

WORKSHOP ON THE
COHOMOLOGY THEORY
OF PROFINITE GROUPS

17-27 January 2011

Lecturers:

Sevan Bedikyan

Şafak Özden

Organizing Committee:

Prof.Dr. Hasan Gümral

Prof. Dr. K. İlhan İkedda

Yrd. Doç. Dr. Erol Serbest

YEDİTEPE UNIVERSITY
DEPARTMENT OF MATHEMATICS

PROGRAM

Week 1

17.01.2011:

Lecture 1 (10:00-12:00) by Şafak Özden

Inverse and direct limit constructions, examples, related limit preservation properties of them.

LUNCH

Lecture 2 (14:00-16:00) by Şafak Özden

Procylic groups, profinite groups, Galois groups. Equivalent definitions of profinite groups, topological properties of profinite groups, cross section theorem and Sylow theory of profinite groups.

19.01.2011:

Special lectures by Sevan Bedikyan

10:00-12:00

Review of finite Galois theory. A motivating example to introduce a topology in Galois theory. Krull topology on the absolute Galois group of a field. Infinite Galois theory.

LUNCH

14:00-16:00

Realizing profinite groups as Galois groups.

20.01.2011:

Lecture 3 (10:00-12:00) by Şafak Özden

A resume on homological algebra: Snake lemma and five lemma, complexes on abelian categories and delta functors.. The canonical projective resolution of G over A . Definition of cochains, cocycles and coboundries. Definition of cohomology groups.

LUNCH

Lecture 4 (14:00-16:00) by Şafak Özden

Detailed analysis of the first cohomology groups H^0 , H^1 and H^2 . Realizing H^1 as a measure of deviation of H^0 being exact. Cohomology functor is a delta functor. Definition of a universal delta functor.

Supported by the Mathematics Department of Yeditepe University.

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Week 2

24.01.2011:

Lecture 5 (10:00-12:00) by Şafak Özden

Behaviour of cohomology, compatible pair of morphisms, restriction map, inflation map. Relating the cohomology groups of profinite groups with that of finite groups.

LUNCH

Lecture 6 (14:00-16:00) by Şafak Özden

Induced modules, adjoint functors, universality of cohomology functor and Shapiro's lemma. Dimension shifting. Restriction and corestriction maps.

27.01.2011:

Lecture 7 (10:00-12:00) by Şafak Özden

Schirokauer work: Schirokauer integration.

LUNCH

Lecture 8 (14:00-16:00) by Şafak Özden

Schirokauer's generalized transfer map.

Notes:

- 1- All lectures will take place in the Seminar Hall **B618** of the Mathematics Department of **Yeditepe University**.
- 2- Yeditepe University Mathematics Department will provide free lunch to the participants of the workshop.
- 3- The number of participants is limited to 10 people.