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*IM4005- Advanced Immunology*

*Course Handbook 2023-2024*

*Undergraduate Medical Sciences*

*School of Medicine, Medical Sciences & Nutrition*

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**Course Summary**

This course comprises four main modules combining advanced research-led Immunology and Molecular Biology:

* The immune system and how it functions in health and disease
* Protein structure, function and engineering
* Immunology research – current topics and research methods
* Advanced molecular techniques.

**Course Aims & Learning Outcomes**

The general aims of the course are to enable students:

* to establish a broad and in-depth, up-to-date knowledge of immunology in the context of health and disease.
* to establish a knowledge, at advanced level, of protein structure, function and engineering which underpin immunology

The subject-specific learning outcomes are such that, at the end of the course students will be able to apply your understanding of the following topics, and be able to evaluate and critically assess research findings, review articles and opinion on these topics:

* the main elements of the immune system and their mechanisms of action and be able to give examples to show their fundamental roles in health and disease.
* the major principles that determine the three-dimensional structure of proteins, how evolution has shaped protein structure and function, the contribution of structure to function, and the physical and chemical constraints on protein structure and function; how protein engineering allows the design of therapeutic antibodies
* topics at the forefront of Immunology knowledge and the current research techniques used to investigate them

Students should also be able to decide which molecular techniques are appropriate to answer a particular research question considering their advantages and disadvantages

**Course Teaching Staff**

**Course Co-ordinator(s):**

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

Prof Heather Wilson ([**h.m.wilson@abdn.ac.uk**](mailto:h.m.wilson@abdn.ac.uk))

**Other Staff:**

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

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Prof Jonathan Pettitt ([**j.pettitt@abdn.ac.uk**](mailto:j.pettitt@abdn.ac.uk))    
Prof Derek Scott **(**[d.scott@abdn.ac.uk](mailto:d.scott@abdn.ac.uk)**)**

**In-person teaching**

The live in-person lectures will have full recordings which have captions and powerpoint files, so that you can go over them later as well at your leisure. These will have been recorded in advance and may be in shorter sections and may include questions and additional material which aim to help you consider the material in more depth. At level 4 independent learning and critical thinking is important. 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.

The Immunology Research module of the course will have in-person tutorials where you will need to read research papers in advance, so please look out for those sessions and plan your time so that you read the papers and are prepared to discuss them before coming to the tutorial. Prof Wilson will explain more about this at the start of this module.

The Advanced Molecular techniques module at the end of the course is a set of online workshops on practical techniques using Lt software. These aim to give you an understanding of these techniques which are central to much immunology research. They have work for you to do as you go along which will be assessed. This will be explained in more detail at the start of this section.

**Assessments & Examinations**

This course is assessed via a written examination (worth 70% of the overall course grade) in the May exam diet and two pieces of continuous assessment, the Research Perspective  (worth 20% of the overall course grade) and the workshop on Advanced Molecular Techniques (worth 10% of the overall course grade).

The continuous assessment associated with this course is detailed below, with two other pieces of work being associated with your “Options” courses.

It is vital that the deadlines for your continuous assessments are adhered to.  Submit an incomplete piece of work rather than miss a deadline.  Work not submitted on time will not be accepted unless accompanied by either a medical certificate or a written explanation justifying this.

A complete submission of your work consists of:

* uploading an electronic copy of the work via MyAberdeen before 12 NOON on the deadline date.

The deadlines for all four pieces of work are:

* **Core course (IM4005) *Research Perspective*: 12 NOON, Monday 9th October.**
* Option 1 course *Research Tutorial Spotlight*: 12 NOON, Monday 6th November.
* Option 2 course *Essay*: 12 NOON, Monday 27th November.
* **Core course (IM4005) *Advanced Molecular Techniques*: Ongoing assessment Monday 20st Nov - Monday 4th Dec** (this will be explained in more detail at the introductory session for this module)**.**

**Research Perspective Assessment**

This piece of work is intended to provide a quick update to the reader on one research article aligned to immunology. The work should give additional insight on the topic, highlighting broader implications for the field that have not already been provided by the original paper.

You are writing for a wide but scientifically trained audience, not only for readers in your own field. You can assume that your audience is competent in the basic language of the subject but may require explanation or definition of technical terms, concepts, and assumptions specific to your topic. Avoid jargon, but do not oversimplify or cut corners: be accurate and precise throughout.

As a guide and good example of this kind of article, see the Nature *News and Views* articles at the following links.

[**www.nature.com/nature/articles?type=news-and-views**](http://www.nature.com/nature/articles?type=news-and-views)

[**https://www.nature.com/articles/nature23090.pdf**](https://www.nature.com/articles/nature23090.pdf)

You are welcome to use subheadings to structure the work as you see fit, but the following should be included on a title page.

* *Title* (8 words maximum)
* *Chosen Article* – A reference for your chosen research paper written in a standard reference format (as below)
* *Keywords* (at least 2 and a maximum of 6)
* *Abstract* (50 words maximum) – Please provide a short teaser to set the scene and introduce the main take home-message of the article.  Must not include reference citations
* *Name*
* *Student ID*
* *Word Count*

Word count for your Research Perspective is **1,000 words** and you can use a maximum of two figures/tables.  The word limit does not include text in tables, figure legends, abstract, or references.

The research article to be used is:

Hurabielle, C., Link, V.M., Bouladoux N. et al., (2020) **Immunity to commensal skin fungi promotes psoriasiform skin inflammation.**, *Proceedings of the National Academy of Sciences of the United States of America*. 117(28), pp. 16465-16474

[**https://www.pnas.org/content/117/28/16465**](https://www.pnas.org/content/117/28/16465)

**Scientific Writing**

Writing is an important scientific skill.  Its function in the Honours courses is to provide you with training in finding, reading, analysing and communicating scientific ideas.  Although it is usually necessary to start your reading from reviews that provide an expert overview of a topic, it is critical to your development that you read a significant number of original papers that describe the experiments underpinning key scientific advances.  Central to these skills is the development of the ability to judge the important points made in a paper and what are the central pieces of evidence that support those points.  Finally, it is important for all graduates to have a working knowledge of the key experimental procedures and techniques that generate the data that we use to test hypotheses.

**Word Limit:** Adhering to a word limit (excluding figure legends, tables and the reference list) requires you to be disciplined in the preparation of the piece of work; being able to write to a required length is a very useful skill, so we expect you to stay within the limit set.  Your computer will give you a word count; this must be included at the end of the work submitted.  **We reserve the right to return work exceeding the word count for shortening.  Submissions returned for shortening must be re-submitted within 24 h**. Having to resubmit your work again will delay marking and subsequent feedback.

**Assessment:** The continuous assessment for Honours will be assessed by two members of staff, using criteria that will be published in MyAberdeen alongside the submission links for each piece of work.  This assessment is not open to negotiation, although if asked, the markers will clarify any points of constructive criticism.  Please use the assessment criteria as a guide and read them with care; the notes on scientific writing also give you guidance on what we judge to be important in a well-written piece of work.  If you have particular doubts about your ability to write scientifically, either in terms of organising material or in the mechanics of good scientific writing, seek help from a member of staff or the Honours Coordinators during the first term.  Do not wait until your first assignment is causing you anxiety.

All submissions should make reference to the latest literature on the subject you have chosen.  While you may be guided through an unfamiliar subject area by reference to a review, **your work should specifically not paraphrase the review article**, but should be a synthesis of your own views of the subject, **written in your own words** arrived at by reading of the **original research papers** from resources such as Web of Science/Medline/PubMed/Google Scholar.  This will give insight into *how* information is derived (one criteria assessed) as well as helping in preparation for the Data Analysis exam at the end of the year, where understanding of a research paper is tested.

**Avoiding Plagiarism**

**The definition of Plagiarism** is the use, without adequate acknowledgement, of the intellectual work of another person in work submitted for assessment.  A student cannot be found to have committed plagiarism where it can be shown that the student has taken all reasonable care to avoid representing the work of others as his or her own.

The instruction given above to write assignments **in your own words** and not to copy whole sentences from articles is crucially important to avoid plagiarism.

The University views this offence extremely seriously indeed; it can have dire consequences, including the awarding of no higher than a pass degree.

Continuous assessment assignments and your thesis are all submitted as electronic copies via MyAberdeen so they can be checked for originality.  The programme will detect passages of text copied from other sources, and also if sentences from various text sources were used throughout the text, both indicators of plagiarism. MyAberdeen accepts most common formats, but it is advised that you submit your work as **PDF** files to avoid problems with re-formatting of figures and/or text during the submission process.  Any evidence of copying from other sources that is detected in your final submissions will be brought to the attention of the Head of School, who will investigate and determine whether cheating has occurred and take the appropriate action.

**Feedback**

As for all elements of continuous assessment, you will be given feedback on the Honours classification your work has attained, with the grading on the University Common Grading Scale (CGS). Feedback is normally given within 3 weeks of submission.

**Guide to Writing**

Students should refer to "A Guide to Scientific Writing" by David Lindsay (Longman Cheshire) for more general guidance on writing.  What follows is not a substitute for reading this book, but gives general guidance on writing and on how we assess your work.

**PLANNING YOUR WRITING**

**Think**

* What do I know already?
* Where will I find the information needed to develop my views on this issue?
* Where can I find more information?
* What are the best examples to illustrate the points that I want to make?
* How many words do I devote to each example?

**Prepare**

* Read a mix of reviews and use these to identify the major original scientific papers that have resulted in our current understanding of the topic.
* Read these papers and make notes on: research strategy use to analyse the problem, key experimental procedures that generate the data and critical controls that validate the data.
* Devise a set of themes and ideas for your work using the core information from above.
* Organise evidence under the theme headings: remember that arguments pro and contra are equally important.
* Select illustrations (diagrams/schemes) that reflect the themes and ideas.

**Plan**

* Place themes in a logical order, and have a clear, and planned, introduction and conclusion.
* Start simply and develop towards more complex arguments.
* Do not hop from one theme to another and then back again.
* Identify the links between themes as a mechanism of ensuring continuity.

**Execute**

* Write short sentences and keep clauses simple.
* Use appropriate tenses.
* Be consistent in the organisation of sections.
* Have diagrams in front of you when writing about them.
* Support statements with evidence, usually a citation; ensure your citation style is consistent

**Complete**

* Read over what you have written - can you read it out loud without stumbling?
* Have you answered the question?
* Have you done what you said you would do at the start of the assignment?
* Have you checked it carefully for typographical errors?

**Assessment of Written Work**

Every piece of work in your Honours year will be assessed using a standardised assessment form.  The assessment forms ensure that you get useful feedback on your written work.  The Continuous Assessment form covers the following criteria.

**Content and Presentation**

Each piece of work will be judged on content and also on style of presentation.  More marks are given for the content of the work than are given for the presentation.  Look at the structure of the feedback form to see what the priorities are in giving marks.  However, remember also that a written piece of work must always be more than a collection of facts and ideas.  Good presentation is central to clear communication.

**Knowledge**:  It is expected that any piece of work will contain a substantial body of facts gleaned from appropriate original literature, which should be cited within the text (**Citations**).  The length of the work and its intended audience will dictate how many facts can be given in support of a given statement.

**Analysis**:  Students are expected to develop their analytical skills.  This is most readily demonstrated by use of carefully selected examples, which should show a good **understanding** of the material.  Remember that examples may either support or undermine an argument.

**Understanding:** Students are expected to display a clear grasp of fundamental conceptsin the context of the work and their discipline.  This is sometimes illustrated by the lack of mistakes about fundamentals of the cell and cellular processes, but it is also expected a student will develop, through their reading, an understanding of the subject area and display this by writing logically about it.

**Techniques**:  Scientific information is derived from experimentation.  It is important to understand how information is derived.  For example what technique was used, how was the experiment conducted etc.

**Figures**:  An argument can often be supported by Figures or Tables that present information more effectively than text alone. Figures and Tables should not be an add-on, but must be an integral feature of the text and must be described and discussed.  A poor or inappropriate figure or table will usually detract from the work. Appropriate figures prepared by hand or using a drawing programme are preferred to reproductions of complex diagrams from other people's work (if used, make sure you acknowledge the source).

**Citations**:  Papers and reviews used as source material should be cited in the text. Direct quotes should be indicated by quotation marks, **although their use should be kept to a minimum, and they must be referenced (see University Web page on plagiarism)**.  Use of the **Harvard style of citation** is essential and a list of citations should be presented at the end of the work (referencing of EMBO Journal articles is a good example). The reference list does not have to be included in your word count.

In the text a reference should be cited by author and date; e.g. 'Water is known to boil at 100°C (Jones and Brown, 1872; Brown *et al*, 1873) and freeze at…'.Not more than two authors may be cited per reference; if there are more than two authors use *et* *al*. References should be listed alphabetically according to the initial letter of the surname of the first author.  Where the same authors have published more than one paper, list them in the order in which their papers appeared. If necessary use a and b, e.g. 1990a., with the authors' surnames and initials inverted.

References should include, in the following order:

authors' names;  year;   article or chapter title;  editors (books only);   journal or book title;   name and address of publisher (books only); volume number and inclusive page numbers.

The name of each journal should be abbreviated according to the World List of Scientific Periodicals (see an EMBO J. paper for reference) and italicised.  References should therefore be listed as follows:

  Tugendreich, S., Bassett, D.E., Jr, McKusick,V.A., Boguski, M.S. and

        Hieter, P. (1994) Genes conserved in yeast and humans*. Hum. Mol.*

*Genet*., 3, 1509-1517.

        Gehring, W. (1994) A history of the homeobox. In Duboule, D.

        (ed.), Guidebook to the Homeobox Genes. Oxford University Press,

        Oxford, UK, pp. 1-10.

        Lewin, B. (1994) Genes V. Oxford University Press, Oxford, UK.

**Structure**:  A good piece of writing will be clearly structured by division into appropriate sections, including an **introduction**, which provides a clear and concise statement of the issue to be discussed, and a **conclusion,** which briefly sums up the issues discussed.

**Introduction**: a clear and brief introduction of the topic of the work that describes the specific areas questions or issues that the reader should focus on.

**Viewpoint**:  Students should form a view on the subject about which they are writing and should be able to support their views with balanced use of appropriate examples. A balanced piece of work will consider the relative strengths of the arguments for and against a particular point of view.

**Conclusions:**  this section is used to pull the main themes of the work together and to briefly state the principal outcome of the analysis that you have performed.  It should leave the reader with a clear impression of what you think about the subject matter presented.

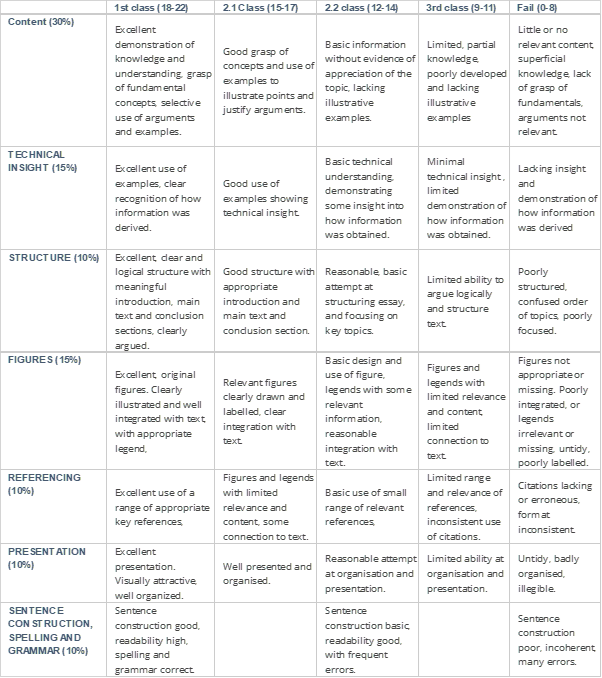
**Sentence construction, spelling, grammar**:  Students are expected to spell correctly and to follow the basic rules of grammar.  Short, clear sentences are preferable to complex, tortuous, rambling constructions. You should be able to pick up the eight clear grammatical, punctuation and spelling errors in the sentence that follows. If you can’t, then revise your grammar/spelling rules. “It’s clear to the company that there commercial targeted young people of the same age as Johns friends who were clearly able to receive its message.”

**Organisation:**  A written assignment is easier to read if it is attractively set out on the page (wide margins, double spaced, font size ³12) with a logical progression and structure.

**Specific comments**:  This section is provided for the staff to make comments that amplify the box assessments in the top half of the form.

**Note that computer failure is not accepted as a reason for late submission - it is good practice to maintain at least two copies of computer files.**

**Assessment/Feedback MyAberdeen Rubric**

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# 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 (Professor Gordon McEwan)
* 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.

If a course has been completed and students are no longer on campus (i.e. work from second half session during the summer vacation), coursework will be kept until the end of Fresher’s Week, during the new academic year. After that point, unclaimed student work will be securely destroyed.

**Course Reading List**

As this is a level 4 course you are expected to read the primary research literature. Some will be suggested and mentioned throughout the course, but you should also get used to accessing this for yourself, to follow up on a topic, via databases such as PubMed and Web of Science. However, your previous texts from third year will be useful for revising basic and fundamental knowledge and as a starting point for some topics e.g. Cellular and Molecular Immunology, 9th Edition, Abbas, Lichtman, Pillai. There is now a 10th Edition but we don’t expect you to buy this if you already have the 9th Edition. The 9th Edition is available online via MyAberdeen

**Lecture Synopsis**

**MODULE 1 – BASIC IMMUNOLOGY IN DISEASE**

This module is designed to refresh and build on knowledge acquired at 3rd year and provide students with a solid understanding of the main elements of the immune system with examples to show their fundamental roles in health and disease.

**MODULE 2 – PROTEINS: STRUCTURE, FUNCTION AND ENGINEERING**

Proteins are central to all biological processes and understanding them is essential for all molecular life scientists.  This core module will explore current knowledge of protein structure and function.   The objective of the module is to give students an appreciation of the relationships between primary sequence and final structure, consequences for function, including interactions, as well as insights into mutations that cause disease and into the evolution of biological systems.

The manipulation of antibodies, and related structures, as a route to new, targeted and efficacious treatments for disease could be considered as one of the great positives to have emerged from the application of protein engineering techniques.  In these lectures on Antibodies and Protein Engineering we will consider initially the antibody protein as a scaffold for manipulation and follow the earlier pioneers’ efforts to develop immune-therapies.  In the second lecture we will discuss why antibodies make up six or the world’s top ten selling drugs and speculate where this technology will go next, with particular reference to the application of new protein architectures from sources as diverse as camel and sharks.

The lectures on protein folding and structure (Prof Iain J McEwan) will examine the dynamics of protein folding, with an emphasis on structure-function relationships. The concept of naturally disordered proteins or protein domains will be introduced and their functional significance discussed. Examples will be chosen to illustrate different aspects of protein folding, in particular induced folding and allosteric regulation. Methods for studying protein conformation and folding will also be discussed, where appropriate.

The objective of the protein structure workshop exercises (Prof Ian Stansfield) is to familiarize students with key concepts regarding the folding and function of proteins.  The workshop will consider the importance of amino acid side chains in controlling the interaction of the protein with its environment and with ligands; the conservation of folds among diverse protein sequences; the role of amino acid side chains in catalysis and static versus dynamic views of proteins.  Students will be expected to supplement the workshops with extra work at computer terminals.

The membrane protein lectures (Dr Sam Miller) focus on Integral membrane proteins that constitute 20-30% of the protein encoded by most genomes and represent 60-70% of the drug targets utilised in health care.  Any understanding of biology requires some knowledge of membrane protein structure and function.  The lectures will examine

* The basic structure of different classes of membrane proteins, using the crystallographic database to illustrate the connection between the original “cartoons” used to guide thinking on membrane proteins and the structures of selected examples;
* The use of genetic methods to probe membrane protein structure and function;
* The importance of mutations in membrane proteins in provoking disease.

**MODULE 3 –IMMUNOLOGY RESEARCH**

The aim of this module is to take students beyond the textbook and make them aware of important hypotheses and advances in immunological theory and practice.  The format will be an informal mix of tutorials and lectures with the specific aim of enabling students to gain the confidence in their own knowledge and participate in discussion and debate. In addition, the lecture/workshop sessions will give theoretical and practical insight into important modern technologies commonly used in immunological research and diagnosis.

In a series of tutorials and under the guidance of individual members of staff, recent papers that represent an important advance in our knowledge will be read and discussed. These may challenge accepted theories and ideas or may represent important technological or methodological advances which will change the way research is carried out.   Students will be expected to have read papers before tutorials and be ready to discuss concepts, data interpretation, controls and conclusions on the day.

At the end of the module the students will have developed their critical faculties when reading, have an understanding of what makes a key paper and have acquired advanced knowledge of recent ideas and opinions and the methodology used to prove or refute them.

**MODULE 4 – ADVANCED MOLECULAR TECHNIQUES**

The Advanced Molecular techniques module at the end of the course is a set of online workshops on practical techniques using Lt software. These workshops aim to consolidate and extend, using an active learning approach, some of the techniques that have been discussed in module 3. Not only are they commonly used in immunological research they are also important in other areas of medical science research so have a generic value. Analysing and presenting real data will also further generic research skills including data interpretation.

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 Monitoriung (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 IM4005: 2023-2024

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Time | Venue | Subject | Session | Staff |
| Week 8 | | | | | |
| Mon 18 Sep | 11:00-12:00 | SLT | Essay Writing | Lecture | Prof J Pettitt |
|  |  |  | BASIC IMMUNOLOGY IN DISEASE |  |  |
| Tue 19 Sep | 11:00-12:00 | 1M:001 | Introduction to the course | Tutorial | Dr I Crane  Prof H Wilson |
|  | 12:00-13:00 | 1M:001 | Innate immune response – recognition and responses | Lecture | Prof H Wilson |
| Wed 20 Sep |  |  |  |  |  |
| Thu 21 Sep | 10:00-12:00 | 1M:001 | Inflammation and resolution of inflammation | Lecture | Prof H Wilson |
| 13:00-14:00 | Suttie Centre – 402 | Memory (not compulsory for info only) | Seminar | Ext speaker |
| 15:00-16:00 | 1M:001 | Immunity and vaccination: Introduction to adaptive immune system | Lecture | Dr F Ward |
| Fri 22 Sep | 10:00-12:00 | 1M:003 | The role of B cells and complement in SLE | Lecture | Dr F Ward |
|  | 13.00-14.00 | SLT | Careers Service Tutorial | Tutorial | R Gibson |
| Week 9 | | | | | |
| Mon 25 Sep | 11:00-13:00 | 1M:001 | T cells – basics (T helper cells and disease) | Lecture | Dr I Crane |
| Tue 26 Sep |  |  |  |  |  |
| Wed 27 Sep | 10:00-11:00 | SLT | Citing, Referencing and Plagiarism | Lecture | Prof D Scott |
| Thu 28 Sep | 10:00-11:00 | 1M:001 | T regulatory cells extended: CTLA4 and PD-1 | Lecture | Dr F Ward |
|  | 13:00-15:00 | 1M:003 | Innate and adaptive cytotoxic cells  Module discussion | Lecture | Dr I Crane |
| Fri 29 Sep |  |  |  |  |  |
| Week 10 | | | | | |
| Mon 2 Oct |  |  |  |  |  |
| Tue 3 Oct |  |  |  |  |  |
| Wed 4 Oct |  |  |  |  |  |
| Thu 5 Oct |  |  |  |  |  |
| Fri 6 Oct |  |  |  |  |  |
| Week 11 | | | | | |
|  |  |  | PROTEINS: STRUCTURE, FUNCTION AND ENGINEERING |  |  |
| Mon 9 Oct |  |  | *Research Perspective:* deadline | Assessed |  |
| 09:00-11:00 | 2:054 | Antibodies and Protein Engineering 1 & 2 | Lecture | Dr O Ubah |
| Tue 10 Oct |  |  |  |  |  |
| Wed 11 Oct |  |  |  |  |  |
| Thu 12 Oct | 11:00-12:00 | SLT | Protein Folding and Function 1 | Lecture | Prof IJ McEwan |
| 12:00-13:00 | SLT | Protein Folding and Function 2 | Lecture | Prof IJ McEwan |
| Fri 13Oct |  |  |  |  |  |
| Week 12 | | | | | |
| Mon 16 Oct | 09:00-10:00 | 2:054 | Protein Folding and Function 3 | Lecture | Prof IJ McEwan |
| 10:00-11:00 | 2:054 | Protein Folding and Function 4 | Lecture | Prof IJ McEwan |
| Tue 17 Oct |  |  |  |  |  |
| Wed 18 Oct |  |  |  |  |  |
| Thu 19 Oct | 13:00-14:00 | SLT | Proteins – Folds and Function | Lecture | Prof Stansfield |
|  |  |  |  |  |
| Fri 20 Oct | 13.00-14.00 | SLT | Statistics | Lecture | Prof D Scott |
| Week 13 | | | | | |
| Mon 23 Oct | 10:00-11:00 | SLT | Membrane proteins 1 | Lecture | Dr S Miller |
| 11:00-12:00 | SLT | Membrane proteins 2 | Lecture | Dr S Miller |
| Tue 24 Oct |  |  |  |  |  |
| Wed 25 Oct |  |  |  |  |  |
| Thu 26 Oct | 11:00-12:00 | SLT | Membrane proteins 3 | Lecture | Dr S Miller |
| Fri 27Oct |  |  |  |  |  |
| Week 14 | | | | | |
|  |  |  | IMMUNOLOGY RESEARCH |  |  |
| Mon 30 Oct | 10:00-11:00 | 1M:001 | Overview of this section of the course | Lecture | Prof H Wilson |
| 11:00-12:00 | 1M:001 | Diagnostic Methods in Immunology | Lecture | Dr M Arastoo |
| Tue 31 Oct | 11:00-12:00 | 1M:003 | Quantitative imaging flow cytometry in immunology research | Lecture | Dr R Abu Eid |
| Wed 1 Nov |  |  |  |  |  |
| Thu 2 Nov |  |  |  |  |  |
| Fri 3 Nov | 13:00-15:00 | 1M:001 | Cancer Immune Therapy – Current Concepts | Tutorial | Dr R Abu-Eid |
| Week 15 | | | | | |
| Mon 6 Nov |  |  |  |  |  |
| Tue 7 Nov | 10:00-11:00 | 1M:001 | Immunological research using in vivo models | Lecture | Dr P Cao |
| 11:00-12:00 | 1M:003 | Glycomics in immunological research | Lecture | Dr P Cao |
| Wed 8 Nov | 11:00-12:00 | 1M:001 | Glycomics research tutorial | Tutorial | Dr P Cao |
| Thu 9 Nov |  |  |  |  |  |
| Fri 10 Nov | 11:00-12:00 | 1M:001 | Immunology and Ageing | Lecture | Dr L Penny |
| Week 16 | | | | | |
| Mon 13 Nov | 10:00-12:00 | 1M:001 | Immunometabolism | Tutorial | Prof H Wilson |
| Tue 14 Nov |  |  |  |  |  |
| Wed 15 Nov |  |  |  |  |  |
| Thu 16 Nov |  |  |  |  |  |
| Fri 17 Nov | 11:00-13:00 | 1M:001 | Neuroimmunology | Tutorial | Dr P Cao |
| Week 17 | | | | | |
|  |  |  | ADVANCED MOLECULAR TECHNIQUES |  |  |
| Mon 20 Nov | 10:00-11:00 | 2:054 | Introduction / Guided tour of Lt/ Assessment deadline tbc | Tutorial | Prof J Barrow |
| Tue 21 Nov |  | Lt | Advanced Microscopy Techniques | Lt Workshop |  |
| Wed 22 Nov |  | Lt | Flow Cytometry | Lt Workshop |  |
| Thu 23 Nov |  | Lt | Bia-Core Analysis | Lt Workshop |  |
| Fri 24 Nov |  |  |  |  |  |
| Week 18 | | | | | |
| Mon 27 Nov |  | Lt | Cell Growth Analysis | Lt Workshop |  |
| Tue 28 Nov |  | Lt | PCR / RT-PCR / qPCR | Lt Workshop |  |
| Wed 29 Nov |  |  |  |  |  |
| Thu 30 Dec |  |  |  |  |  |
| Fri 1 Dec | 10:00-11:00 | S LT | Final Session | Tutorial | Prof J Barrow |

Green – material which is online only for you to study in your own time.

Blue – Generic lectures

Yellow – assessment deadline

Venues

All venues are in Foresterhill. SLT is the main lecture theatre in the Suttie Centre. All other venues are in Polwarth.

Campus Maps - Foresterhill



Polwarth Floor Plans

Diagram, schematic

Description automatically generated

Diagram

Description automatically generated

Diagram

Description automatically generated