

Module title: Harmonic Analysis

Module Code: 28-...

Module Credit: 4

Term: First Term 1398-99

Lecturer: Mojtaba Bakherad
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Lecturing time: Mon. (18-20) and Wed. (7:30-9:30)

Assessments: 30% mid-term 1 exam
10% home works
60% final exam

Class attendance: **REGULAR ATTENDING IS IMPORTANT AND EACH SESSION YOUR ATTENDANCE WILL BE CHECKED**

References: **A Course in Abstract Harmonic Analysis (2nd Edition)**
G. Folland
ISBN-13: 978-0070542365

Module Subjects:

Banach Algebra and Spectral Theory:

- 1st. week: Banach Algebra
- 2nd. week: Gelfand Theory
- 3rd. week: Nonunital Banach Algebras
- 4th. week: The Spectral Theorem
- 5th. week: The Spectral Theory of *-Rep.

Locally Compact Groups:

- 6th. week: Topological Groups
- 7th. week: Haar Measure
- 8th. week: The Modular Functions

Basic Representations Theory:

- 9th. week: Orthonormal Sets and Sequences
- 10th. week: Hilbert-Adjoint Operator
- 11th. week: Self-Adjoint, Unitary and Normal Operators

Abelian Groups:

- 12th. week: The Dual Group
- 13th. week: The Fourier Transform.
- 14th. week: Hahn-Banach Theorem for Complex Vector Spaces and Normed Spaces
- 15th. week: Adjoint Operator, Reflexive Spaces
- 16th. week: Strong and Weak Convergence, Convergence of Sequences of Operators and Functionals