**Modules Catalogue: DL836 – BSc (Honours) in Creative Computing**

Erasmus students can study either year 2 or year 3 for the full academic year only.

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| **YEAR** | **MODULE CODE** | **MODULE TITLE** | **ECTS** | **SEMESTER** | **MODULE AIMS / LEARNING OUTCOMES** |
| 2 | PROG H2004 | **Computer Architecture and Operating Systems** | 10 | Full Academic Year | The aim of this module is to provide students with the theoretical and applied knowledge of computer platforms, including architecture and operating systems concepts.  On successful completion of the module, students will be able to:   * Explain the fundamental principles of operating systems. * Explain concurrency and synchronisation issues that arise within operating systems and applications. * Describe input/output and storage abstractions used in modern operating systems. * Perform command-line operations to control and manipulate an operating system. |
| 2 | COMP H2003 | **Software Design and Development** | 10 | Full Academic Year | The aim of this module is to improve the students’ problem solving and programming skills and to develop their knowledge and skills in relation to software design and development.  On successful completion of the module, students will be able to:   * Explain the importance of quality software engineering and the software development lifecycle. * Analyse clients’ software needs, and define the scope and requirements for a software project. * Use UML and object-oriented design techniques to analyse and design software projects. * Analyse and select the appropriate algorithms and data structures to solve programming problems. * Design, implement, test and debug programs with an appropriate level of expertise. |
| 2 | COMP H2006 | **Database Management Systems** | 5 | Full Academic Year | The aim of this module is to provide students with a firm foundation in the principles and use of database management systems.  On successful completion of the module, students will be able to:   * Use SQL and Transact SQL for a range of database functions. * Design a relational database from a set of requirements. * Describe the recovery mechanisms for a DBMS. * Explain concurrency control methods. * Select appropriate indexing methods. * Describe query optimisation, distributed database and multimedia database issues. |
| 2 | MULT H2001 | **Computer Modelling** | 10 | Full Academic Year | The aim of this module is to provide the student with an introduction to the mathematical, statistical, problem solving, and programming skills needed to model, visualise and animate data or phenomena, using the appropriate computing tools.  On successful completion of the module, students will be able to:   * Solve a range of fundamental mathematical/statistical problems, using a given set of mathematical/statistical rules and techniques. * Describe the role of mathematics and statistics in the process of modelling, visualising and animating data and phenomena. * Apply appropriate mathematical, statistical and programming techniques to model, visualise and animate data or phenomena. |
| 2 | COMP H2012 | **Advanced Web Design and Development** | 10 | Full Academic Year | The aim of this module is to improve students’ knowledge and skills in relation to web design, development and testing with an emphasis the use design and development frameworks.  On successful completion of the module, students will be able to:   * Explain the principles of web design and development, and apply those principles in designing and developing websites. * Implement web designs using current web design and development tools and techniques, including CSS and JavaScript frameworks. * Implement the front-end and back-end of a website using appropriate programming/scripting languages and frameworks. * Test and evaluate websites in relation to their design and development. |
| 2 | COMP H2014 | **Software Project** | 10 | Full Academic Year | The aim of this module is to provide students with an opportunity to develop their skills and competencies in relation to the design and development software applications using a range of different tools.  On successful completion of the module, students will be able to:   * Design, implement, test, debug and document a software application using appropriate tools and techniques at an advanced level. * Integrate the skills they have learnt in other modules to anaylse and solve computing problems. * Apply the principles of project management to complete a team-based software project. * Describe and apply the principles and practices of problem solving and creative thinking. * Understand and apply the innovation and entrepreneurial skills required in the IT industry. |
| 2 | COMP H2013 | **Elective Module** | 5 | Semester 2 | The module is to provide the learner with an opportunity to study outside of their normal discipline and to encounter a range of themes, ideas, creative and critical approaches which are new to them. They work with students and staff from across the Faculty, so as well as encountering new areas of study this will also be an important opportunity for them to network with peers and lecturing staff.  On successful completion of the module, students will be able to:   * Practice / refine the skill being learnt. * Develop a brief and proposal for their final project. * Research the historical and cultural context for their skill. * Maintain a reflective journal of work undertaken and knowledge / insight gained. * Complete and present final project work. |

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| 3 | PROG H3003 | **Computer Networks** | 10 | Full Academic Year | To provide students with an understanding of how computer networks and the Internet works and how network applications are designed and implemented. |
| 3 | MATH H3001 | **Interaction Design** | 10 | Full Academic Year | To introduce students to user centred design and the range of methods used for gathering requirements, designing interfaces between computers and humans, and evaluating such interfaces. |
| 3 |  | **Research and Innovation** | 10 | Full Academic Year | To enable students to develop skills in critical thinking, research planning, academic writing, experimental design and analysis. |
| 3 | COMP H3004 | **Mobile Computing \*** | 10 | Full Academic Year | To provide the students with the knowledge and skills required to design, implement and deploy mobile computing applications and to develop the students’ knowledge of object-oriented programming techniques. |
| 3 | PROG H3004 | **Web Application Frameworks \*** | 10 | Full Academic Year | To provide the students with an understanding of web application frameworks, and the skills and competencies to use web application frameworks in the design and development of web applications. |
| 3 | TBC | **Game Development \*** | 10 | Full Academic Year | To teach students the principles and skills required to create digital game prototypes using appropriate technology. |
| 3 | TBC | **Interactive Graphics \*** | 10 | Full Academic Year | To enable students to create interactive animations using a range of mathematical concepts, and web graphics/animation tools and frameworks. |
| 3 | TBC | **Professional Practice** | 10 | Full Academic Year | To provide students with an opportunity to assimilate their knowledge in computing and to improve their competency by applying their skills in the development of a software application in a workplace environment. |

**\* Elective modules: offered subject to demand.**