UNIVERSITY OF LONDON

Course information 2020-21

MT2175 Further linear algebra (half course)

General information

COURSE LEVEL: 5

CREDIT: 15

NOTIONAL STUDY TIME: 150 hours

Summary

In MT1173 Algebra, students have met many of the key concepts of linear algebra. In this course, we study further theoretical material and look at additional applications of linear algebra.

Conditions

Prerequisite: If taken as part of a BSc degree, the following course must be passed before this course may be attempted:

- MT1173 Algebra

Exclusions: You may not register for this course in the same year as:

- MT3095 Further mathematics for economists

Aims and objectives

This half course is designed to:

- enable students to acquire further skills in the techniques of linear algebra, as well as understanding of the principles underlying the subject
- prepare students for further courses in mathematics and/or related disciplines (e.g. economics, actuarial science).

Learning outcomes

At the end of this half course and having completed the essential reading and activities students should have:

- knowledge of the concepts, terminology, techniques and conventions covered in the half course.
- The ability to demonstrate an understanding of the underlying principles of the subject.
- The ability to demonstrate the ability to solve unseen mathematical problems involving an understanding of the concepts.

Essential reading

For full details, please refer to the reading list

Please consult the current EMFSS Programme Regulations for further information on the availability of a course, where it can be placed on your programme's structure, and other important details.

Anthony, M. and M. Harvey, *Linear Algebra: Concepts and Methods*. (Cambridge University Press, 2012) [ISBN 978-0521279482]

Assessment

This half course is assessed by a two-hour unseen written examination.

Syllabus

This course continues the study of linear algebra initiated in MT1173 Algebra.

Topics covered are:

Diagonalization and Jordan normal form, applied to systems of differential equations.

Inner products, orthogonality, quadratic forms, and orthogonal diagonalization.

Direct sums and projections, with applications to least squares.

Generalized inverses.

Complex numbers. Complex matrices and vector spaces. Hermitian and unitary matrices, unitary diagonalization and spectral decomposition.

Please consult the current EMFSS Programme Regulations for further information on the availability of a course, where it can be placed on your programme's structure, and other important details.