>Utilise specialist resources for Database Systems Research</li> </ol>	→	<p><b><u>Teaching and Learning Strategy:</u></b></p> <ol style="list-style-type: none"> <li>Laboratory sessions (PS: 1, 2)</li> <li>Project (PS: 1, 2)</li> </ol>
	→	<p><b><u>Assessment Strategy</u></b></p> <ol style="list-style-type: none"> <li>Test (PS: 1-3)</li> <li>Project (PS: 1-3)</li> </ol>
<p><b><u>Transferable Skills</u></b></p> <ol style="list-style-type: none"> <li>Abstract thinking</li> <li>Ability to work in teams</li> <li>Critical thinking skills</li> </ol>	→	<p><b><u>Teaching and Learning Strategy:</u></b></p> <ol style="list-style-type: none"> <li>Laboratory sessions with hands-on experience with Oracle (TS: 1, 3)</li> <li>Projects (TS: 1, 2, 3)</li> </ol>
	→	<p><b><u>Assessment Strategy</u></b></p>

		<ol style="list-style-type: none"> <li>1. Final exam (TS: 1, 3)</li> <li>2. Project (TS: 1-3)</li> </ol>
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<b><u>Key Texts and/or other learning materials</u></b>	
<b>Set Text</b>	
<ul style="list-style-type: none"> <li>• Morris, S., Coronel, C., (2014), <i>Database Systems: Design, Implementation and Management</i>, 11<sup>th</sup> Edition, Course technology Inc.</li> </ul>	
<b>Supplementary Materials</b>	
<ul style="list-style-type: none"> <li>• Connolly, T., Begg, C., (2014), <i>Database Systems: A Practical Approach to Design, Implementation and Management</i>, Global Edition, Pearson Education</li> <li>• Garcia-Molina, H., et al., (2013), <i>Database Systems: The Complete Book</i>, Pearson</li> <li>• Further material to be advised</li> </ul>	
<p><b>Please note:</b> This specification provides a concise summary of the main features of the module and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module and programme can be found in the departmental or programme handbook. The accuracy of the information contained in this document is reviewed annually by the University of Buckingham and may be checked by the Quality Assurance Agency.</p>	
<b>Date of Production</b>	Spring 2019
<b>Date approved by School Learning and Teaching Committee</b>	28 <sup>th</sup> September 2016
<b>Date approved by School Board of Study</b>	12 <sup>th</sup> October 2016
<b>Date approved by University Learning and Teaching Committee</b>	2 <sup>nd</sup> November 2016
<b>Date of Annual Review</b>	December 2017