Syllabus Advanced Mathematics II

- Differential equations: introduction, definitions, initial value problem. Differential equations of first and second order with constant coefficients.

- Fourier series: periodic functions, trigonometric series, Euler formulas, Fourier series of even and odd functions, exponential Fourier series..

- Function of several real variables: definition, domain and graph.
  Limit and continuity.
  Partial derivative: definition, notations, higher derivatives, rules for finding the partial derivative, Schwartz's theorem. Tangent plane. Total derivative. Chain rule. Directional derivative.
  Application of the derivatives in finding the extrema of a function, Lagrange multipliers.
  Vector fields, gradient, divergence, Laplacian and curl.

- Double integral: definition, properties, methods of integration, change of variables, applications.

- Triple integral: definition, properties, methods of integration, applications.

Bibliography

[1] Bratsos, A. (2002), Advanced Mathematics, Stamoulis Publications, Athens, ISBN 978-9603514534 (in Greek).

[2] Finney R. L., Giordano F. R., Weir M. D. (2012), Calculus, Crete University Press, ISBN 978-9605241827 (in Greek).

[3] Glambedakis M. (2011), Calculus II, Parikos Publications, Athens, ISBN 978-9605080402.

[4] Kreyszig E. (2011), Advanced Engineering Mathematics, John Wiley & Sons, ISBN: 978-0470458365

[5] Spivac M. (2008), Calculus, Publish or Perish Inc., ISBN: 978-0914098911.

Mathematical data bases

- http://en.wikipedia.org/wiki/Main_Page
- http://eqworld.ipmnet.ru/index.htm
- http://mathworld.wolfram.com/
- http://eom.springer.de/