2017–18 **MATH216 Mathematics IV – Information** N. Course

Teacher

Dr. Neil Course

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Course Website

You will find course information, handouts, past exams, exam dates, etc. on my website

- `www.neilcourse.co.uk/math216.html`

Required Text

- William E. Boyce and Richard C. DiPrima, *Elementary Differential Equations and Boundary Value Problems*, Wiley.

Note: New students *must* buy a new copy of this book **which includes an access code for WileyPlus**. Be careful, some books do not include the WileyPlus code.

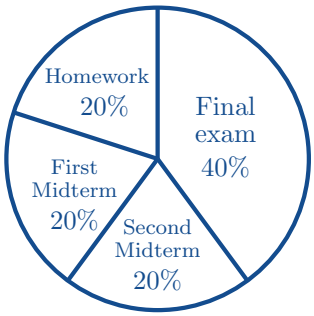
Repeating students who already have this textbook can request access to the homework by entering their information into the website `tinyurl.com/okan216` .

Homework

- website: `wileyplus.com`
- course id: 627838

Contents

"Mathematics is not a spectator sport."



This course has 4 hours of lectures per week.. I expect you to spend atleast 8 hours every week, studying outside of class. Every week you should be reading the textbook, attempting the exercise questions in the text book and making use of the WileyPlus website.

All of the homework will utilise the WileyPlus website. It is your responsibility to log in to this website weekly and to complete each piece of homework before its deadline. Your homework marks will only be counted if the average of your exam marks is atleast 20%.

Office Hour

If you have any questions, you can find me in my office (C333) each

- Tuesday, from 15:00 to 16:00;
- Thursday, from 12:00 to 12:30.

Alternately, you can email your questions to me. Please don't forget to write "MATH216" in your emails.

Syllabus[1]

Week	Topics Covered	Independent Study Expected
1	**Introduction** 1.1 Some Basic Mathematical Models; Direction Fields 1.2 Solutions of Some Differential Equations 1.3 Classification of Differential Equations	Buy the book Register for WileyPlus Read Chapter 1
2	**First Order Differential Equations** 2.1 Linear Equations; Method of Integrating Factors 2.2 Separable Equations 2.4 Differences Between Linear and Nonlinear Equations	Read Chapter 2 Use WileyPlus
3	2.5 Autonomous Equations and Population Dynamics 2.6 Exact Equations and Integrating Factors	Read Chapter 2 Use WileyPlus
4	**Second Order Linear Equations** 3.1 Homogeneous Equations with Constant Coefficients 3.3 Complex Roots of the Characteristic Equation 3.4 Repeated Roots	Read Chapter 3 Use WileyPlus
5	3.5 Nonhomogeneous Equations; Method of Undetermined Coefficients 3.6 Variation of Parameters **Higher Order Linear Equations** 4.2 Homogeneous Equations with Constant Coefficients	Read Chapters 3-4 Use WileyPlus
6	**The Laplace Transform** 6.1 Definition of the Laplace Transform 6.2 Solution of Initial Value Problems	Read Chapter 6 Use WileyPlus
7	**The Laplace Transform** 6.3 Step Functions 6.4 Differential Equations with Discontinuous Forcing Functions	Read Chapter 6 Use WileyPlus
8	*First Midterm Exam* (no lessons this week)	Reread your lecture notes and textbook
9	**The Laplace Transform** 6.5 Impulse Functions 6.6 The Convolution Integral	Read Chapter 6 Use WileyPlus
10	**Systems of First Order Linear Equations** 7.1 Introduction 7.4 Basic Theory of Systems of First Order Linear Equations 7.5 Homogeneous Linear Systems with Constant Coefficients	Read Chapter 7 Use WileyPlus
11	7.6 Complex Eigenvalues 7.7 Fundamental Matrices	Read Chapter 7 Use WileyPlus
13	7.8 Repeated Eigenvalues	Read Chapter 7 Use WileyPlus
14	7.9 Nonhomogeneous Linear Systems	Read Chapter 7 Use WileyPlus

[1]Schedule subject to change. Full syllabus available at `www.neilcourse.co.uk/math216.html`