**Mathematics and Statistics A | ECU11021**

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| Year | Junior Freshman |
| ECTS Credits | 5 |
| Contact Hours | 22 hours of lectures and 10 hours of tutorial |
| Pre-Requisite | None |
| Semester | 1 |
| Module Leader and Lecturer | Professor Martina Kirchberger |
| Contact Email | kirchbem@tcd.ie |

**Module Outline:**

In mathematics, as applied to business, economics, and the social sciences, we mainly ask questions like: how can we model and analyse individuals' decisions? How do these change if the environment changes? What happens to economic output if wages change?

Topics discussed include:

- Linear and quadratic functions;
- Indices and logarithms;
- Matrices;
- Differentiation;
- Optimisation of functions of one variable;
- Partial differentiation;
- Constrained and unconstrained optimisation of functions of several variables;
- Basic integration.

**Module Learning Outcomes:**

Satisfactory completion of this module will contribute to the development of the following key skills:

- Abstraction from concrete problems to generic concepts;
- Problem solving using quantitative methods;
- Explaining quantitative reasoning in clear, concise, and correct English.

**Assessment:**

- 20% for the midterm test
- 20% for homeworks
- 60% for the annual exam

**Recommended Reading List:**

Ian Jacques, *Mathematics for Economics and Business, 9e, Pearson*.