

Section 10: Modules Offered by the Department of Molecular Biology and Biotechnology and Degree Course Structures

10.1 Modules and their Prerequisites. The list below gives the titles of all MBB modules available in 2010-11, their credit value, the semester in which they are taught and their prerequisites.

Module Number	Module Title	Semester	Credits	Prerequisites
Level 1				
MBB 152	Genetics	1	20	-
MBB 153	Diversity of Life	1	20	-
MBB 154	Molecular Biology of the Gene	2	20	-
MBB 155	Practical Molecular Biology 1	1	10	-
MBB 156	Practical Molecular Biology 2	2	10	-
MBB157	From Cells to Organisms	2	20	-
MBB158	Biochemical Basis of Life	1	20	-
Level 2				
BMS223	Differentiation	2B	10	MBB154
MBB202	Gene Expression & Regulation	1A	10	MBB154
MBB203	Analysis of Genomes	2A	10	MBB202
MBB211	Macromolecular Structure and Function 1	1A	10	MBB158
MBB212	Biological Membranes	1B	10	MBB157, MBB158
MBB214	Metabolism: Control and Manipulation	2B	10	MBB158
MBB215	Macromolecular Structure and Function 2	2A	10	MBB211
MBB220	Practical Molecular Biology 3	1	10	MBB155, MBB156
MBB226	Practical Molecular Biology 4	2	10	MBB155, MBB156
MBB231	Genetics of Higher Eukaryotes	1B	10	MBB152
MBB232	Microbial Genetics	1A	10	MBB152
MBB241	Microbial Growth, Structure & Function	1B	10	MBB153
MBB242	Biological Energy Transformations	2A	10	MBB153, MBB157
MBB245	Micro-organisms in Human Disease	2B	10	MBB153, MBB241

Level 3

BMS326	Modelling Human Disease	1A	10	BMS223
MBB301	Macromolecular Machines	2A	10	MBB211, MBB215
MBB302	Physical Methods for Studying Biological Structures	1A	10	MBB211
MBB303	Cells as Factories	1A	10	MBB202, MBB203
MBB304	Plant Biotechnology	1A	10	MBB202, MBB203
MBB306	Virus Infections of Humans	1A	10	MBB245
MBB308	Molecular Systems Biology and Synthetic Biology	1B	10	MBB203
MBB309	Membrane Protein Structure and Function	1B	10	MBB211, MBB212
MBB310	Assembly of Supramolecular Structures	2B	10	MBB211
MBB311	Molecular Immunology	1A	10	MBB203, MBB212
MBB313	Genome Stability and Genetic Change	2A	10	MBB203, MBB231
MBB320	Human Genetics 1	1B	10	MBB203, 231
MBB321	Molecules to Market	2B	10	MBB203
MBB323	Microbial Sensing of the Environment	2A	10	MBB203
MBB331	Gametes, Embryos and Stem Cells	1B	10	MBB203
MBB334	Biochemical Basis of Human Disease	2A	10	MBB212
MBB335	Bacterial Pathogenicity	1B	10	MBB202, MBB241, MBB245
MBB336	Human Genetics 2	2A	10	MBB320
MBB339	Evolutionary Genetics	2B	10	MBB203, MBB231
MBB340	The Microbiology of Extreme Environments	2A	10	MBB241
MBB342	Genetics of Cell Growth and Division	2B	10	MBB202, 232
MBB343	Biochemical Signalling	2A	10	MBB212
MBB344	Functional Genomics	1A	10	MBB203
MBB360	Laboratory Project	1 and 2	20	MBB220, MBB226
MBB361	Library Project	2	10	MBB220, MBB226
MBB362	Biochemistry Data Handling	1 and 2	10	-
MBB363	Genetics Data Handling	1 and 2	10	-
MBB364	Microbiology Data Handling	1 and 2	10	-

Level 4

MBB401	Introduction to Research Methodology	1	10	-
MBB402	Literature Review	1 and 2	20	MBB361
MBB403	Extended Laboratory Project	1 and 2	80	MBB360
MBB404	Project in Industry	1 and 2	80	MBB360
MBB405	Advanced Research Topics	1 and 2	10	-

10.2 Degree Course Structures

The department offers 4-year MBiolSci degree courses and 3-year BSc (Hons) degree courses. Students completing Levels 1, 2 and 3 graduate with the BSc degree, whereas students completing the additional MBiolSci year (Level 4) graduate with an MBiolSci degree. Students must normally attain an average grade of 60 or above at Level 2 to be eligible for the MBiolSci degree courses, and must also maintain a satisfactory performance in Level 3 (see section 9.6).

Degree Course	BSc	MBiolSci
Biochemistry	C700	C709
Biochemistry and Genetics	CC74	CC7C
Biochemistry and Microbiology	CC75	CC79
Biochemistry and Molecular Cell Biology	C790	C791
Genetics	C400	C409
Genetics and Microbiology	CC45	CC4C
Genetics and Molecular Cell Biology	CC47	CC4R
Medical Biochemistry	C741	C749
Medical Genetics	C431	C433
Medical Microbiology	C521	C523
Microbiology	C500	C509
Molecular Biology	C440	C449

The structure of degree courses in the Department of Molecular Biology and Biotechnology in terms of core and approved modules is given below.

Please note that the information given here is based upon the University Degree Course Regulations for the academic year 2010-11, and the University Regulations themselves are the definitive version. You may find these listings useful as an indication of probable course structures for the academic year 2011-12 and beyond, but you should note that modules are added, deleted or changed each year to reflect changes in our knowledge of particular subject areas.

Level 1

		Semester	Biochemistry	Biochem / Gen	Biochem / Micro	Biochem & MCB	Genetics	Gen / Micro	Genetics & MCB	Medical Biochem	Medical Genet	Medical Micro	Microbiology	Molecular Biology
Genetics	MBB152	1	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Diversity of Life	MBB153		●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Biochemical Basis of Life	MBB158		●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Practical Molecular Biology 1	MBB155		●	●	●	●	●	●	●	●	●	●	●	●
Molecular Biology of the Gene	MBB154	2	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
From Cells to Organisms	MBB157		●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Practical Molecular Biology 2	MBB156		●	●	●	●	●	●	●	●	●	●	●	●

You must register for the modules above, totalling 120 credits for the year.

●● = 20 credit core module (required); ● = 10 credit core module (required).

Level 2

		Semester	Biochemistry	Biochem / Gen	Biochem / Micro	Biochem & MCB	Genetics	Gen / Micro	Genetics & MCB	Medical Biochem	Medical Genet	Medical Micro	Microbiology	Molecular Biology
Gene Expression and Regulation	MBB202	1A	●	●	●	●	●	●	●	●	●	●	●	●
Macromolecular Structure and Function 1	MBB211		●	●	●	●	●	●	●	●	●	●	●	●
Microbial Genetics	MBB232		●	●	●	●	●	●	●	●	●	●	●	●
Biological Membranes	MBB212	1B	●	●	●	●	○		●	●	●	●	○	○
Genetics of Higher Eukaryotes	MBB231		○	●		●	●	●	●	○ ^a	●	●	●	●
Microbial Growth, Structure & Function	MBB241		○		●		●	●	●	○ ^b	●	●	●	●
Analysis of Genomes	MBB203	2A	●	●	●	●	●	●	●	●	●	●	●	●
Macromolecular Structure and Function 2	MBB215		●	●	●	●	○			●			○	○
Biological Energy Transformations	MBB242		●	●	●	●	●	●	●	●	●	●	●	●
Differentiation	BMS223	2B	○	●		●	●	●	●	○ ^a	●		○	○
Metabolism: Control and Manipulation	MBB214		●	●	●	●	●	●	●	●	●	●	●	●
Micro-organisms in Human Disease	MBB245		○		●		○	●		○ ^b		●	●	○
Practical Molecular Biology 3	MBB220	1	●	●	●	●	●	●	●	●	●	●	●	●
Practical Molecular Biology 4	MBB226	2	●	●	●	●	●	●	●	●	●	●	●	●

You must register for modules above totalling 120 credits for the year.

● = 10 credit core module (required); ○ = 10 credit approved module (optional)

For Medical Biochemistry, ○^a = both these modules must be taken **OR** ○^b = both these modules must be taken.

Level 3

		Semester / Period	Biochemistry	Biochem / Gen	Biochem / Micro	Biochem / MCB	Genetics	Genetics / Micro	Genetics / MCB	Medical Biochem	Medical Genetics	Medical Micro	Microbiology	Molecular Biology
Modelling Human Disease	BMS326	1A		OG		●	○	OG	●	◇ ¹	●			◇
Physical Methods for Studying...	MBB302		○	OB	OB	○				○ ²				○
Cells as Factories	MBB303				OM			OM					○	○
Plant Biotechnology	MBB304			OG			○	OG	○					○
Virus Infections of Humans	MBB306				OM			OM				●	○	◇
Molecular Immunology	MBB311		○	OB	OB	○				●	○	●	◇	◇
Functional Genomics	MBB344		○	OB	OB	○	○	OG	○	○ ²	○	○	○	○
Molecular Systems Biology ...	MBB308	1B	○	OB	OB	○	○	OM	○	●		○	○	○
Membrane Protein Structure ...	MBB309		○	OB	OB	○				○ ²		○	◇	◇
Human Genetics 1	MBB320			OG			○	OG	○		●	○		○
Gametes, Embryos and Stem ...	MBB331			OG		●	○	OG	●	●	●			○
Bacterial Pathogenicity	MBB335				OM			OM		◇ ¹		●	○	◇
Macromolecular Machines	MBB301	2A	○	OB	OB	○			○ ²					◇
Genome Stability and Genetic ...	MBB313			OG		○	○	OG	○		●			○
Microbial Sensing of ...	MBB323				OM			OM	○			●	○	○
Biochemical Basis of Human ...	MBB334		○	OB	OB	○				●	●	○		◇
Human Genetics 2	MBB336			◇G			◇	◇G	◇		●			◇
The Microbiology of Extreme ...	MBB340				OM			OM					○	○
Biochemical Signalling	MBB343		○	OB	OB	●			●	●				◇
Assembly of Supramolecular ...	MBB310	2B	○	OB	OB	○			○ ²					○
Molecules to Market	MBB321		○	OB	OM	○		OM		○ ²	○	○	○	○
Evolutionary Genetics	MBB339			OG			○	OG	○		○			○
Genetics of Cell Growth ...	MBB342			OG		●	○	OG	●		○	○	○	○
Any Level 3 module above			◇				◇						◇	
Laboratory Project	MBB360	1 + 2	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Biochemistry Data Handling	MBB362		●	○ ¹	○ ¹	●					●			○ ¹
Genetics Data Handling	MBB363			○ ¹			●	○ ¹	●		●			○ ¹
Microbiology Data Handling	MBB364				○ ¹			○ ¹				●	●	○ ¹
Library Project	MBB361	2	●	●	●	●	●	●	●	●	●	●	●	●

You must register for modules totalling 120 credits in each year, with at least 40 credits in each semester.

● & ●● = 10 & 20 credit core modules (required); ○ = 10 credit approved module (optional); ◇ = 10 credit approved module for which you must have taken the prerequisite module(s), as shown on the Departmental form for each degree; ○¹ = one (and only one) data handling module must be chosen.

For Medical Biochemistry: ○² = two of these modules must be chosen; ◇¹ = one of these modules must be chosen.

For two-subject degree courses: B = Biochemistry module (4 to be chosen); G = Genetics module (4 to be chosen); M = Microbiology module (4 to be chosen).

Level 4

		Semester	Biochemistry	Biochem / Gen	Biochem / Micro	Biochem & MCB	Genetics	Gen / Micro	Genetics & MCB	Medical Biochem	Medical Genet	Molecular Biology	Mol & Med Micro
Introduction to Research Methodology	MBB401	1	●	●	●	●	●	●	●	●	●	●	●
Literature Review	MBB402	1+2	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Extended Laboratory Project	MBB403		○○	○○	○○	○○	○○	○○	○○	○○	○○	○○	○○
Project in Industry	MBB404		○○	○○	○○	○○	○○	○○	○○	○○	○○	○○	○○
Advanced Research Topics	MBB405		●	●	●	●	●	●	●	●	●	●	●

You must register for modules above totalling 120 credits for the year.

●● = 20 credit core module (required); ● = 10 credit core module (required);

○○ = 80 credit approved module.

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10.3 Degrees with Employment Experience

As a student in MBB you have two opportunities to undertake a year long placement as part of your degree.

The MBiolSci degrees in MBB incorporate a special option to take an industrial placement covering the fourth year of the MBiolSci degree. This means that you will work for a year in an approved placement in an industrial research laboratory, and the laboratory work you do on placement will be assessed and count directly towards your degree mark. This option will greatly enhance your employment prospects in industry, although it is important to note that most students taking this option will go on to study for a PhD before embarking upon a career in industry. For more information, see the briefing document available at: <http://www.roger-anderson.staff.shef.ac.uk/shef-only/plac/> and discuss it with Dr Anderson. Level 4 placements will be discussed in the introductory session for Level 3 students on Tuesday of Week 1.

Another option is to take an industrial placement after Level 2, as part of the University's 'Degrees with Employment Experience' scheme. You will have a chance to spend one year working and then return to the University to complete your degree. Upon graduation your degree title will reflect your employment experience (e.g. "BSc Biochemistry with Employment Experience"). A placement of this type provides an excellent opportunity to apply the knowledge, skills and understanding developed during the earlier stages of your degree programme in a field you may wish to work in upon graduation. A placement can also enhance your employment prospects. For more information speak to Dr. Roger Anderson or contact Claire Brooke, Student Placement Officer on 0114 22 20962 or email: placements@sheffield.ac.uk.