

**MSC INVESTIGATIVE OPHTHALMOLOGY & VISION SCIENCES – SYLLABUS AND UNIT GUIDE 2015-2016**

# Aims

1. To give students a firm grounding in the knowledge, understanding and skills that they will need to pursue a higher research degree or to participate in research programmes. It recognises that undergraduate courses do not always provide these skills and that those considering research programmes can benefit from a period of structured training;
2. To provide those working within the ophthalmic professions (ophthalmologists, optometrists, orthoptists and ophthalmic nurses) with an opportunity for professional development;
3. To provide a programme whose curricula are informed by the research strengths of the University of Manchester and Manchester Royal Eye Hospital and which draws upon expertise from a wide range of disciplines that extends beyond the staff of the two institutions;
4. To continually develop the course in response to a) new developments within the field; and b) feedback from students;
5. To provide students with academic, career and pastoral support in addition to that provided by the University;
6. To meet a need for researchers who can form a bridge between basic research and applied clinical research.
7. To widen access to eye health and vision sciences research

# Objectives

On completion of the course students will have:

1. Obtained the knowledge, understanding and skills needed to follow a research based career; Gained an enhanced and more specialist knowledge in selective areas of ophthalmic research;
2. Experienced interdisciplinary learning and have a wider appreciation of the contributions that different subjects can make to the discipline;
3. Acquired skills in experimental design, statistics and the use of computers in research;
4. Demonstrated an ability to successfully complete a research project;
5. Learnt how to critically review the literature;
6. Acquired/developed oral and written presentation skills.

# Course Structure and Credits

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|  | **Credits** | | | |
| **Course Units** | **MSc Pathway 1** | **MSc Pathway 2**  (optional units: choose 2 from 4) | **PG Diploma** | **PG Cert** (optional units: choose 4 from  6) |
| **Macular Degeneration** | 15 | 15 | 15 | 15 option |
| **Research Methods** | 15 | 15 | 15 | 15 option |
| **Glaucoma** | 15 | 15 option | 15 | 15 option |
| **Retinal Vascular Disease** | 15 | 15 option | 15 | 15 option |
| **Contact Lenses** | 15 | 15 option | 15 | 15 option |
| **Cornea** | 15 | 15 option | 15 | 15 option |

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| **Literature review (MSc pathway 2 and PG Diploma only)** |  | 30 | 30 |  |
| **Main Project (MSc) Dissertation** | 90 | 90 |  |  |
| **Total credits for MSc** | **180** | **180** |  |  |
| **Total credits for PG Diploma** |  |  | **120** |  |
| **Total credits for PG Certificate** |  |  |  | **60** |

**Teaching & Learning Methods**

The programme uses a range of different teaching methods. Lectures, tutorials, workshops, practicals, and self-directed learning will facilitate a more in depth understanding of the major concepts delivered via the compulsory core course units. Peer review discussions and opportunity for staff-student feedback will be provided during tutorials.

# Teaching & Learning Resources (access to PCs, library, journals etc)

Ophthalmology is housed within the Manchester Royal Eye Hospital, which is located on the CMFT site at the southern end of the University of Manchester campus. Optometry is housed within the Carys Bannister Building. The two sites are few hundred yards apart.

Computing facilities are available within the large public clusters in easily accessible locations. Students are automatically registered on the University network when they formally register at the beginning of the programme. Once registered they can access a wide range of facilities including e-mail and the Internet.

# Research Projects, Dissertations and Literature Reviews Choosing the topic for your MSc dissertation (90 credits)

In January students will be given a list of dissertation titles that are available. Each dissertation will have a named supervisor and students are expected to discuss those they are interested in with supervisors prior to coming to an agreement with the supervisor on a topic. Once agreement has been reached students should notify the programme administrator of their dissertation title and supervisor. The final dissertation may be presented as a literature review followed by a report of the experimental work (which may take the form of a paper suitable for publication).Guidance for the word count of the dissertation is 10,000 to 15,000 words. Please expect to have marks deducted by your examiner if you do not remain within this range.

# Location

Most dissertations are conducted within the confines of the University and the Manchester Royal Eye Hospital. Students may, however, embark on work outside these confines (e.g. an optometric practice or other hospital). This is contingent on the acceptance of the research proposal and the approval of suitable external and internal supervisors by the course director.

# Timetable

Full-time students normally start their dissertations in January and are expected to have completed their introduction and gained any required permissions (ethical reviews, Trust approval) prior to starting their practical work in May. They then work full time on their dissertation through to September. To enable the Departments to nominate Examiners and to have these nominations approved by the Postgraduate Panel before the date of submission, a student is required to give notice to the Programme Administrator of his/her intention to submit a dissertation. Students will be contacted by the Graduate Office to confirm the process for notice of submission forms.

# RESEARCH METHODS

**Course Unit Coordinator:** Rachel Cowen [rachel.cowen@manchester.ac.uk](mailto:rachel.cowen@manchester.ac.uk)

# Introduction to the Course Unit

The Research Methods Course Unit is a 15 credit, interactive blended learning unit which will give you a comprehensive introduction to key information and skills required for the design, execution, interpretation and dissemination of medical, scientific and clinically-related research. The research methods course is an integral part of your research experience whilst undertaking your degree. It will help you produce a high quality dissertation and provide you with the strongest grounding possible to carry out successful research, whether in academia, industry or a medically-aligned profession.

The unit is a blended combination of lectures, workshops and on-line material designed to cover topics relating to critical analysis of scientific/medical research literature, information management, study design, basic statistical analysis, research integrity, research presentation skills, scientific writing and publishing skills.

# Aims of the Course Unit

This unit aims to prepare you for postgraduate research. Specifically it will:

* + Introduce you to the skills and knowledge required to critically design, effectively implement, ethically conduct and knowledgeably interpret research in medical, scientific and clinically related sciences.
  + Provide you with life-long critical appraisal skills that you will be able to apply to any research evidence that comes before you.
  + Develop your competence in key transferable skills, particularly written and oral communication of research and time and project management in the research setting.

# Organisation and Intended Learning Outcomes (ILOs) of the Course Unit

The unit will begin with 5 taught introductory sessions run by the Faculty Graduate Training Team covering:

## Unit Overview and How to Ensure Research Ethics/Integrity.

ILOs:

* + To be able to use blackboard and maximise your research methods knowledge/learning using the research methods online resources.
  + To fully understand how you will be assessed and what it takes to successfully complete the unit.
  + To understand the importance of research integrity and how to avoid plagiarism, fraud, and misconduct
  + To raise awareness of the research governance research has gone wrong.

## Introduction to Statistics

ILOs:

* + To be able to approriately describe and present quantitative data.
  + To understand the principles underlying hypothesis testing, sampling, estimation and confidence intervals.
  + To be able to carry out statistical analyses using statistical software.

## Research Study Design

ILOs:

* + To understand the basic principles of project and time management.
  + To be able to apply project planning tools to establish and execute a successful research study with maximum research impact.

## Dissertation Skills

ILOs:

* + To be able to critically analyse a research paper and prepare a well-structured research abstract.
  + To understand the principles of effective academic writing.
  + To be able to produce a high quality dissertation.

## Research Communication Skills

ILOs:

* + To understand how to effectively communicate your research ideas and findings to a wide audience.
  + To be able to produce an effective research poster with high visual impact.
  + To be able to confidently deliver a research presentation and defend/field questions.

# Timetable - Taught Introductory Sessions

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| --- | --- | --- | --- | --- |
| **Session** | **Date** | **Time** | **Location** | **Delivered by** |
| **Unit Overview and Research Ethics/Integrity** | Mon 29 Sept | 9.30 - 1pm | K3, Sackville Building | Rachel Cowen and Judy Williams |
| **Introduction to Statistics** | Tues 30 Sept | 9.30 - 12.30 pm | K3, Sackville Building | Tanya Walsh |
| **Research Study Design** | Wed 1 Oct | 9.30 - 1pm | Entrance Hall, Sackville Building | Rachel Cowen |
| **Dissertation Skills** | Thurs 2 Oct | 9.30–  1pm | Entrance Hall, Sackville Building | Judy Williams |
| **Research Communication Skills** | Fri 3 Oct | 9.30–  1pm | Entrance Hall, Sackville Building | Rachel Cowen |

The unit will then run on-line in Blackboard. All of the face to face material including session slides will be available through blackboard. There will be a blackboard discussion board to support the summative assessment aspects of the unit and there may also be some in-programme taught consolidation sessions. Information will remain available in Blackboard for the whole academic year.

The Research Methods Online blackboard material is structured into 3 sections and includes multiple choice questions (MCQ’s) to formatively assess your learning from the face to face training and online research methods resources.

# Timetable for submission and completion of assessments

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| --- | --- | --- | --- |
| **Assessment task** | **Length** | **Submission/ completion date** | **Weighting within unit** |
| **Abstract writing assignment** | **250 words** | **4pm on Thurs 9 Oct** | **Summative (34%)** |
| **Self-assessment MCQs for:**   * **Library skills** * **Study design** * **Epidemiology** | **1 hour per topic** | **4pm on Mon 17 Oct** | **Formative** |
| **Self-assessment nline**  **Critical appraisal exercise** | **1.5 hours** | **4pm on Mon 17 Oct** | **Formative** |
| **Ethics assignment** | **1000 word** | **4pm on Thurs 16 Oct** | **Summative (33%)** |
| **Statistical assignment** | **On-line MCQ unde exam conditions** | **9.15 – 10.15am, 11.30 –**  **12.30pm or 2.00 –**  **3.00pm on Fri 17 Oct Venue: Simon**  **Building Computer Cluster** | **Summative (33%)** |

# MACULAR DEGENERATION: RESEARCH, INVESTIGATIONS AND CLINICAL PRACTICE

**Aims:**

The unit aims to provide students with a core understanding of the basic pathophysiology of age-related macular degeneration, understanding the role of modern investigative techniques. They should understand latest research findings and apply evidence based care to patients with age related macular degeneration.

# Learning Outcomes:

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| Knowledge and understanding | * understand basic pathology * understand key epidemiological concepts * Understand latest research findings in experimental studies and those in clinical practice with critical appraisal of key papers. * Understand the role of investigations and tests in macular degeneration including imaging but also * visual function tests * Understand the principles behind intravitreal injection |
| Intellectual skills | * Critical appraisal of relevant papers * The role of research in this field. * Assimilation of large amounts of information and research into a pragmatic management plan . |
| Practical skills | * Be able to apply knowledge of principles of intravitreal injection to a safe and stable technique. |
| Transferable skills and personal qualities | * manage time; work to deadlines; use initiative when seeking information * use information technology to a high standard * apply skills for identifying, appraising, synthesising and applying evidence, in Macular degeneration |

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| **Course Organisers:** | Mr Sajjad Mahmood  Professor Tariq Aslam |
| **Basic Structure:** | Two to three hour sessions comprising lectures, tutorials and a practical session. |
| **Credit rating:** | 15 |
| **Unit Code** | **MEDN 61241** |
| **When:** | See individual lectures below |
| **Where**: | See individual lectures below |

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| **Day** | **Date** | **Time** | **Title** | **Speaker** | **Where** |
| Fri | 02/10/2015 | 14:00-17.00 | **Pathophysiology of AMD**  Genetics of AMD  Role of Complement in AMD | Prof Paul Bishop, [paul.bishop@manchester.ac.uk](mailto:paul.bishop@manchester.ac.uk)  Simon Clark, [Simon.Clark-3@manchester.ac.uk](mailto:Simon.Clark-3@manchester.ac.uk) | AV Hill, 4.005 |
| Tue | 06/10/2015 | 14:00-17:00 | **Imaging:** Fundus Fluorescein angiography, autofluorescence and ICG in AMD patients | Prof Paulo Stanga, [retinaspecialist@btinternet.com](mailto:retinaspecialist@btinternet.com), [Paulo.Stanga@manchester.ac.uk](mailto:Paulo.Stanga@manchester.ac.uk) | Stopford, 1.063 |
| Tue | 13/10/2015 | 14:00-17:00 | **Imaging:** Scientific basic of OCT, interpretation of retinal anatomy, clinical features of AMD | Prof Tariq Aslam, [Tariq.Aslam@cmft.nhs.uk](mailto:Tariq.Aslam@cmft.nhs.uk) | Stopford, 1.064 |
|  | TBC |  | **Imaging:** Observation session | Jane Gray, [Jane.Gray@cmft.nhs.uk](mailto:Jane.Gray@cmft.nhs.uk) | MREH, Clinic E |
| Mon | 26/10/2015 | 15:00-18:00 | **Dry AMD.**  i) Macular carotenoids; measurement in AMD and effects of supplementation  ii) Demonstration of Macular Pigment measurement  iii) Functional consequences of drusen; link between AMD and rod vision | Ian Murray, [ian.j.murray@manchester.ac.uk](mailto:ian.j.murray@manchester.ac.uk) | Carys Bannister 4.010 |
| Fri | 06/11/2015 | 10:00-13:00 | **Evidence based management of wet AMD**. Current techniques and future development | Sajjad Mahmood, [sajjid.mahmood@cmft.nhs.uk](mailto:sajjid.mahmood@cmft.nhs.uk) | Stopford, G.050A |
| Fri | 13/11/2015 | 09:30-12:30 | **AMD Treatment initiation and retreatment decision-making.**  Lecture and interactive worked examples session. | Sajjad Mahmood, [sajjid.mahmood@cmft.nhs.uk](mailto:sajjid.mahmood@cmft.nhs.uk) | Stopford, 1.064 |
| Wed | 18/11/2015 | 14:00-17:00 | **The Intravitreal Injection Procedure:** Evidence base and current best practice.  To include dry lab practical | Konstantinos Balaskas, [Konstantinos.Balaskas@cmft.nhs.uk](mailto:Konstantinos.Balaskas@cmft.nhs.uk) | Stopford, 2.064 |
| Wed | 25/11/2015 | 14:00-16:00 | **Low Vision Rehabilitation**  To include modern approach to low vision aids, eccentric viewing and steady eye strategies.  CVI Registration, Social Services for AMD patients | Jeremy Parkes, [Jeremy.Parkes@cmft.nhs.uk](mailto:Jeremy.Parkes@cmft.nhs.uk),  Rosalind Creer, [Rosalind.Creer@cmft.nhs.uk](mailto:Rosalind.Creer@cmft.nhs.uk) | Stopford, G.054 |

**Assessment:**

2 hour written exam

40% - MCQs set by lecturers

60% - Short answer questions set by lecturers

# GLAUCOMA

**Aims:**

* To provide an understanding of changes that occur in the glaucomatous eye.
* To prepare healthcare professionals to participate in community or hospital-based schemes involving the detection and management of ocular hypertension (OHT) and chronic open angle glaucoma (COAG).
* To provide a comprehensive knowledge of the technologies used in the diagnosis and management of OHT and COAG.
* To provide an understanding of the approach to, and the various treatment modalities for, the management of glaucoma.

# Learning Outcomes:

* An understanding of the relevant anatomy and physiology of the normal eye and the changes that occur in glaucoma.
* A comprehension of the different types of glaucoma; a knowledge of the prevalence of, and risk factors for, the glaucomas and an understanding of the associated visual impairment.
* An ability to interpret images of the optic nerve head and visual field charts.
* An ability to make appropriate management decisions based upon clinical guidelines e.g. NICE.
* An understanding of the principles and application of the techniques used in the diagnosis and management of COAG.
* A comprehensive knowledge of the rationale for, and mechanism of, the current therapeutic options in the management of COAG.

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| **Course Organisers:** | Dr Eleni Nikita [Eleni.Nikita@cmft.nhs.uk](mailto:Eleni.Nikita@cmft.nhs.uk) |
| **Basic Structure:** | 10 x 3 hour sessions comprising lectures, tutorials and workshops. |
| **Credit rating:** | 15 |
| **Unit Code** | MEDN70352 |

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| **Date** | **Time** | Location | **Title** | **Presenter** |
| 03/02/2016 | 9.00-13.00 | University Place, 6.208 | Introduction to the course | David Henson |
|  |  |  | Accessing Blackboard | David Henson |
|  |  |  | Classification of the glaucomas | David Henson |
|  |  |  | Definition of Glaucoma | David Henson |
|  |  |  | Epidemiology of primary open angle glaucoma and Risk Factors | David Henson |
| 10/02/2016 | 9.00-13.00 | University Place, 6.208 | Pathophysiology of the optic nerve head and nerve fibre layer | David Henson |
|  |  |  | e-learning evaluation of optic nerve head-GONE | David Henson |
|  |  |  | Pathophysiology of anterior chamber and aqueous circulation | David Henson |
| 17/02/2016 | 9.00-13.00 | University Place, 6.208 | Imaging of the optic nerve head (SLO, HRT, GDx, OCT, Multispectral) | David Henson |
|  |  |  | e-learning evaluation of optic nerve head-DISCUS |  |
|  |  |  | Structure function relationship | David Henson |
| 24/02/2016 | Distance Learning |  | An introduction to Visual Fields | David Henson |
|  |  |  | Visual field loss in glaucoma | David Henson |
|  |  |  | Interpreting the visual field chart | David Henson |
| 24/02/2016 | Distance Learning |  | Visual Field Tests | David Henson |
|  |  |  | Reliability indices | David Henson |
|  |  |  | Screening for glaucoma | David Henson |
| 09/03/2016 | 9.00-13.00 | University Place, 6.208 | Quantification of field loss | David Henson |
|  |  |  | Analysis of progression rates in Manchester Royal Eye Hospital | Emmanouil Tsamis |
|  |  |  | Practical- visual field tests | David Henson |
| 16/03/2016 | 9.00-1.00 |  | Glaucoma trials | David Henson |
|  |  |  | The optic nerve head in glaucoma | Fiona Spencer |
|  |  |  | Medical and surgical treatment | Cecilia Fenerty |
| 13/04/2016 | 12.00-17.00 | MREH Seminar Room | Measurement of the IOP, factors affecting IOP and review of new instruments | Aachal Kotecha |
|  |  |  | Testing the visual field of children | Marco Miranda |
|  |  |  | Other examination techniques Multifocal VEPs, pupillometry. | David Henson |
| 20/04/2016 | 11.00-13.00 | University Place, 6.208 | Referral refinement schemes | David Henson |
|  |  |  | NICE Workshop | David Henson |
| 27/04/2016 | 13.00-17.00 | MREH Seminar Room | Gonioscopy | Leon Au |
| 04/05/2016 | 10.00-13.00 |  | Visual electrodiagnosis in glaucoma screening | Neil Parry |
|  |  | University Place, 6.208 | Co-management HES based schemes | Rob Harper |

(Presenters and order of presentations subject to change and confirmation)

# Course work

The course includes five summative assessments of learner’s management/diagnostic skills when provided with clinical data (optic nerve head images, visual field charts and IOP data).

# Assessment

Course work (20%)

2 hr Written Examination (80%) (May 2016)

# CONTACT LENSES

**Aims and Objectives:**

The aims of these sessions are:

1. to acquire important new information in the field of corneal physiology and contact lenses
2. to encourage critical evaluation of the literature
3. to foster the development of articulate scientific communication

# Content:

This unit consists of 10 sessions which each focus on a specific aspect of corneal physiology and contact lenses. The first hour of each session an overview lecture of the topic under discussion by the session leader to provide a background to the paper presentations which comprise the second hour.

The paper presentations are 15 minute presentations given by a student who is expected to critically analyse a paper which is assigned at the start of the module. This presentation should provide an overview of the work and then a critical assessment of the methods and results of the work, in addition to the style of the paper and the validity of any conclusions. The presentation will be given using Microsoft Powerpoint (or other, similar presentational software) delivered through a data projector. After completion, there will be a discussion and questions from the other students and the session leader.

The remainder of each session will be devoted to a practical session. This will be directly related to the lecture and paper reviews and will either feature a demonstration or hands-on experience in a clinic or laboratory.

Students will be required to prepare a critical appraisal and a summary handout of their assigned papers. The presentation should give a brief background, present the aim, methods, results and your view on the meaning and/or clinical relevance of the work. You must also offer a critical appraisal of the paper. It is important to practice your presentation and ensure that it is tailored to the allocated time.

To aid your presentation you are expected to construct a PowerPoint presentation (Microsoft software) and present this from your own laptop computer via a computer/data projector, which will be available during the seminars. If you do not have a laptop computer one will be available for you to use, but you must of course bring your presentation on a CD-ROM or USB memory stick.

You are required to prepare a printed handout to supplement your formal presentation. This should be a printout of the PowerPoint captions, formatted for six frames per page. Twelve handout copies should be prepared. If you give a hard-copy to Optometry secretary Joanne Cohen by 10.00 am on the Wednesday prior to your seminar, Joanne will print off the handouts for you. You must then collect the handouts from Joanne at an agreed time. If you miss the Wednesday 10.00 am deadline, you are responsible for producing the copies yourself. Distribute these handouts immediately prior to your presentation.

It is advisable for all candidates to read the papers to be presented (a full list will be provided in due course) prior to each seminar. This will enable you to critically evaluate the reports and to play a more active role in the discussions.

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| **Course Organisers:** | Dr. Philip Morgan [(philip.morgan@manchester.ac.uk,](mailto:(philip.morgan@manchester.ac.uk) x64441) |
| **Basic Structure:** | **Lecture presentation:**  14.00 – 15.15  **Paper reviews:**  15.15 – 16.15  **Practical/demonstration:**16.30 –18.00 |
| **Credit rating:** | 15 |
| **Unit Code** | MEDN70352 |
| **Location** | Cary Bannister Building, Room 1.010 |

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| 04/02/2016 | **Introduction to seminar series**  **Design of clinical studies**  *Paper review*  Epstein 2006: | Dr. Philip Morgan |
| 11/02/2016 | **Contact lens oxygen performance**  *Paper reviews* Efron et al 2007: Brennan 2001:  Brennan 2005: | Dr. Philip Morgan  Dr. Michael Read |
| 18/02/2016 | **Soft contact lens materials**  *Paper reviews*  Maldonado-Codina et al 2004: Read et al 2004:  Subbaraman et al 2006: | Dr. Carole Maldonado-Codina  Dr. Michael Read |
| 25/02/2016 | **Soft contact lens manfacturing**  *CooperVision Limited.*  *Meet 7.45am at Stopford Building* | Dr. Philip Morgan |
| 03/03/2016 | ***In vivo* confocal microscopic examination of the cornea** | Mr. Ioannis Petropoulos  Dr. Philip Morgan |
| 10/03/2016 | **Orthokeratology** *Paper reviews* Nichols et al 2000:  Lum and Swarbrick 2011: | Mr. Nick Howard  Dr. Philip Morgan |
| 17/03/2016 | **Contact lens associated keratitis**  *Paper reviews* Chang et al. 2007: Stapleton et al. 2008: Dart et al. 2008: | Dr. Philip Morgan  Dr. Curtis Dobson |
| 14/03/2016 | **Keratoconus**  *Paper reviews* Mannion et al 2011: Kymionis et al 2009: Zadnik et al 2005: | Dr. Amit Jinabhai |
| 21/03/2016 | **Contact lens solutions and compliance**  *Paper reviews* Jones et al 2002: Carnt et al 2007: Tchao et al 2002: | Dr. Philip Morgan  Mr. Neil Chatterjee |
| 28/03/2016 | **Ocular aberrations** *Paper reviews* Parker at al 2009: López-Gil et al 2009: Sabesan et al 2007: | Dr. Hema Radhakrishnan  Ms. Ithar Beshtawi |

# Assessment

2 hr Written Examination (60%) (May 2014) and scores from seminar presentations (40%)

The written examination will be based on information presented during the seminars. The seminar presentations will be assessed in terms of evidence of preparation, grasp of the material reviewed and the quality of the your presentations (including timing).The marks for the seminar presentations will be apportioned as follows:

Understanding 10; quality of slides 10; delivery 10

Cornea: Clinical Practice and Current Research

**Aims and objectives:**

The unit will provide a solid background on the epidemiology, pathophysiology, clinical presentation, diagnosis and management of common corneal pathologies such as keratoconus, endothelial dystrophy, corneal infection and limbal stem cell deficiency. There will be a strong focus on new techniques and current research. Our main objective is to provide those working within the ophthalmic professions (ophthalmologists, optometrists, vision scientists, orthoptists and ophthalmic nurses) with an opportunity for professional development. The mains are to:

1. To further understanding of mechanisms underlying corneal disease processes and how this understanding can provide a rational basis for treatments.
2. To learn how to critically evaluate research papers
3. To develop skills in oral presentation

**Intended Learning Outcomes**

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| Knowledge and understanding | * Be familiar with the epidemiology, pathophysiology, clinical presentation, diagnostic approach, imaging findings and management options for corneal pathologies. * They should have an understanding of relevant literature especially with respect to the evidence base supporting the use of current treatments for corneal disease. * Be able to critically assess published ophthalmic research and report results both orally and in written format. |
| Intellectual skills | * To understand how the corneas structure provides transparency and how disease alters this structure causing loss of transparency * To understand how the immune system plays a role in the success of corneal transplantation but may also contributes to corneal autoimmune diseases * Be well informed on the best treatment for corneal diseases taking in to consideration corneal imaging, ocular and systemic symptoms and environmental factors. * Have a good understanding of current and future treatments for corneal disease. |
| Practical skills | * Interpret corneal images both from confocal images of patients corneas and pathology samples. * Finally, to review papers submitted for publication and research proposals. |
| Transferable skills and personal qualities | * Students at the completion of the module should be expected to advise colleagues/peers on the differential diagnosis and available treatment options for corneal disease and the newer treatments not yet in the mainstream. * They should also be able to search the relevant literature both in written and electronic form. |

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| **Organiser:** | Dr Chantal Hillarby, [chantal.hillarby@manchester.ac.uk](mailto:chantal.hillarby@manchester.ac.uk) |
| Structure: | 10 x 3½ hour sessions of lectures and student seminars |
| Credit rating: | 15 |
| **Unit Code:** | MEDN 61232 (MSc) and MEDN31132 (MOptom) |
| **When:** | 2nd Semester, Thursdays 9.00 am - 12.30 p.m. |
| **Where:** | Keith Morgan Seminar Room, 1st Floor, Stopford Building |

**TIMETABLE**

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| **Week 1-** 04/02/2016 | **Corneal Transplantation** |
| 9-10 | An Introduction to Immunity in the Eye (Dr Chantal Hillarby) |
| 10-11 | Keratoplasty (Corneal Fellow) |
| 11.30-12.30 | Corneal Transplant Rejection (Dr Chantal Hillarby) |
| **Week 2 -** 11/02/2016 | **Autoimmunity in the Anterior Chamber** |
| 9-10 | An Introduction to Autoimmunity in the Eye (Dr Chantal Hillarby) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | Dry Eye (Mrs Fiona Carley) |
| **Week 3 -** 18/02/2016 | **Diabetic Cornea** |
| 9-10 | The Diabetic Cornea (Dr Clare O’Donnell) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | Corneal Nerves in Diabetic Neuropathy (Dr Mitra Tavakoli) |
| **Week 4 -** 25/02/2016 | **Corneal Maintenance and Repair** |
| 9-10 | An introduction to stem cells (Dr Steve Richardson) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | The Limbus and Corneal Repair and Regeneration (Dr Chantal Hillarby) |
| **Week 5 -** 03/03/2016 | **Eye Banking Workshop** |
| 9-10 | Why we need Eye Banks (Dr Isaac Zambrano) |
| 10-11 | Eye Retrieval (Dr Isaac Zambrano) |
| 11.30-1.00 | Corneal Processing for Transplantation (Manchester Eye Bank Staff) |
| **Week 6 -** 10/03/2016 | **Keratoconus** |
| 9-10 | Keratoconus – the Basics (Dr Evripidis Sykaki) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | UV cross linking (Dr Hema Radhakrishnan) |
| **Week 7 -** 17/03/2016 | **Corneal Structure** |
| 9-10 | Extracellular Matrix in the Eye (Prof Paul Bishop) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | Pathology of the Cornea (Dr Luciane Irion) |
| **Week 8 -** 14/03/2016 | **Pediatric Cornea** |
| 9-10 | Anterior Segment Developmental Disorders (Mr Susmito Biswas) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | Corneal dystrophy and other corneal clouding (Dr Jane Ashworth) |
| **Week 9 -** 21/03/2016 | **Refractive Surgery** |
| 9-10 | Corneal Imaging (Mr Khaled Alzahrani) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | Refractive Surgery (Mr Arun Brahma) |
| **Week 10 -** 28/03/2016 | **Genetics of Corneal Disease** |
| 9-10 | Genetic Counselling (Ms Georgina Hall) |
| 10-10.30 | Student presentation |
| 10.30.11 | Student presentation |
| 11.30-12.30 | Genetics of Corneal Dystrophies (Dr Forbes Manson) |

# ASSESSMENT

1 x 2 hr written examination (80%) in May 2016- choice of (3 from 5) questions

1 x paper presentation (10%)

# Retinal Vascular Disease

**Aims:** Provide a solid background on the epidemiology, pathophysiology, clinical presentation, diagnosis and management of common retinal vascular pathologies such as diabetic retinopathy and retinal vein occlusions. To provide those working within the ophthalmic professions (ophthalmologists, optometrists, vision scientists, orthoptists and ophthalmic nurses) with an opportunity for professional development.

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| **Course Organisers:** | Dr Konstantinos Balaskas  Email: [Konstantinos.Balaskas@cmft.nhs.uk](mailto:Konstantinos.Balaskas@cmft.nhs.uk) |
| **Basic Structure:** | 2-3 hour lectures and one practical class. |
| **Credit rating:** | 15 |
| **Unit Code** | MEDN |
| **When:** | Wednesdays 9:00-13:00. Specific times as indicated. |
| **Where:** | **Room 1.064, Stopford Building or as per arrangements of individual lecturers** |

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| **Category of outcome** | *Students should/will (please delete as appropriate) be able to:* |
| Knowledge and understanding | Be familiar with the epidemiology, pathophysiology, clinical presentation, diagnostic approach, Imaging findings and management options for retinal vascular pathologies. They should have an understanding of relevant literature especially with respect to the evidence base supporting the use of current treatments for retinal vascular disease. Also to critically assess published ophthalmic research and report results both orally and in written format. |
| Intellectual skills | Students should be able to distinguish between different vascular retinal pathologies on the basis of pattern recognition of the clinical appearance. They should be able to identify vision threatening features of disease and be familiar with relevant treatment options. They should be in a position to recognise the systemic implications of retinal vascular disease and have an understanding of the underlying pathogenetic mechanisms. Also to critically review the literature and make judgements based upon this review that can be applied to clinical practice. |
| Practical skills | Students should be able to recognise retinal vascular pathologies on the basis of fundus images and identify vision-threatening features of disease such as macular edema or neovascular complications from an array of imaging modalities. They should also be in a position to broadly suggest the appropriate management approach for relevant pathologies. Finally, to review papers submitted for publication and research proposals. |
| Transferable skills and personal qualities | Students at the completion of the module should be expected to advise colleagues/peers on the differential diagnosis and available treatment options for retinal vascular disease. They should also be able to search the relevant literature both in written and electronic form. |

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| **Week** | **Time** | **Title** | **Lecturer** |
| **1**  07/10/2015 | 9.30-13.00 | Introduction to Retinal Vascular Disorders: Overview of common pathologies, | Konstantinos Balaskas |
| **2**  14/10/2015 | 9.30-13.00 | Practical Observation session: Imaging for Retinal Vascular Disease | Mrs Jane Gray (TBA) |
| **3**  21/10/2015 | 9.30-13.00 | Pathophysiology of retinal vascular disorders | Prof Paul Bishop |
| **4**  28/10/2015 | 9.30-13.00 | Imaging in retinal vascular disease: Fluorescein/OCT/ Wide-field imaging | Prof Paulo Stanga |
| **5**  04/11/2005 | 9.30-13.00 | Diabetic Retinopathy: Pathophysiology, Classification, Epidemiology, Clinical Features | Mrs Yvonne D’Souza |
| **6**  11/11/2015 | 9.30-13.00 | Diabetic Retinopathy: The Diabetic Screening Program | Mrs Amy Stone |
| **7**  18/11/2015 | 9.30-13.00 | Diabetic Retinopathy: Diabetic Macular Edema – Modern approach to treatment and evidence base | Mr Konstantinos Balaskas |
| **8**  25/11/2015 | 9.30-13.00 | Retinal Vein Occlusions: Epidemiology, Pathophysiology, Clinical Aspect, Imaging, Management, Evidence Base | Mr Konstantinos Balaskas |
| **9**  02/12/2015 | 9.30-13.00 | Retinal arterial vascular disorders: Retinal Arterial Occlusions, Macroanurysms, Retinopathy of Prematurity | Prof Tariq Aslam |
| **10**  09/12/2015 | 9.30-13.00 | Retinal Vascular Pathology: Role of vitreo-retinal surgery | Mr Felipe Scala |

**Assessment:**

Written examination (65 %)

Essay (15 %)

Lab practical write-up (10 %)

Tutorial presentation (10 %)