# **MPhil in Medical Science (Psychiatry) PhD in Psychiatry Lecture List**

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Updated: June 2025

Those are some formal teaching, structured lectures that I found useful to supplement the research lecture series held across the neuroscience related departments. Some of them may be undergraduate level, but I found them extremely helpful to build up the foundation. Some lectures are recorded and are marked on the list. But note that the recordings are only accessible on Panopto if you enrol on Moodle. I’ve categorised them into themes so it would be easier to navigate.

Have fun!

Roderick

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Glossary:

***NEUR***  Neuroscience ***PSYC***  Psychology/Psychiatry

***PHSI***  Physiology ***ENGE*** Engineering

***DSML*** Data Science & Machine Learning

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## **NEUR0001 Cognition and the Brain (Live & Recorded)**

Department: MRC Cognition and the Brain Unit

Access: Self-registration via Moodle

Term: Michaelmas

Description: Covers general topics in cognitive neuroscience including semantic cognition, sensation, perception, memory, learning, physiological psychology, and clinical neuroscience.

## **NEUR0002 Improving Scientific Practices in Cognitive Neuroscience**

Department: MRC Cognition and the Brain Unit

Access: Self-registration via Moodle

Term: Michaelmas

Description: Lecture series focusing on research methodology and technology. Covers topics including common biases and frauds in publications, structure of journals, open science, statistical reproducibility, and robust statistical methods.

## **NEUR0003 Introduction to Neuroimaging Methods**

Department: MRC Cognition and the Brain Unit

Access: Self-registration via Moodle

Term: Lent

Description: Covers both mechanistic principles and hands-on coding for neuroimaging data analysis across different methods. Topics of lectures include the gross anatomy and physics for neuroimaging, structural/diffusion/functional MRI, PET, EEG/MEG, neurostimulation methods, connectivity analysis, and neural network modelling. Highly recommended!

## **NEUR0004 Computational Neuroscience (Live & Recorded)**

Department: Department of Engineering

Access: Search “Computational Neuroscience” in Moodle (self-enrolment key: cued\_access\_moodle)

Term: Lent

Description: Ideal starting point if interested in computational neuroscience. Topics include reinforcement learning, associative learning, probabilistic models, Bayesian inference, synaptic plasticity, and network dynamics.

## **PHSI0005 Homeostasis (Live & Recorded)**

Department: Department of Physiology, Neuroscience, and Development

Access: Search for the course director and email for interest, or you can directly go to the lectures (shouldn’t be a problem because no one is checking attendance)

Term: Michaelmas, Lent, and Easter

Description: General introduction to the medical physiology in different systems. Covers both human and some veterinary contents. Themes including neurobiology, muscular, autonomous nervous system, cardiovascular, blood and lymph, respiration, renal, digestive, and endocrine systems. The practical sessions can be taken upon request.

## **DSML0006 Introduction to Machine Learning (Live & Recorded)**

Department: MRC Biostatistics Unit

Access: Request on the MPhil Population Health Sciences website (deadline around December)

Term: Lent

Description: Basics you need to know about machine learning. Consists of both mathematical theorems and practical coding sessions. Topics include classification algorithms (nearest neighbours, decision tress/random forest, support vector machines), kernel methods, dimensionality reduction, Bayesian methods, and artificial neural networks.

## **DSML0007 Probabilistic Machine Learning (Live & Recorded)**

Department: Department of Engineering

Access: Search “4F13” in Moodle (self-enrolment key: cued\_access\_moodle)

Term: Michaelmas

Description: The aim of this module is to introduce students to basic concepts in machine learning, focusing on statistical methods for supervised and unsupervised learning. The module will be structured around three recent illustrative successful applications: Gaussian processes for regression and classification, Latent Dirichlet Allocation models for unsupervised text modelling and the TrueSkill probabilistic ranking model.

## **ENGE0008 Fourier Transforms & Signal and Data Analysis (Live & Recorded)**

Department: Department of Engineering

Access: Search “Fourier Transforms” in Moodle (self-enrolment key: cued\_access\_moodle)

Term: Lent

Description: Basics of Fourier series/transforms used in sinusoidal electrophysiological signal processing (e.g., EEG/MEG). Topics include Fourier series, basics of Fourier transforms, sampling theory, and discrete Fourier transform (DFF).

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**Additional Resources**

* **University of Oxford**, Mathematical Institute Materials: <https://courses.maths.ox.ac.uk/course/index.php?categoryid=838>
* **Sainsbury Wellcome Centre, University College London** got weekly seminars that I found inspiring for my thesis. Worth to check out on Eventbrite.