Addendum to the Programme Specification

4741 BSc Mathematics with German

This Addendum has been produced to highlight the key changes made to the existing Programme Specification as a result of the University's response to the Covid-19 Pandemic. You should read it in conjunction with the relevant Programme Specification from the year you started your programme.

Programme Specification for entry in 2020-21
Programme Specification for entry in 2019-20
Programme Specification for entry in 2018-19

University level information

In view of COVID-19, the University has had to make changes to some elements of programme delivery for 2020-21. These changes have included the method of delivery, such as face-to-face and online, and the number of modules available.

The University aims to provide as much of a face-to-face component to your education as prevailing conditions at the time allow, combined with its new blended approach that will develop active independent and group online learning.

As the COVID-19 pandemic develops, the University's response to this and other issues may likewise need to evolve. The University will consult with student representatives as necessary and appropriate and will communicate changes to you as soon as practicable so that you have the information you need to understand how a change may impact you and what steps you need to take next. The University remains committed to supporting you as you learn.

Programme Information

In light of Covid-19, teaching and learning methods may be adapted. Lectures, seminars, tutorials, and consultation with academic staff may be delivered online or in person as the prevailing conditions allow. Group sizes for tutorials and seminars may be adjusted. Assessment methods may also be adapted. For example, in-class test may be replaced by assignments, weightings of assessments may change, exams may be replaced by coursework or take-home assignments and group presentations and projects may take place online or be adapted to allow for social distancing guidelines.

The year abroad element of this programme is a compulsory feature and you will be supported in finding appropriate placements based on the current national and international situation. This may involve a reduced period overseas, remote learning, or other arrangements.

Programme Structure

Where optional modules have been specified, the following is an indicative list of available optional modules, which are subject to change each academic year. Please note that, in some instances, modules have limited spaces available.

Part 1

Semester 1				Semester 2			
Modules	**ECTS**	**CATS**	**Module type**	**Modules**	**ECTS**	**CATS**	**Module Type**
GERM9011 German Language Stage 4					15	30	Core
MATH1048 Linear Algebra I	7.5	15	Core				
MATH1059 Calculus	7.5	15	Core				
MATH1046 First Year Mathematics Workshop					0	0	Comp
MATH1053 TT Personal Tutor meeting					0	0	Comp
MATH1024 Introduction to Probability and Statistics	7.5	15	Comp	MATH1049 Linear Algebra II	7.5	15	Comp
				MATH1060 Multivariable Calculus	7.5	15	Comp
Option Modules **Select 1 module (15 CATS) from the following:**							
Modules	**ECTS**	**CATS**	**Module type**	**Modules**	**ECTS**	**CATS**	**Module Type**
				MATH1057 Dynamics and relativity	7.5	15	Comp
				MATH1058 Operational Research I and Mathematical Computing	7.5	15	Comp

Part 2

Semester 1				Semester 2			
Modules	**ECTS**	**CATS**	**Module type**	**Modules**	**ECTS**	**CATS**	**Module Type**
GERM9012 German Language Stage 5					15	30	Core
LANG2010 Managing Research and Learning					0	0	Comp
MATH2039 Analysis	7.5	15	Comp	MATH2038 Partial Differential Equations	7.5	15	Comp
The option modules shown below constitute an indicative list, there will always be choice but the options might vary between years. **Select 2 modules (15 ECTS/ 30 CATS) comprising 1 of the following 3 groups –** **Please Note: Each group contains a pair of modules that must be selected together, so you are choosing to take 1 of the 3 groups.**							
Select up to 2 modules (30 credits). Select both modules if you wish to study the Pure Mathematics pair as your 2 Optional Modules.							
Modules	**ECTS**	**CATS**	**Module type**	**Modules**	**ECTS**	**CATS**	**Module Type**
MATH2003 Group Theory	7.5	15	Option	MATH2049 Geometry and Topology	7.5	15	Option
Select up to 2 modules (30 credits). Select both modules if you wish to study the Applied Mathematics pair as your 2 Optional Modules							
Modules	**ECTS**	**CATS**	**Module type**	**Modules**	**ECTS**	**CATS**	**Module Type**
MATH2045 Vector Calculus and Complex Variable	7.5	15	Option	MATH 2044 Fields and Fluids	7.5	15	Option
Select up to 2 modules (30 credits). Select both modules if you wish to study the Statistics pair as your 2 Optional Modules.							
Modules	**ECTS**	**CATS**	**Module type**	**Modules**	**ECTS**	**CATS**	**Module Type**

Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH2011 Statistical Distribution Theory	7.5	15	Option	MATH2010 Statistical Modelling I	7.5	15	Option

<table>
<tr><td colspan="8" align="center">

Option Modules:

Select 2 modules (15 ECTS/ 30 CATS) from the following:

Please do NOT select modules you have taken previously. If you do, you will be contacted by your Student Office and asked to amend your choices.
</td></tr>
</table>

Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH2003 Group Theory	7.5	15	Option	MATH2010 Statistical Modelling I	7.5	15	Option
MATH2011 Statistical Distribution Theory	7.5	15	Option	MATH2012 Stochastic Processes	7.5	15	Option
MATH2013 Introduction to Operational Research	7.5	15	Option	MATH2014 Algorithms	7.5	15	Option
MATH2040 Financial Mathematics	7.5	15	Option	MATH2044 Fields and Fluids	7.5	15	Option
MATH2045 Vector Calculus and Complex Variable	7.5	15	Option	MATH2049 Geometry and Topology	7.5	15	Option

Part 3

Semester 1				Semester 2			
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
LANG3005 Year Abroad Research Project YARP					15	30	Core

Part 4

Semester 1				Semester 2			
Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
GERM9014 German Language Stage 7					15	30	Comp
MATH3092 Mathematics Project					15	30	Comp

<table>
<tr><td colspan="8" align="center">

Option Modules:

Select a minimum of 2, and up to 3 modules (22.5 ECTS/45 CATS) from the following:

Please ensure that you select an even split of credits overall by Semester including your compulsory modules. If you do not, you will be contacted by your Student Office and asked to amend your choices.
</td></tr>
</table>

Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
MATH3016 Optimization	7.5	15	Option	MATH3006 Relativity, Blackholes and Cosmology	7.5	15	Option
MATH3018 Numerical Methods	7.5	15	Option	MATH3017 Mathematical Programming	7.5	15	Option
MATH3033 Graph Theory	7.5	15	Option	MATH3022 Mathematical Finance	7.5	15	Option
MATH3044 Statistical Inference	7.5	15	Option	MATH3052 Mathematical Biology	7.5	15	Option
MATH3063 Actuarial Mathematics I	7.5	15	Option	MATH3066 Actuarial Mathematics II	7.5	15	Option
MATH3076 Hilbert Spaces	7.5	15	Option	MATH3078 Further Number Theory	7.5	15	Option
MATH3083 Advanced Partial Differential Equations	7.5	15	Option	MATH3080 Algebraic Topology	7.5	15	Option
MATH3085 Survival Models	7.5	15	Option	MATH3084 Integral Transform Methods	7.5	15	Option
MATH3086 Galois Theory	7.5	15	Option	MATH3088 Complex Analysis	7.5	15	Option
MATH3090 Structure and Dynamics of Networks	7.5	15	Option	MATH3091 Statistical Modelling II	7.5	15	Option
				MATH3014 Design and Analysis of Experiments	7.5	15	Option

<table>
<tr><td colspan="8" align="center">

Option Modules:

Select up to 2 modules (15 ECTS/ 30 CATS) from the following:
</td></tr>
</table>

7.5 ECTS/15 CATS in any level NQF6 module in Subject MATH

Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
FREEXZ15 Part 3 Elective	7.5	15	Option	FREEXZ15 Part 3 Elective	7.5	15	Option
LANGXX15 Language Module	7.5	15	Option	LANGXX15 Language Module	7.5	15	Option
LANGXX30 Language Module	7.5	15	Option	LANGXX30 Language Module	7.5	15	Option

Option Module:

Select up to 1 module (7.5 ECTS/15 CATS). Select 0 modules (0 credits) up to a maximum of 1 module
(7.5 ECTS/15 CATS) from the following:-
Please note you cannot take MATH2049 Geometry and Topology if you have previously taken
MATH2046.

Modules	ECTS	CATS	Module type	Modules	ECTS	CATS	Module Type
FREEXY15 Part 2 Elective	7.5	15	Option	FREEXY15 Part 2 Elective	7.5	15	Option
LANGXX15 Language Module	7.5	15	Option	LANGXX15 Language Module	7.5	15	Option
MATH2003 Group Theory	7.5	15	Option	MATH2010 Statistical Modelling I	7.5	15	Option
MATH2011 Statistical Distribution Theory	7.5	15	Option	MATH2012 Stochastic Processes	7.5	15	Option
MATH2013 Introduction to Operational Research	7.5	15	Option	MATH2014 Algorithms	7.5	15	Option
MATH2040 Financial Mathematics	7.5	15	Option	MATH2044 Fields and Fluids	7.5	15	Option
MATH2045 Vector Calculus and Complex Variable	7.5	15	Option	MATH2049 Geometry and Topology	7.5	15	Option
				STAT3010 Statistical Methods in Insurance	7.5	15	Option