Mathematics 2022
Summer Advising

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Quick Notes

- Check your VT email!
- Transfer credit (including AP/IB/CLEP/Cambridge/DE)
- Review all information on right-hand side of math.vt.edu/orientation
  - Computer requirements
  - Progress to degree rules
  - Handbooks, checksheets, 4-year course plans**
  - First-year Pathways courses**
Questions

- **Cadet?** MGT 1945
- **Cadet Regimental Band?** MUS 3314 CRN 88250
- **Marching Virginians?** MUS 3314 CRN 88251
  (Audition required)
- **Student Athlete?**
- **Living Learning Community Member?**
Basic Competency Requirement
Foreign Language

- **Requirement:** At least 2 years of a single foreign, classical, or sign language in high school

- **If not met:** Complete 6 credits of a single foreign, classical, or sign language at the college level
  - courses taken to meet this requirement do **not** count toward the hours required for graduation

<table>
<thead>
<tr>
<th>ARABIC</th>
<th>ITALIAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHINESE</td>
<td>JAPANESE</td>
</tr>
<tr>
<td>FRENCH</td>
<td>LATIN</td>
</tr>
<tr>
<td>GERMAN</td>
<td>RUSSIAN</td>
</tr>
<tr>
<td>GREEK</td>
<td>SPANISH</td>
</tr>
</tbody>
</table>
Degree Options for B.S. Mathematics

Option # to Check:
1. Traditional
2. Education
3. Applied Discrete
4. Applied Computational

Options #2-4:
Use 4-year plan in new handbook.
Degree Options for B.S. Mathematics

ACM: Applied Computational
- Math + Application Area
  - Mathematical Modeling
  - Scientific Computing
  - Differential Equations
  - Numerical Analysis

ADM: Applied Discrete
- Math + Computer Science
  - Number Theory
  - Combinatorics
  - Graph Theory
  - Cryptography

MSTR: Math Education
- Math + 6-12 Teaching Prep
  - 5 year MAEd Program
    - History of Math
    - Math Tutoring
    - College Geometry

Traditional
- Flexible Advanced Courses
  - Menu
    - 4000-level math:
      - Real Analysis
      - Abstract Algebra
      - Linear Algebra
      - Differential Eqs
      - Complex Analysis
      - etc...
  - Menu
    - Math-related courses:
      - Economics
      - Statistics
      - Physics
      - Engineering
      - Finance
      - etc...
**Completing a Mathematics B.S.**

<table>
<thead>
<tr>
<th>Component</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education (Pathways)</td>
<td>45 credits</td>
</tr>
<tr>
<td>Math Major Requirements</td>
<td>approx. 60-75* credits</td>
</tr>
<tr>
<td>Free Electives</td>
<td>9-21 credits</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120 credits</strong></td>
</tr>
</tbody>
</table>

- More free elective credits could be possible by satisfying multiple requirements with a single course.
- Some major requirements satisfy Pathways requirements, and those credits are counted twice above.

*Range depends on degree option.*
First Year Experience (FYE)
MATH 1004 - Discovering Mathematics I

Fall: 1 credit, P/F; Spring: 2 credits, A-F; CRN 86936

Yearlong course:
- the math major
- career opportunities
- LaTeX
- geometry beyond Euclid
- mathematical modeling
- graph theory
- research… and much more!

Meet:
- other first-year math majors
- upper-class math majors
- mathematics department faculty members
Math Course Selection
Calculus Sequence

- **MATH 1214 (Preparation for Calculus, 3 credits)**
  - No calculus transfer credit; Have not passed ALEKS placement assessment

- **MATH 1225 (Calculus 1, 4 credits)**
  - No calculus transfer credit; Have passes ALEKS

- **MATH 1226 (Calculus 2, 4 credits)**
  - Transfer credit for 1225

- **MATH 2204 (Multivariable Calculus, 3 credits)**
  - Transfer credit for 1225 and 1226
Mathematics in a Computational Context  
MATH 2405H-2406H

- Prerequisites: MATH 1225 and MATH 1226
- Yearlong honors course (5 credits fall; 5 credits spring)
- Covers MATH 2114, 2214, and 2204
  - Alt: 2114, 2214, 2204 as individual courses in same timeframe
- Fast-paced and conceptual
- Motivated by applications and taught with attention to algorithmic implementation
- Will teach math in a context in which computers are a tool to be used *when needed* to handle hard problems
Programming Requirement

- All Degree Options:
  - Consider MATH 1454: Intro to Math Programming
  - Introduction to programming in MATLAB language
  - Focused on mathematical applications
  - Must at least be enrolled in and Eligible for MATH 1225

- ADM Option: CS 1114 (Typically after completing MATH 1225)
Pathways Curriculum requires a total of 45 credits to fulfill the 7 core concepts and both integrative concepts. Students might pursue a minor or an alternative Pathway as means of completing a portion of the requirements.
## Pathways Concepts
*(See checksheet for details)*

### Core Concepts

<table>
<thead>
<tr>
<th>Concept</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discourse</td>
<td>9</td>
</tr>
<tr>
<td>Reasoning in the Natural Sciences</td>
<td>6</td>
</tr>
<tr>
<td>Reasoning in the Social Sciences</td>
<td>6</td>
</tr>
<tr>
<td>Quantitative and Computational Thinking</td>
<td>9</td>
</tr>
<tr>
<td>Critique and Practice in Design and the Arts</td>
<td>6</td>
</tr>
<tr>
<td>Critical Thinking in the Humanities</td>
<td>6</td>
</tr>
<tr>
<td>Critical Analysis of Identity and Equity in the United States</td>
<td>3 (may be double-counted with another core concept)</td>
</tr>
</tbody>
</table>

### Integrative Concepts

<table>
<thead>
<tr>
<th>Concept</th>
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</thead>
<tbody>
<tr>
<td>Ethical Reasoning</td>
</tr>
<tr>
<td>Intercultural and Global Awareness</td>
</tr>
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Pathway 1: Discourse, 9 credits (1f: 6 credits + 1a: 3 credits)

1f-Foundational credits:

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>ENGL 1105 (3)</td>
<td>ENGL 1106 (3)</td>
</tr>
<tr>
<td>ENGL 1106 (3)*</td>
<td></td>
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* If you have transfer credit for ENGL 1105 only.
Pathway 4: Natural Science, 6-7 credits

- Math Ed Option: Must take one lab! (7 credits total)
Breakout Rooms

- Shortly you will begin to review and adjust your course schedule as needed
- We’ve created a personal breakout room for each of you, labeled with your last name
- If you have any questions you wish to ask in private, enter your breakout room
- Jessica or Eric will join you there to assist with your questions as soon as available
Once you have 14-17 credits on your fall course schedule

▪ Jessica or Eric must check over your schedule

▪ Complete the Advising Session Exit Form
  ▪ linked on the right-hand side of https://www.math.vt.edu/orientation