

COURSE TITLE:
APPLIED FUNCTIONAL ANALYSIS

INSTRUCTORS:

Professor Basil K. Papadopoulos (Coordinator)
Professor Garyfalos Papaschinopoulos
Professor Christos J. Schinas

SYLLABUS:

Metric Spaces, Normed Spaces, Topology of Metric spaces, Banach spaces, Hilbert spaces, The continuity of a function, Complete spaces, completion, totally bounded spaces, Compact spaces, compactifications, connected spaces, The Baire Category Theorem, Fixed point Theorems and applications, The space of continuous functions, pointwise and uniform convergence, The Stone Weierstrass theorem, Lebesgue measure, outer Lebesgue measure, Measurable sets, measurable functions, Theorems of approximation of measurable functions, Applications in probability, Lebesgue integral, L_p spaces with applications.

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1. N.L. CAROTHERS, REAL ANALYSIS, CAMBRIDGE UNIVERSITY PRESS, 2000.
2. ΣΤΥΛΙΑΝΟΣ ΝΕΓΡΕΠΟΝΤΗΣ, ΖΑΧΑΡΙΑΔΗΣ ΚΩΝΣΤΑΝΤΙΝΟΣ, ΚΑΛΑΜΙΔΑΣ ΝΙΚΟΛΑΟΣ, ΦΑΡΜΑΚΗ ΒΑΣΙΛΙΚΗ ΓΕΝΙΚΗ ΤΟΠΟΛΟΓΙΑ ΚΑΙ ΣΥΝΑΡΤΗΣΙΑΚΗ ΑΝΑΛΥΣΗ, ΣΥΜΜΕΤΡΙΑ, 1997.
3. Γ. ΚΟΥΜΟΥΛΗΣ, Σ. ΝΕΓΡΕΠΟΝΤΗΣ, ΘΕΩΡΙΑ ΜΕΤΡΟΥ, ΣΥΜΜΕΤΡΙΑ, 2005.
4. J. TINSLEY ODEN, LESZEK DEMKOWICZ, APPLIED FUNCTIONAL ANALYSIS, TAYLOR AND FRANCIS 2010.