Faculty of Eng. & Natural Sci.

MATH58000-202002

Special Topics in MATH: Commutative Algebra

Instructor(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>Email</th>
<th>Office</th>
<th>Phone</th>
<th>Web</th>
<th>Office Hours</th>
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</thead>
<tbody>
<tr>
<td>Ayesha Asloob Qureshi</td>
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Objectives

To understand the basics of commutative ring theory

Textbook

Introduction to Commutative Algebra by Michael Atiyah and I. G. Macdonald

Monomial ideals by Jürgen Herzog and Takayuki Hibi

Commutative ring theory by Hideyuki Matsumra

Grobner Bases in Commutative Algebra by Viviana Ene and Jürgen Herzog
Grading Scheme

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<th>Percentage(%)</th>
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<tr>
<td>Final</td>
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<td>Midterm</td>
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<td>Quiz</td>
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Course Outline

1) Rings and ideals
2) Rings and modules of fractions
3) Primary decomposition
4) Chain conditions
5) Noetherian rings
6) Aritinian rings
7) Graded rings and modules
8) Dimension theory
9) Monomial ideals and ideal operations on monomial ideals
10) A brief introduction to combinatorial methods in commutative algebra.
11) Gröbner basis (if there is any time left.)