Universidad de los Andes
Facultad de Ciencias

DEPARTAMENTO DE MATEMÁTICAS

OFRECIMIENTOS DE CURSOS

2017-10

Nivel del Curso	**Nombre completo del curso en español**:
1	**Mathematical crystallography**
inicio de carrera	**Profesor: Alexander Getmanenko**

Descripción del curso en inglés:

This is an elective course in algebra where the relationship between concepts of algebra and their crystallographic applications are studied. This is a mathematics course, so the physics topics will me mentioned only to motivate mathematical developments.

Prerrequisitos:

Algebra lineal 1.

Goals:

– to reinforce and deepend understanding of linear algebra

– to gain experience with computations with vectors in 3D space

– introduce the concept of a group in a motivated manner

– to learn about mathematical objects and questions that appear in physics of crystals

Course content:

-– What is a crystal structure (1 week)

-– Crystallographic computations (2 weeks)

-– Lattice planes (1 week)

-– Reciprocal space (1 week)

-– Additional crystallographic computations (2 weeks)

-– Symmetry in crystallography (2 weeks)

-– Point groups (1 week) -– Plane groups and space groups (2 weeks) –- X-ray diffraction (1 week, just the concept) –- Non-crystallographic point groups (1 week) -- Periodic and aperiodic tilings (1 week)
Evaluation: 2 midterm exams, final exam, weekly quizzes or homeworks
Bibliografía: de Graef, McHenry, “Structure of materials”