A close-up of a logo

Description automatically generated with low confidence



*IM3501- Fundamentals of Immunology*

*Course Handbook 2023-2024*

*Undergraduate Medical Sciences*

*School of Medicine, Medical Sciences & Nutrition*

**Contents**

* Course Summary (3)
* [**Course Aims & Learning Outcomes**](#_Toc78464227)
* [**Course Teaching Staff**](#_Toc78464228)(4)
* Blended Learning Approach
* [**Assessments & Examinations**](#_Toc78464229)(5)
* [**Class Representatives**](#_Toc78464230)
* [**Problems with Coursework**](#_Toc78464231)(6)
* [**Course Reading List**](#_Toc78464232)
* [**Lecture Synopses**](#_Toc78464233)(7)
* [**Practical/Lab/Tutorial Work**](#_Toc78464234)
* [**University Policies**](#_Toc78464236)
* [**Academic Language & Skills support**](#_Toc78464237)(8)
* [**Medical Sciences Common Grading Scale**](#_Toc78464244)(9)
* [**Course Timetable IM3501: 2023-2024**](#_Toc78464245)(10)
* Campus and Floor Maps

# Course Summary

This course extends your basic knowledge in Immunology going into more depth and giving you the fundamental knowledge, you need to understand how the immune system functions in health and disease and how immunological therapies can be devised. The evolution of the immune system has been shaped by its need to protect the host from infection and the majority of multicellular organisms have some form of organised immune system that increases in complexity in line with the organism. The course considers the cells and organs of the immune system, their differentiation and how they function to provide innate and adaptive immunity. Antigen presentation; antibody structure and function; generation of diversity; complement; T cell subsets; cell trafficking; cytokines and signalling are covered in detail. Although the immune system functions to protect from infection and maintain the health of the individual, immune dysfunction may cause disease and the final part of the course focuses on immune deficiency and loss of tolerance and autoimmunity. Practical classes reinforce this knowledge as well as teaching immunological and generic laboratory techniques, and range of transferable skills.

# Course Aims & Learning Outcomes

Aims

The aims of this course are several-fold and are divided into specialist knowledge (the course content) and transferable skills. In summary they are:

1. To develop and extend your knowledge of cellular and molecular components of the immune system.
2. To enable you to understand how the components of the immune system interact to maintain the health of the individual and how immune dysfunction may lead to disease.
3. To allow you to develop and practise a range of transferable skills during the practical classes including lab skills, software applications and data analysis.

Learning Outcomes

Students should be able to synthesize and apply their knowledge of specific cellular and molecular components of the immune system to predict how they interact to defend against infection and how their dysfunction or imbalance may lead to disease. This should include:

* the innate immune system and cells such as dendritic cells, neutrophils, macrophages, NK cells
* MHC and antigen processing and presentation
* the adaptive immune system including different T cell subsets, B cells and antibodies, their development and function and signalling
* the complement system and its function
* cytokines and chemokines and their signalling and roles
* immune deficiency
* tolerance and the development of autoimmunity

Students should be able to use general laboratory and team working skills, data analysis, software applications and literature research to investigate a scientific hypothesis, critically analyse results and create a report.

# Course Teaching Staff

Course Co-ordinator(s):

Dr Isabel Crane (IC) [**i.j.crane@abdn.ac.uk**](mailto:i.crane@abdn.ac.uk)

Other Staff:

Dr Patrick Cao (PC) h.cao@abdn.ac.uk

Dr Thelma Fletcher (TF) [**t.c.fletcher@abdn.ac.uk**](mailto:t.c.fletcher@abdn.ac.uk)

Dr Andrea Holme (AH) andrea.holme@abdn.ac.uk

Dr Pietro Marini (PM) [**p.marini@abdn.ac.uk**](mailto:p.marini@abdn.ac.uk)

Dr Mike Morgan (MM) michael.morgan@abdn.ac.uk

Dr Indrani Mukhopadhya (IM) [**indrani.mukhopadhya@abdn.ac.uk**](mailto:indrani.mukhopadhya@abdn.ac.uk)

Dr Candice Quin (CQ) candice.quin@abdn.ac.uk

Dr Frank Ward (FW) [**f.j.ward@abdn.ac.uk**](mailto:f.j.ward@abdn.ac.uk)

Dr Virtu Solano (VS) [**mariavirtudes.solanocollado@abdn.ac.uk**](mailto:mariavirtudes.solanocollado@abdn.ac.uk)

Dr Tara Sutherland (TS) [**tara.sutherland@abdn.ac.uk**](mailto:tara.sutherland@abdn.ac.uk)

# In-person teaching

# Please note that we aim for all lectures and tutorials to be in-person on campus. Highlighted in green on the timetable are a couple of online revision lectures and the practical material which you should study before the class. If you have any questions relating to this material please do ask at the in-person classes or email the relevant lecturer.

# The live in-person lectures will have full recordings which have captions and powerpoint files, available online on MyAberdeen, so that you can go over them later, as well, at your leisure. These are likely to have been recorded in advance to improve quality and may be in shorter sections and may include questions which aim to help you consider the material in more depth. Because the full captioned, recorded lectures have been prepared in advance for you, the in-person sessions may not be identical and may focus on certain aspects of the lectures to help with understanding but use the online recordings as the definitive version for revision.

Assessments & Examinations

Assessment

There will be a 40% continuous assessment component to this module based upon 4 assignments.

Examination

There will be a written examination at the end of the course (60%). It will consist of a choice of four questions selected from a total of eight.

IM3501 is a 30 credit course and to achieve these credits you should put in 300 hours of study including attending lectures, tutorials, practical classes, completing assignments, reading and revising. Students are expected to attend all lectures, laboratory classes, and tutorials, and to complete all class exercises by stated deadlines.

The degree examination is held in May, with the re-sit examination in July. The previous continuous assessment mark will be carried over for the re-sit. If you fail the practical continuous assessment component of the course, you will be required to resubmit this or complete alternative work and this will be capped at CGS mark D3.

# Class Representatives

We value students’ opinions in regard to enhancing the quality of teaching and its delivery; therefore, in conjunction with the Students’ Association we support the Class Representative system.

In the School of Medicine, Medical Sciences & Nutrition we operate a system of course representatives, who are elected from within each course. Any student registered within a course that wishes to represent a given group of students can stand for election as a class representative. You will be informed when the elections for class representative will take place.

What will it involve?

It will involve speaking to your fellow students about the course you represent. This can include any comments that they may have. You will attend a Staff-Student Liaison Committee and you should represent the views and concerns of the students within this meeting. As a representative, you will also be able to contribute to the agenda. You will then feedback to the students after this meeting with any actions that are being taken.

Training

Training for class representatives will be run by the Students Association. Training will take place within each half-session. For more information about the Class representative system visit [www.ausa.org.uk](http://www.ausa.org.uk) or email the VP Education & Employability [vped@abdn.ac.uk](mailto:vped@abdn.ac.uk) . Class representatives are also eligible to undertake the STAR (Students Taking Active Roles) Award with further information about this co-curricular award being available at: [www.abdn.ac.uk/careers](http://www.abdn.ac.uk/careers).

Problems with Coursework

If students have difficulties with any part of the course that they cannot cope with alone, they should notify the course coordinator immediately. If the problem relates to the subject matter general advice would be to contact the member of staff who is teaching that part of the course. Students with registered disabilities should contact the medical sciences office, ([medsci@abdn.ac.uk](mailto:medsci@abdn.ac.uk)) (based in the Polwarth Building, Foresterhill) 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 Medical Sciences Staff/Student Liaison Committee
* Personal Tutor
* Medical Sciences Disabilities Co-ordinator (Dr Derryck Shewan)

All staff are based at Foresterhill and we strongly encourage the use of email or telephone the Medical Sciences Office. You may have a wasted journey travelling to Foresterhill only to find staff unavailable.

# Course Reading List

Cellular and Molecular Immunology by A.K. Abbas, A.H. Lichtman and S. Pillai (10th Edition) W.B. Saunders Co. (ISBN: 9780323757485)

This textbook provides a lot of information relevant to this course and many of the lectures will use the material in this book. You will also find the 9th edition available second hand and in the library. The 9th edition is also available via Leganto online (10th edition is not available online yet).

Where appropriate you will also be directed to specific reading material.

If you do not plan to do Immunology at level 4 there is also a simpler version of the Abbas textbook, Basic Immunology by A.K. Abbas, A.H. Lichtman and S. Pillai (Sixth Edition) W.B. Saunders Co. (**ISBN:** 9780323549431)

[Janeway's Immunobiology](http://www.amazon.co.uk/Janeways-Immunobiology-Ken-Murphy/dp/0815341237/ref=sr_1_1?ie=UTF8&qid=1292246371&sr=1-1) by Murphy et al., 8th or 9th Edition may also be helpful.

Lecture Synopses

These are available on MyAberdeen

Practical/Lab/Tutorial Work

The course contains six practical elements, 4 of which have a marked assignment (2, 3, 4 and 6). Each marked assignment is given equal weight.

All assignments must be submitted online by 5 pm on the Wednesday following the practical class on Thursday. Deadlines are indicated in the timetable at the end of this handbook.

Late submissions without a negotiated extension or a justifiable reason will have CGS grades deducted as shown in the Assessment Handbook e.g. if work is awarded a CGS grade of B1, and the work is four days late, the final mark will be B2. After seven days, the work is marked at a maximum of D3, and after 10 days it will be recorded as zero (G3).

Please contact the course co-ordinator as soon as possible if you have any problems.

University Policies

Students are asked to make themselves familiar with the information on key education policies, available [here](https://www.abdn.ac.uk/staffnet/teaching/key-education-policies-for-students-11809.php). These policies are relevant to all students and will be useful to you throughout your studies.  They contain important information and address issues such as what to do if you are absent, how to raise an appeal or a complaint and how the University will calculate your degree outcome.

These University wide education policies should be read in conjunction with this programme and/or course handbook, in which School specific policies are detailed. These policies are effective immediately, for the 2023/24 academic year. Further information can be found on the [University’s Infohub webpage](https://www.abdn.ac.uk/students/) or by visiting the Infohub.

The information included in the institutional area for 2023-24 includes the following:

* Assessment
* Feedback
* Academic Integrity
* Absence
* Student Monitoring/ Class Certificates
* Late Submission of Work
* Student Discipline
* The co-curriculum
* Student Learning Service (SLS)
* Professional and Academic Development
* Graduate Attributes
* Email Use
* MyAberdeen
* Appeals and Complaints

Where to Find the Following Information:

C6/C7- University of Aberdeen Homepage > Students > Academic Life > Monitoring and Progress > Student Monitoring (C6 & C7)

<https://www.abdn.ac.uk/students/academic-life/student-monitoring.php#panel5179>

Absences- To report absences you should use the absence reporting system tool on Student Hub. Once you have successfully completed and sent the absence form you will get an email that your absence request has been accepted. The link below can be used to log onto the Student Hub Website and from there you can record any absences you may have.

[Log In - Student Hub (ahttps://www.abdn.ac.uk/studenthub/loginbdn.ac.uk)](https://www.abdn.ac.uk/studenthub/login)

Submitting an Appeal- University of Aberdeen Homepage > Students > Academic Life > Appeals and Complaints

https://www.abdn.ac.uk/students/academic-life/appeals-complaints-3380.php#panel2109

Academic Language & Skills support

For students whose first language is not English, the Language Centre offers support with Academic Writing and Communication Skills.

Academic Writing

* Responding to a writing task: Focusing on the question
* Organising your writing: within & between paragraphs
* Using sources to support your writing (including writing in your own words, and

citing & referencing conventions)

* Using academic language
* Critical Thinking
* Proofreading & Editing

Academic Communication Skills

* Developing skills for effective communication in an academic context
* Promoting critical thinking and evaluation
* Giving opportunities to develop confidence in communicating in English
* Developing interactive competence: contributing and responding to seminar discussions
* Useful vocabulary and expressions for taking part in discussions

More information and how to book a place can be found here

Medical Sciences Common Grading Scale

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Grade | Grade Point | % Mark | Category | Honours Class | Description |
| A1 | 22 | 90-100 | Excellent | First | • Outstanding ability and critical thought • Evidence of extensive reading • Superior understanding •The best performance that can be expected from a student at this level |
|  |
| A2 | 21 | 85-89 |  |
|  |
| A3 | 20 | 80-84 |  |
|  |
| A4 | 19 | 75-79 |  |
|  |
| A5 | 18 | 70-74 |  |
|  |
| B1 | 17 | 67-69 | Very Good | Upper Second | • Able to argue logically and organise answers well  • Shows a thorough grasp of concepts  • Good use of examples to illustrate points and justify arguments  • Evidence of reading and wide appreciation of subject |  |
|  |
| B2 | 16 | 64-66 |  |
|  |
| B3 | 15 | 60-63 |  |
|  |
| C1 | 14 | 57-59 | Good | Lower Second | • Repetition of lecture notes without evidence of further appreciation of subject • Lacking illustrative examples and originality • Basic level of understanding |  |
|  |
| C2 | 13 | 54-56 |  |
|  |
| C3 | 12 | 50-53 |  |
|  |
| D1 | 11 | 47-49 | Pass | Third | • Limited ability to argue logically and organise answers • Failure to develop or illustrate points • The minimum level of performance required for a student to be awarded a pass |  |
|  |
| D2 | 10 | 44-46 |  |
|  |
| D3 | 9 | 40-43 |  |
|  |
| E1 | 8 | 37-39 | Fail | Fail | • Weak presentation • Tendency to irrelevance • Some attempt at an answer but seriously lacking in content and/or ability to organise thoughts |  |
|  |
| E2 | 7 | 34-36 |  |
|  |
| E3 | 6 | 30-33 |  |
|  |
| F1 | 5 | 26-29 | Clear Fail | Not used for Honours | • Contains major errors or misconceptions • Poor presentation |  |
|  |
| F2 | 4 | 21-25 |  |
|  |
| F3 | 3 | 16-20 |  |
|  |
| G1 | 2 | 11-15 | Clear Fail/Abysmal |  | • Token or no submission |  |
|  |
| G2 | 1 | 1-10 |  |
|  |
| G3 | 0 | 0 |  |
|  |

# Course Timetable IM3501: 2023-2024

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Time | Place | Subject | Session | Staff |
| Week 26 | | | | | |
| Mon 22 Jan |  |  |  |  |  |
| Tue 23 Jan |  |  |  |  |  |
| Wed 24 Jan |  | MyAbd | See revision material - Overview of the immune system before first lecture | Lecture | FW |
| 12:00-13:00 | 1:039/040 | L 1: Introduction to the course and the  innate Immune response 1 | Lecture | IC |
| Thu 25 Jan |  |  |  |  |  |
| Fri 26 Jan | 11:00-12:00 | 1:039/040 | L 2: The innate immune response 2 | Lecture | IC |
| Week 27 | | | | | |
| Mon 29 Jan |  |  |  |  |  |
| Tue 30 Jan |  |  |  |  |  |
| Wed 31 Jan | 11:00-12:00 | D2 Workshop BMP | L 3: The innate immune response 3 | Lecture | IC |
| Thu 1 Feb | 11:00-13:00 | Comp F81 Ed Wright | P 1: Collecting and analysing data | Practical | PM |
| Fri 2 Feb | 10:00-11:00 | [1M:001](IM:001) | L 4: Anatomy and function of lymphoid organs | Lecture | PC |
| Week 28 | | | | | |
| Mon 5 Feb |  |  |  |  |  |
| Tue 6 Feb |  |  |  |  |  |
| Wed 7 Feb | 11:00-13:00 | 2.054 | L 5&6: MHC and Antigen and Antigen processing | Lecture | FW |
|  | MyAbd | P2a: Flow cytometry introduction – please go over this in advance of the practical class tomorrow | Practical | AH |
| Thu 8 Feb | 10:00-13:00 | STH 1.001 | P2b: Flow Cytometry staining prep | Practical | AH |
| Fri 9 Feb | groups from 09:00-13:00 | IMS IFCC | P2c: Flow Cytometry data acquisition | Practical | AH |
| Week 29 | | | | | |
| Mon 12 Feb |  |  |  |  |  |
| Tue 13 Feb |  |  |  |  |  |
| Wed 14 Feb | 14:00-15:00 | D2 Workshop BMP | L 7: B and T cell development and receptor diversity | Lecture | MM |
| Thu 15 Feb | 13:00-17:00 | Comp S81 Ed Wright | P2d: Flow cytometry analysis (assignment 1) | Practical | AH |
| Fri 16 Feb | 12:00-14:00 | 1:039/040 | L 8&9: CD4 and CD8+ cells and T helper subsets | Lecture | IC |
| Week 30 | | | | | |
| Mon 19 Feb | 12:00-13:00 | 1:039/040 | L 10 : T regulatory cells | Lecture | PC |
| Tue 20 Feb |  |  |  |  |  |
| Wed 21 Feb |  |  |  |  |  |
|  |  |  | Deadline for submitting assignment 1 online | N/A |  |
|  | MyAbd | P 3: Immunohistochemistry – in advance please read the associated handbook | Practical | TS/IC |
| Thu 22 Feb | 10:00-15:00 | STH 1.001 | P 3: Immunohistochemistry (assignment 2) | Practical | TS/IC |
| Fri 23 Feb | 10:00-12:00 | 1:039/040 | L11 &12: B cell activation and Antibody | Tutorial | IM |
| Week 31 | | | | | |
| Mon 26 Feb |  |  |  |  |  |
| Tue 27 Feb |  |  |  |  |  |
| Wed 28 Feb | 11:00-12:00 | D2 Workshop BMP | L 13: Fc Receptors | Lecture | IM |
|  |  |  | Deadline for submitting assignment 2 | N/A |  |
| Thu 29 Feb | 15:00-17:00 | MR268 | L14 and T1: Cytokines in Action: lecture and tutorial | Lecture | VS |
| Fri 1 Mar | 10:00-12:00 | 1:039/040 | L15: Complement | Lecture | IM |
|  |  | MyAbd | Revision material: Immune activation – how what we have covered so far fits together | Lecture | FW |
| Week 32 | | | | | |
| Mon 4 Mar |  |  |  |  |  |
| Tue 5 Mar |  |  |  |  |  |
| Wed 6 Mar | 11.00-13.00 | 2.054 | L16&17: Immune cell trafficking and chemokines | Lecture | IC |
|  | MyAbd | P 4: ELISA – in advance read the associated handbook | Practical | FW/TF |
| Thu 7 Mar | 10:00-14:00 | STH 1.001 | P 4: ELISA (assignment 3) | Practical | FW/TF |
| Fri 8 Mar | 13:00-14:00 | 1:039/040 | T2: B cells in action | Tutorial | VS |
| Week 33 | | | | | |
| Mon 11 Mar |  |  |  |  |  |
| Tue 12 Mar |  |  |  |  |  |
| Wed 13 Mar | 11.00-13.00 | 2.054 | L 18 &19: Intracellular signalling 1 & 2 | Lecture | CQ |
|  |  | Deadline for submitting assignment 3 | N/A |  |
| Thu 14 Mar | 15:00-17:00 | Comp F86 Ed Wright | P 5: Use of PCR in Immunological Research | Workshop | VS |
| Fri 15 Mar | 10:00-11:00 | 1:039/040 | L20: Immune system evolution | Lecture | PC |
| Week 34 | | | | | |
| Mon 18 Mar |  |  |  |  |  |
| Tue 19 Mar |  |  |  |  |  |
| Wed 20 Mar |  |  |  |  |  |
| Thu 21 Mar | 9:00-10:00 | Taylor A31 | L21: Immune Tolerance | Lecture | MM |
| 10:00-12:00 | Comp S26  William Guild | P 6: Bioinformatics in the development of vaccines (assignment 4) | Practical | VS and MM |
| Fri 22 Mar | 12:00-14:00 | 1:039/040 | L 22&23: Autoimmunity: Genetics and the environment | Lecture | MM |
| Week 35 | | | | | |
| Mon 25 Mar |  |  |  |  |  |
| Tue 26 Mar |  |  |  |  |  |
| Wed 27 Mar |  |  | Deadline for submitting assignment 4 | N/A |  |
| 12.00-13.00 | 1:039/040 | L.24 Primary Immunodeficiency | Lecture | VS |
| Thu 28 Mar | 11.00-13.00 | 1:039/040 | L 25: Acquired Immunodeficiency | Lecture | VS |
| T3: Immunodeficiency | Tutorial | VS |
| Fri 29 Mar | 10:00-11:00 | 1:039/040 | L 26: Immunology – future perspectives | Tutorial | FW |
| Week 39 | | | | | |
| Mon 22 Apr | 12:00-13:00 | 1:039/040 | T4: Revision | Revision | FW/IC |
| Tue 23 Apr |  |  |  |  |  |
| Wed 24 Apr |  |  |  |  |  |
| Thu 25 Apr |  |  |  |  |  |
| Fri 26 Apr |  |  |  |  |  |

Staff

Dr Patrick Cao (PC)

Dr Isabel Crane (IC)

Dr Thelma Fletcher (TF)

Dr Andrea Holme

Dr Pietro Marini (PM)

Dr Mike Morgan (MM)

Dr Indrani Mukhopadhya (IM)

Dr Candice Quin (CQ)

Dr Virtu Solano (VS)

Dr Tara Sutherland (TS)

Dr Frank Ward (FW)

Venues

1:039/040, 1M:001 and 2.054 – Polwarth Building, Foresterhill

D2 workshop, Biomedical Physics Building, Foresterhill

F81 and S81 – Edward Wright Building, OA

Science Teaching Hub (STH), OA

Taylor A31, Taylor Building, OA

S26 William Guild, William Guild Building, OA

MR268, MacRobert Building, OA

IFCC – Institute of Medical Sciences, IMS, Foresterhill

Campus Maps - Foresterhill



Polwarth Floor Plans

Diagram, schematic

Description automatically generated

Diagram

Description automatically generated

Diagram

Description automatically generated