ACADEMIC LANDSCAPE

BOV Retreat
July 2022
DATA-INFORMED PLANNING

• Allows us to understand the **past**, evaluate the **present**, and strategize and evolve the **future**

• A provost-led **Data Initiative Taskforce** works on creating a framework that provides a baseline of data points and trends for analysis and reporting related to teaching and research, as well as faculty and students, across the university
PROJECTING FORWARD

• Using data on enrollment and degrees conferred over time provides key indicators of trends in:
  – student interest and demand
  – areas of academic strength
  – faculty interest and activity
  – market and workforce needs
LOOKING BACK: UNDERGRADUATE

• Our undergraduate population has grown by 8% over the last decade
• W&M’s undergraduate population is primarily served by Arts & Sciences
• The Mason School of Business and the School of Education accept undergraduates after their initial coursework in Arts & Sciences
10-YEAR TREND

Undergraduate Degrees Conferred

- **STEM**: 2021 (600) vs. 2011 (300)
- **Social Sciences**: 2021 (700) vs. 2011 (600)
- **Arts & Humanities**: 2021 (450) vs. 2011 (250)
LOOKING BACK: GRADUATE

- Our graduate population has grown by 40% over the last decade

- Breakdown of graduate headcount by academic unit (Spring 2022):
  - Business 1090
  - Education 794
  - Law 653
  - Arts & Sciences 346
  - Marine Science 95
EVOLVING FOR THE FUTURE:
SUSTAINABLE CURRICULUM INITIATIVE

• 2020-2022: Provost-led data, analysis and planning reset
• Fully implemented, ongoing process in each school, led by deans, to manage programs and resources for students and faculty
• Ensures that each school’s curriculum:
  • meets the needs of current students
  • anticipates the needs of future students
  • advances W&M mission, vision and values
SUSTAINABLE CURRICULUM BENEFITS

• Provides a mechanism for identifying potential new opportunities and programs
• Surfaces potential synergies and areas for collaboration across academic units
• Positions the academic enterprise to respond effectively in the current (and future) fiscal environment
• Supports strategic planning and data-informed decision-making
## OUTCOMES GOING FORWARD

- Cancel or shift rotation of courses with historical under-enrollment
- Reevaluate or restructure degree programs with historical trends for low student interest
- Identify popular courses that could be increased in class size without sacrificing quality
- Identify core curricular needs for students interested in particular tracks to make sure necessary courses are available
- Balance undergraduate and graduate courses within academic units
- Explore consolidating coursework to ensure quality and create efficiencies
- Develop new coursework in interdisciplinary programs that will release enrollment pressures in departments
DATA-INFORMED PLANNING IN ACTION

• W&M Computing, Data Science & Engineering
  – Internal and external data indicate a unique opportunity:
    • growing current student interest
      – interest in computational fields at W&M has more than tripled in the last 10 years, going from 219 declared majors to 722
      – Computer Science and Data Science have together grown 68% in declared majors since 2020
    • demonstrated W&M faculty strength in both instruction and research
    • significant market need in the mid-Atlantic region – graduates do not meet current workforce demand
    • excellent career paths with high salary potential
Expanding computational offerings will help W&M meet student and industry demand, grow enrollments and broaden workforce connections across Virginia and the Mid-Atlantic region.

- **Student Interest**: W&M has a strong foundation of student interest to build from in computing/data science fields.
- **Industry Need**: Market demand and unmet need exist regionally and nationally, especially for well-rounded candidates.
- **Competition**: Career outcome potential is strong in this field: significant job growth regionally and nationally with high paying positions.
- **W&M Strengths**: VA universities are not keeping pace with producing graduates in the fastest growing degrees nationally.
- **Other VA schools**: Other VA schools focused on traditional engineering, while what is called for is an interdisciplinary approach.

- **W&M produces well-rounded problem solvers** with strong critical thinking, writing and speaking skills.
- **W&M is uniquely qualified to create a niche** by combining liberal arts and STEM into the computational fields – no one regionally is doing it.
W&M’s Liberal Arts Approach Provides a Competitive Advantage to STEM

Drawing upon different aspects of W&M’s core values and student experiences can create a unique environment for computing, data science and engineering that other institutions without a strong liberal arts foundation are unable to replicate.

- Data Science
  - Applications, predictions, machine learning, AI, etc.
- Computational Engineering
  - Modeling, simulation, virtual environments, design, etc.
- Computer Science
  - Systems, networks, algorithms, hardware, software, cybersecurity, etc.

W&M Niche
- Data fluency at the core
- Interdisciplinary in nature
- Liberal arts lens
- Technical expertise

- Data fluency across disciplines with Humanities, Social Sciences, and STEM
- 13% of students double-major or pursue a minor in STEM-Liberal Arts or STEM-Social Science combination
- More than 40% of students double-major or pursue a minor, while 10% of students double-major in STEM
- Basic and applied research with real world applications
- Second highest grad rate among public universities nationally, including high STEM graduation rates – able to meet demand
- Strong career pathways with high salaries
- Public and private partnerships

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### GROWING DEMAND IN COMPUTATIONAL FIELDS

<table>
<thead>
<tr>
<th>Major</th>
<th>2016 Enrollment</th>
<th>2021 Enrollment</th>
<th>Percent Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>359</td>
<td>422</td>
<td>14%</td>
</tr>
<tr>
<td>Computer Science</td>
<td>215</td>
<td>299</td>
<td>39%</td>
</tr>
<tr>
<td>Data Science</td>
<td>19*</td>
<td>120</td>
<td>&gt;200%</td>
</tr>
<tr>
<td>Physics</td>
<td>94</td>
<td>108</td>
<td>15%</td>
</tr>
<tr>
<td>Business Analytics Data Science</td>
<td>29</td>
<td>105</td>
<td>&gt;200%</td>
</tr>
<tr>
<td>Computational &amp; Applied Math &amp; Statistics</td>
<td>35</td>
<td>48</td>
<td>38%</td>
</tr>
<tr>
<td>Business Analytics Supply Chain</td>
<td>3</td>
<td>20</td>
<td>&gt;200%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>735</strong></td>
<td><strong>1122</strong></td>
<td><strong>49%</strong></td>
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*Data from 2020 when major was first available; data from W&M Fact Book*
EXISTING W&M CAPABILITIES

Existing Faculty:
More than 20 faculty with engineering degrees
More than 40 faculty with degrees in computational sciences

New Facility: Integrated Science Complex IV (2024)

Needed: Investment in faculty positions and additional space
SCHEV APPROVED THIS MONTH

• Graduate certificate in Data and Computer Sciences
  – Response to immediate and critical industry need
  – Stackable credential to potentially lead to MS in Computer Science
Next Steps