School of Mathematics

Course 2S2 Mathematics for Science Students 1999-2000
(SF Students of Mathematics as a whole subject within the Natural Science Moderatorships)

Lecturer: Mr E. Prodanov

Requirements/prerequisites: none (except 1S)

Duration: 24 weeks

Number of lectures per week: 2.5, including one tutorial every two weeks

Assessment: Corrected exercises contribute 10% of the final mark.

End-of-year Examination: A three hour final examination held in June covers the entire course. A 3 hour supplemental examination also covers the entire course.

Description:

- Linear Algebra with Applications
  Anton & Rorres: Review of Chapter 1 (systems of Linear Equations and Matrices); Chapter 2 (Determinants); Chapter 4 (Euclidean vector spaces); Chapter 5 (General vector spaces — simple treatment); Chapter 6 (Inner product spaces — 6.1, 6.2, 6.4); Chapter 7 (Eigenvalues and eigenvectors). Applications.

- Fourier Analysis
  Kreysig: Chapter 10 (Fourier Series, including Complex Fourier Series, Fourier Transforms).

- Ordinary Differential Equations with Applications, Special Functions, Introduction to Partial Differential Equations
  Review and Further Examples from Anton (Calculus) Chapter 10; Kreysig: from Chapters 1-4 (excluding parts already covered in 1S2); Chapter 11, 11.1–11.3.

Textbooks:
Essential References

1. Erwin Kreyszig, Advanced Engineering Mathematics, (7th edition) Wiley, 1993.

2. Howard Anton and Chris Rorres, Elementary Linear Algebra applications version, (7th edition) Wiley 1994. **OR** Howard Anton, Elementary Linear Algebra, (7th edition) Wiley 1994.

3. Howard Anton, Calculus: a new horizon (6th edition), Wiley, 1998.

Recommended references

1. S. Lipschutz, Linear Algebra (Schaum's Outline Series).

2. S. Wolfram, Mathematica a system for doing mathematics by computer, Addison-Wesley (3rd edition) 1996, published by Wolfram Media and Cambridge University Press.

October 8, 1999