School of Medical Sciences

BSc (Hons) Biomedical Sciences

Degree Programme Guide 2014-15

UNIVERSITY OF ABERDEEN
**Introduction**

This degree is designed for students with a broad interest in human structure and function. It offers a choice of programmes within the disciplines taught by the Biomedical Sciences and Molecular & Cell Biology sections of the School of Medical Sciences (SMS). Each of these programmes provides the student with a breadth of knowledge and expertise that is highly sought after by prospective employers, especially those related to medical science.*

This degree programme differs from the other degree programmes taught by the disciplines of Biomedical Sciences and Molecular & Cell Biology in that it covers the scientific requirement of first year medicine, as well as providing a high quality science based honours degree.

Consequently, it should be noted that higher entrance standards are required, and a more prescribed set of modules taken, than in the BSc Pure Science. The BSc Biomedical Science degree is governed by its own set of degree regulations although students may transfer to the BSc in Pure Science at any stage, provided they satisfy the progress requirements of Pure Science at the time of transfer.

* The BSc Biomedical Sciences degree scheme offered by Aberdeen University is NOT accredited by the Institute of Biomedical Sciences (IBMS). IBMS accredited degree programmes must focus on the specific vocational training required to pursue a career as a biomedical scientist in a pathology or biomedical laboratory within (or serving) the NHS. The degree programme in Aberdeen aims to underpin a much wide range of potential career choices to our graduates. These would include individual IBMS accreditation, following a further one-year conversion course.

**Aims and Outcomes**

The BSc Biomedical Science degree will provide the student with a thorough grounding in theory and practice relating to anatomy, molecular biology and physiology. The graduate will gain a broad knowledge in both the subjects related to medical science and in scientific research methods. In addition, they will develop interpersonal skills from team-working plus oral and written communication, as well as develop a substantive understanding of PC-orientated IT skills. Advanced knowledge in a single discipline chosen from one of Anatomy, Molecular Biology, Pharmacology, Physiology or Developmental Biology, will be acquired in the third and fourth years of the course.

**General Enquiries**

The Degree Programme Co-ordinator is Professor Gordon McEwan, (tel. 01224-437403) who will answer any query concerning the degree programme. Enquiries concerning a specific module should be made to the course co-ordinator for that module (See University Catalogue of Courses or SMS World Wide Web Pages for names: [http://www.abdn.ac.uk/sms/](http://www.abdn.ac.uk/sms/)) The Head of the School of Medical Sciences is always available for advice regarding any of the degree schemes run by the school, as well as matters such as careers advice. In the first instance appointments to see any of the above staff should be made with Ms Jill Reid ([jill.reid@abdn.ac.uk](mailto:jill.reid@abdn.ac.uk)) at the School Office sited on the 2nd level, Institute of Medical Sciences (01224-437470 internal 7470).
General Requirements

In order to complete the degree scheme the programme of studies must comply with the Supplementary Regulations for the Degree of Bachelor of Science in Biomedical Sciences (BSc Biomedical Sciences). Attention is drawn in particular to rule 5, which describes the progress requirements for the degree. 120 credits are required at each of levels 1 to 3 before progressing to the next level of study. Currently, this means it is necessary to pass all modules taken at each level. In addition, entry into honours at the end of level 3 is by permission of the Head of School and requires a higher level of performance than a minimal pass (see ‘Looking Forward to the Honours Year’ for details). To graduate with Honours, 120 credits must be obtained at level 4.

Industrial Placements

There is scope within the degree schemes for students with very good academic records to undertake a 1 year, paid, industrial placement as part of their degree. The placement is undertaken in year 4 of the degree scheme and students return to the University to complete their honours year in year 5. This work experience is co-ordinated by the School although placements are in companies outside the University.

Students interested in industrial placements are encouraged to contact Dr Allison Carrington in the first instance to discuss their plans.

Students must also register for, and complete, the pre-placement course, BT3006, in the first half of their third year. On successful completion of a placement and their Honours year students will graduate with an MSci. Further details of this initiative can be obtained from Dr Allison Carrington (a.carrington@abdn.ac.uk).

Looking Forward to the Honours Year

Many of you will be intending to continue for a 4th year and to complete an Honours degree in the School of Medical Sciences. There are a few points you should bear in mind if this is your intention.

1. Standard of entry

We try to welcome as many students as possible into the Honours year, but it must be recognised that it will only benefit the more able students. If 3rd year is a real struggle, then it may be too much for you to take on. As a general rule we find that a CAS mark of 12 or better in each 3rd year module is a reasonable sign that you have reached the appropriate standard. Exceptions can be made if there is good reason, and a mixture of excellent results and one or two slightly poorer ones may sometimes be acceptable. Do let us know if there is an explanation for any poor performance, so that we can do our best to take it into account.

2. Know what’s involved

The teaching in the Honours year in general involves fewer lectures and more input from you than in previous years. You will take the modules specified for your particular degree scheme, these amounting to 120 credits of study.

- For Biomedical Sciences Option A (Physiology), Option B (Pharmacology) and Option E (Anatomy), you are required to include BM4004 Advanced Molecules, Membranes and Cells, and a 60 credit Honours Project in your study programme. You will also write a thesis and give a short presentation on your project. The final degree assessment will comprise a contribution from the thesis, with the remainder coming from a combination of papers associated with the taught modules taken in the Honours year, plus a general essay paper and a paper on data analysis & interpretation.

- For Biomedical Sciences Option C (Molecular Biology), students take the MB4050 Honours Advanced Molecular and Cell Biology module, along with optional modules covering specialist Molecular Biology subjects, following from their third year academic history. A nine-week 60 credit Honours Project is also undertaken, along with a series of tutorials covering advanced critical study of papers from the scientific literature.
For Biomedical Sciences Option D (Developmental Biology) you are required to include PY4302 Developmental Neuroscience, a range of Developmental Biology-specific modules and a 60 credit Honours Project in your study programme. You will also write a thesis and give a short presentation on your project. The final degree assessment will comprise a contribution from the thesis, with the remainder coming from a combination of papers associated with the taught modules taken in the Honours year, plus a general essay paper and a paper on data analysis & interpretation.

3. Prerequisites

The courses prescribed for level 3 have been approved to provide the foundation for the Honours degree you are taking. However, if you have any concerns or have questions regarding other degree programmes, please consult the following:
The relevant section of this Degree Programme Guide (additional copies are available from the SMS World Wide Web home page http://www.abdn.ac.uk/sms/, the School Office (IMS Building), the College Teaching labs (Zoology Building), your Advisor of Studies, or the Degree Programme Coordinator (Professor Gordon McEwan, (tel. 01224-437403)). Please do this in plenty of time.

4. Summer research projects

It is possible to apply for funding for summer projects (8-10) weeks between 3rd and 4th year. This is a helpful base for your Honours project, which must be in a different area of research and usually with a different supervisor. Dr Allison Carrington will email members of the class at the end of November asking for CVs if they wish to be considered for a summer vacation studentship, and if they have any preferences for staff in whose laboratory they would wish to undertake the work.

Assessment

Throughout your course, assessment takes the form of continuous assessment (based upon performance in prescribed tasks such as practical reports, essays and presentations) and written degree examinations (essay or multiple choice questions) taken in the examination diets allotted to each half session. The final year assessment is made up primarily of essay papers.

- For Options A (Physiology), B (Pharmacology), D (Developmental Biology) and E (Anatomy), these include both a two hour general examination (BM4901) and a three hour problem solving examination (BM4902, topic-specific for either Physiology, Pharmacology, Developmental Biology or Anatomy) and the submission of a thesis. The thesis is based on your 10-week research project (biased to Physiology, Pharmacology, Developmental Biology or Anatomy topics, respectively) and is defended in an oral presentation. Some students may be required to attend an oral examination (viva) with the external examiner.
- For Option C (Molecular Biology), the final year assessment is also made up primarily of essay exam papers; these cover the Advanced Molecular and Cell Biology core course, the subject specific options, as well as a paper on data analysis/data interpretation, and a general essay paper. A project thesis submission, oral thesis presentation and three essays form the continuous assessment in the Honours year. The thesis is based on a 9-week research project.

Details concerning assessments and course work are provided in the Course Handbooks associated with each specific module. These Course Handbooks are available either from the School Office, IMS or on the SMS World Wide Web Pages (http://www.abdn.ac.uk/sms/), together with details concerning the relationship between credits and weightings.

Academic Appeals

1. From time to time a student may seek to appeal against a decision involving an academic judgement taken, in terms of the Regulations for the degree or other qualification for which he or she is studying, among others, by a Head of Department refusing an award of a Merit Certificate, or admission to a higher level course; by Examiners refusing to award a pass or awarding an unacceptable class of Honours (or making no award); by the Examiners appointed to examine a thesis for a higher degree; or by the relevant Undergraduate Programme Committee or Academic Postgraduate Officer in relation
to terms of study. Specific rights of appeal are very limited indeed but the Senate has a general duty to regulate and superintend the teaching of the University, and the Court has the authority to review any decision of the Senate which may be appealed against by a member of the University.

2. Academic appeals must be lodged with the Academic Registrar WITHIN 14 DAYS from the date of the issue of the decision being appealed against, unless the relevant Appeals Committee is satisfied that the decision had not become known to an appellant until too late to submit an appeal within that period.

3. Notwithstanding the above time limit, details of illness (which must be certified by a medical practitioner) and/or other personal circumstances which students believe may have affected their performance in an element of prescribed degree assessment will be accepted as grounds for appeal only if the Head of the relevant School has received written notification of them NO LATER THAN ONE WEEK after the date on which a student submitted or appeared for the assessment concerned. Where good reasons have prevented a student from notifying the Head of School within this period, the student should write to the Head of School as soon as is practicable and give details both of the illness (which must be certified by a medical practitioner) and/or other personal circumstances and of the events which prevented him or her from notifying the Head of School within the prescribed period. Details reported after notification of a result will be accepted as grounds of appeal only in exceptional circumstances.

Problems with Course Work

If students have difficulties with any part of the course that they cannot cope with alone they are encouraged to notify someone immediately. If the problem relates to the subject matter, you may be best advised to contact the member of staff who is teaching that part of the course. Students with registered disabilities should contact either the IMS-based School Office (Mrs Jenna Reynolds j.reynolds@abdn.ac.uk) or the Old Aberdeen office associated with the teaching laboratories (Mrs Sheila Jones s.jones@abdn.ac.uk) to ensure that the appropriate facilities have been made available. Otherwise, you are strongly encouraged to contact any of the following as you see appropriate:

- Course student representatives.
- Course co-ordinator.
- Convenor of the Biomedical Sciences Student-Staff Liaison Committee. Professor Gordon McEwan
- School Disabilities Co-ordinator, Dr Derryck Shewan

Staff are based at Foresterhill (IMS & Health Sciences Building) or Marischal College and we strongly encourage the use of e-mail or telephone the School office (Ms Jill Reid, jill.reid@abdn.ac.uk) tel: 437470. You may be wasting your time to travel to Foresterhill only to find staff unavailable.

Course Details

All courses run in the School have practical and enterprise components as integral parts of the teaching package. For detailed descriptions of the courses that make up the BSc (Hons) Biomedical Sciences Degree, consult the University Course Catalogue, or in the case of modules taught within the School of Medical Sciences consult the SMS World Wide Web Pages.

This document supplements the regulations in the University Calendar and the descriptions of modules given in the University "Catalogue of Courses". It is correct at the time of going to press but is open to change.

1st Year Biomedical Sciences Course Requirements

Passes must be achieved in all modules at Level 1 before the candidate is allowed to move to the second year of study. Pre-requisites for second year physiology courses include, in the first half session, SM1001 Introduction to Medical Science and in the second half session SM1501 The Cell. These SM modules will provide a general background in Medical Science, thus preparing the student for
the more detailed studies of human physiology that will be made in the second year of study. Students also require a basic level of general physical and chemical principles and hence are required to take in the first half session CM1020 Chemistry for Life Sciences 1 and in the second half session, CM1512 Chemistry for Life Sciences 2.

Prescribed Level One Courses

First Half Session

Introduction to Medical Science* (SM1001, 15 credits)
Chemistry for Life Sciences 1 (CM1020, 15 credit points)
Two other courses of your choice worth 15 credits, these might include,

Introduction to the Science of Sport, Exercise & Health (SR1001, 15 credits) is highly recommended.

Second Half Session

The Cell (SM1501, 15 credits)
Chemistry for Life Sciences 2 (CM1512, 15 credit points)
Two other courses of your choice worth 15 credits, these might include,

Applied Sports & Exercise Physiology (SR1503, 15 credits) is highly recommended.

Timetable Year 1

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<tr>
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<td>CM1512</td>
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<td>2 other modules</td>
<td>2 other modules</td>
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2nd Year Biomedical Sciences Course Requirements

Passes must be achieved in all modules at level 2 before the candidate is allowed to move onto the third year of study.

Prescribed Level Two Courses

First Half Session

Molecular Biology of the Gene (BI20M3, 15 credits)
Human Anatomy A (BM2009, 15 credits)
Foundation Skills for Medical Sciences (SM2001, 15 credit points)
Physiology of Human Cells (BI20B2, 15 credits)

Second Half Session

Energy for Life (BI25M7, 15 credits)
Human Anatomy B (BM2509, 15 credits)
Research Skills for Medical Sciences (SM2501, 15 credit points)
Physiology of Human Organ Systems (BI25B2, 15 credits)

**Timetable Year 2**

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<td>BI25M7</td>
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<td>BM2009</td>
<td>BM2509</td>
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<tr>
<td>BI20B2</td>
<td>BI25B2</td>
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**3rd Year Biomedical Sciences Course Requirements**

**Prescribed Level Three Courses**
Select one of the following 4 options (A, B, C, D or E - 120 credits each):

**Option A (Physiology)**

**First Half Session**

Integrative Physiology (PY3002, 30 credits)

To meet the requirements for Enhanced Study, in addition to the 90 credits prescribed for your Degree Programme, you are required to take another 30 credit level 3 course of your choice. The School of Medical Sciences runs the following three 30 credit Disciplinary Breadth courses at level 3 which may be of interest to students studying Medical Sciences Degree Programmes.

- SM3001 Frontiers of Molecular Medical Sciences
- SM3002 Frontiers of Biomedical Science
- SM3003 Frontiers of Applied Medical Sciences

**Second Half Session**

Neuroscience and Neuropharmacology (BM3502, 15 credits)
Cardiovascular Physiology and Pharmacology (BM3501, 15 credits)
Integrative Neuroscience (BM3803, 15 credits)
Epithelial Physiology (PY3803, 15 credits)

**Timetable for Year 3 Option A**

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<td>BM3501</td>
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<td>PY3803</td>
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Option B (Pharmacology)

First Half Session

Biochemical Pharmacology & Toxicology (PA3004, 30 credits)

To meet the requirements for Enhanced Study, in addition to the 90 credits prescribed for your Degree Programme, you are required to take another 30 credit level 3 course of your choice. The School of Medical Sciences runs the following three 30 credit Disciplinary Breadth courses at level 3 which may be of interest to students studying Medical Sciences Degree Programmes.

- SM3001 Frontiers of Molecular Medical Sciences
- SM3002 Frontiers of Biomedical Science
- SM3003 Frontiers of Applied Medical Sciences

Second Half Session

Neuroscience and Neuropharmacology (BM3502, 15 credits)
Cardiovascular Physiology and Pharmacology (BM3501, 15 Credits)
Integrative Neuroscience (BM3803, 15 credits)
Mechanisms of Disease & Principles of Chemotherapy (PA3802, 15 credits)

Timetable for Year 3 Option B

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<td>BM3501</td>
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Option C (Molecular Biology)

First Half Session

Molecular Biology of the Cell (MB3006, 30 credits)

To meet the requirements for Enhanced Study, in addition to the 90 credits prescribed for your Degree Programme, you are required to take another 30 credit level 3 course of your choice. The School of Medical Sciences runs the following three 30 credit Disciplinary Breadth courses at level 3 which may be of interest to students studying Medical Sciences Degree Programmes.

- SM3001 Frontiers of Molecular Medical Sciences
- SM3002 Frontiers of Biomedical Science
- SM3003 Frontiers of Applied Medical Sciences

Second Half Session

The Molecular Control of Cell Function (BC3503, 30 credits)

AND EITHER
Molecular Microbiology (MC3504, 30 credits) OR
Genetics (GN3502, 30 credits) OR
Cardiovascular Physiology and Pharmacology (BM3501, 15 credits)

AND EITHER
Mechanisms of Disease & Principles of Chemotherapy (PA3802, 15 credits) OR
Epithelial Physiology (PY3803, 15 credits)

**Timetable Year 3 Option C**

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<tr>
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<td>MC3504 or GN3502</td>
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<td>BM3501 and either PA3802 or PY3803</td>
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**Option D (Developmental Biology)**

**First Half Session**

- Principles of Developmental Biology (DB3005, 15 credits)
- Human Embryonic Development (AN3301, 15 credits)

To meet the requirements for Enhanced Study, in addition to the 90 credits prescribed for your Degree Programme, you are required to take another 30 credit level 3 course of your choice. The School of Medical Sciences runs the following three 30 credit Disciplinary Breadth courses at level 3 which may be of interest to students studying Medical Sciences Degree Programmes.

- SM3001 Frontiers of Molecular Medical Sciences
- SM3002 Frontiers of Biomedical Science
- SM3003 Frontiers of Applied Medical Sciences

**Second Half Session**

- Development Genetics (DB3501, 15 credits)
- Reproductive Biology (DB3502, 15 credits)
- Patterning the Embryo (DB3803, 15 credits)
- Development of Organ Systems (DB3804, 15 credits)

**Timetable Year 3 Option D**

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<td>AN3301</td>
<td>DB3502</td>
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<td>DB3804</td>
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Option E (Anatomy)

First Half Session

Architecture of Life (AN3009, 15 credits)

Human Embryonic Development (AN3301, 15 credits)

To meet the requirements for Enhanced Study, in addition to the 90 credits prescribed for your Degree Programme, you are required to take another 30 credit level 3 course of your choice. The School of Medical Sciences runs the following three 30 credit Disciplinary Breadth courses at level 3 which may be of interest to students studying Medical Sciences Degree Programmes.

- SM3001 Frontiers of Molecular Medical Sciences
- SM3002 Frontiers of Biomedical Science
- SM3003 Frontiers of Applied Medical Sciences

Second Half Session

Biological Imaging (AN3503, 15 credits)

Integrative Neuroscience (BM3803, 15 credits)

Epithelial Physiology (PY3803, 15 credits)

PLUS EITHER Neuroscience and Neuropharmacology (BM3502, 15 credits) OR

Reproductive Biology (DB3502, 15 credits)

Timetable Year 3 Option E

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<td>AN3301</td>
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<td>AN3503</td>
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4th Year Biomedical Sciences Course Requirements

Prescribed Level Four Courses

Continuing from options A - E selected at Level 3 (120 credits):

Option A (Physiology)
For students who selected option A in their third year:

**First Half Session**

Advanced Molecules, Membranes and Cells (BM4004, 30 credits)

Staying Alive, Adaption in Physiological Systems (BM4009, 15 credits)

Developmental Neuroscience (PY4302, 15 credits) or The Science of Ageing – from Cradle to Grave (BM4301, 15 credit points)

**Second Half Session**

Biomedical Sciences Project (BM4501, 60 credits)

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**Timetable Year 4 Option A**

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<td>BM4004</td>
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<tr>
<td>BM4901 General Paper</td>
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<tr>
<td>BM4902 Data Analysis and Problem Solving Paper</td>
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**Option B (Pharmacology)**

For students who selected option B in their third year:

**First Half Session**

Advanced Molecules, Membranes and Cells (BM4004, 30 credits)

Molecular Pharmacology (PA4005, 15 credits)

Molecular Toxicology (PA4302, 15 credits)

**Second Half Session**

Biomedical Sciences Project (BM4501, 60 credits)

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**Timetable Year 4 Option B**

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<td>BM4501</td>
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Option C (Molecular Biology)

For students who selected option C in their third year.

First Half Session

- Biomedical Science (Molecular Biology) A (BM4008, 30 credits)
- Honours Advanced Molecular and Cell Biology (MB4050, 30 credits)

Second Half Session

- Biomedical Sciences (Molecular Biology) B (BM4509, 60 credits)

Timetable Year 4 Option C

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<td>BM4509</td>
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Option D (Developmental Biology)

For students who selected option D in their third year.

- Advanced Molecules, Membranes and Cells (BM4004, 30 credits)
- Evolution & Development (DB4002, 15 credits)
- Developmental Neuroscience (PY4302, 15 credits)

Second Half Session

- Biomedical Sciences Project (BM4501, 60 credits)

Timetable Year 4 Option D
Option E (Anatomy)

For students who selected option E in their third year:

**First Half Session**

Advanced Molecules, Membranes and Cells (BM4004, 30 credits)
Brain Function & Malfunction (with Anatomy) (AN4003, 15 credits)
Developmental Neuroscience (with Anatomy) (AN4301, 15 credits)

**Second Half Session**

Biomedical Sciences Project (BM4501, 60 credits)

Timetable Year 4 Option E

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BM4901 General Paper
BM4902 Data Analysis and Problem Solving Paper