Strategic Analysis and Planning

University of Delaware
September 29\textsuperscript{nd}, 2016

Lawrence Martin
Founder

Tricia Stapleton
Chief Communications Officer

Tynan Heller
Associate Team Manager

This document contains Academic Analytics’ confidential and proprietary, business trade secrets. This document may not be transferred or used by any other person or entity other than your university. For internal use only.

© 2016 Academic Analytics All rights Reserved.
Why Track Research Activity using Academic Analytics

- Who are we today? Who do we want to be?
  - Delaware Will Shine – Goal to be competitive with top AAU research institutions
  - Current excellent: How do we maintain and advance?
  - Aspirations of excellence: Where do we invest resources?
    - Identify niche research themes
  - Address areas in need of improvement or change
  - Identify and monitor appropriate peers

- Complacency can have dire consequences
Applications of Academic Analytics Data

Effectiveness in Training Future Scholars
- View graduate placement and performance within the academy

Establish a Publication Strategy
- View competitiveness based on peers and journal quality
- Determine high-exposure journals per discipline

Evaluate Your Federal Funding Profile
- Determine the federal funding profile of your unit as it relates to national or peer norms
- Identify potential additional sources of funding

Build and Improve a Sustainable Unit
- View mix using career progression and quintiles
- Understand impact as it relates to hiring/retention/retirement
- Inform program review analyses

Identify & Nominate Faculty for Honorific Awards
- Determine whether unit faculty are being appropriately recognized in their discipline
- Identify faculty for honorific award nominations

Research Development
- Identify and respond to potential grant opportunities based on strength in relevant research areas
- Explore research trends among faculty and peers

Build a Culture of Interdisciplinarity and Team Work
- Build an interdisciplinary culture
- View and foster collaborative networks

Unit of analysis
- Program
- Department
- College
- University

This document contains Academic Analytics confidential and proprietary, business trade secrets. This document may not be transferred or used by any other person or entity other than your university. For internal use only. © 2016 Academic Analytics All rights Reserved.
Moving Beyond Rankings

*Building on an analytical toolset to provide context for campus leaders*

**Core benchmark data**

**Academic leadership and analysis expertise**

**Research themes**

**Collaborative networks**

**Doctoral outcomes**

**Hiring and retention**
- Ph.D. granting institutions
- Tenure/Tenure Track Faculty (others critical to research Mission)
- Faculty are aggregated into Departments and Ph.D. Programs
- Tracking refereed nationally competitive research activity in these areas:
  - Articles (27k journals)
  - Citations (Tracked using DOI’s)
  - Books (Baker & Tayler, British Library)
  - Grants (Federal)
  - Awards (Honorific, 6k+)
  - Book Chapters (New, not in comparative)
  - Patents (New, not in comparative)
Academic Analytics Data: Limitations

Academic Analytics is engaged in an ongoing effort to expand the content of the database to provide a more comprehensive view of research activity across all disciplines. Below is a list of areas of awareness that are currently under development for future inclusion in the database:

- Book chapters (currently beta-testing >1 million chapters)
- Co-PIs on federal grants (currently have NSF, NIH, and USDA Co-PIs)
- Citations in/to books
- Federal subawards
- Industry funding
- Foundation funding
- Patents
- Other creative works
Academic Analytics Data: Defining a Comparative Universe

Customize peer groups, data, and analyses

Begin with a group of faculty

**Select/build a peer group**
- Entire discipline
- Unit current/aspirational/institutional peers
- Like-rank or faculty in similar career stage

**Include select data elements**
Examples:
- Selected journals/presses
- Specific granting agencies

**Analyze results, develop further analyses**
- Establish areas of strength/weakness
- Refine with research themes
- Identify unit- and individual-level strategies
Academic Analytics data: Strengths and Cautions

**Provides reliable, comprehensive, comparative information** in those scholarly areas recognized as essential for understanding scholarly productivity in universities across the nation and around the world: books, articles, citations, research funding, honors. Academic Analytics does not track undergraduate instruction outcomes.

**Data starts a conversation - doesn’t finish it**

**Complements, strengthens and acts as check on more traditional tools** for reaching judgments about research productivity and quality of units and individual scholars. Does not and should not be used as replacement

- For individuals: Better, because more accurate and contextualized than h index, Google Scholar, etc.
- Complements peer review:
  - external review - reliant on viewpoints of high quality, but potentially limited perspective “experts”
  - letters - as part of reviews (anonymous) or reference processes
  - word of mouth
  - collegial knowledge
  - “reputation”
- Adds additional information
- This is especially true in establishing a strong comparative context with peers and aspirational peers whether for unit or individual (e.g., comparison to scholars in top quintile).

**Note:**

- Focuses on recent performance - hence downplays older works and reputation built on it
- Does not do as well for data on scholarly production from humanities and arts
- Does less well on measuring “impact”, although as we get better citation data - where cited - this can be reduced
Identifying Current Excellence and Understanding Existing Realities
State Funding for Higher Education Declined in Recent Years While Federal Funding Grew

Federal and state revenue per full-time equivalent student flowing to higher education institutions, fiscal years 2000-12, adjusted for inflation

Sources: Pew’s analysis of data from the Delta Cost Project Database (May 2015), based on original data from U.S. Department of Education, National Center for Education Statistics’ Integrated Postsecondary Education Data System
© 2015 The Pew Charitable Trusts
Research and Development Expenditures Total in Thousands

Source: NSF HERD FY 2014 Report, Table 17

Top 50 Average

Top 150 Average

U. Delaware


$- $100,000 $200,000 $300,000 $400,000 $500,000 $600,000 $700,000 $800,000
Percent Change in Research and Development Expenditures

Source: NSF HERD FY 2014 Report, Table 17
Delaware – Department Total Grants by Total Dollars

Source: Academic Analytics 2014 data (Federal $ for a 5 year window)

Grown Opportunity?
History of successfully garnering funds
Delaware – Institutional Comparisons

Based on institution level index
### Emerging Set of Peers (19 out of 24 in AAU)

<table>
<thead>
<tr>
<th>AAU Institution</th>
<th>Non-AAU Peer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boston University</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td>Case Western University</td>
<td>University of Arizona</td>
</tr>
<tr>
<td>Georgia Institute of Technology</td>
<td>University of Connecticut</td>
</tr>
<tr>
<td>Indiana University</td>
<td>University Illinois Urbana-Champaign</td>
</tr>
<tr>
<td>Iowa State University</td>
<td>University of Maryland</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>University of Massachusetts Amherst</td>
</tr>
<tr>
<td>NC State University</td>
<td>University of Michigan</td>
</tr>
<tr>
<td>Ohio State University</td>
<td>University of Minnesota</td>
</tr>
<tr>
<td>Penn State University</td>
<td>University of North Carolina at Chapel Hill</td>
</tr>
<tr>
<td>Purdue University</td>
<td>University of Virginia</td>
</tr>
<tr>
<td>Rutgers University</td>
<td>University of Utah</td>
</tr>
<tr>
<td>Stony Brook University</td>
<td>Virginia Tech</td>
</tr>
</tbody>
</table>
Delaware - Department Quintile Placement Among Peers

1

2

3

4

5

0%  5%  10%  15%  20%  25%
Inform the Honorific Nomination Process
Delaware- Informing Award Nomination Efforts

High Performing – Under Recognized
Identify Faculty to Nominate

- Discipline Faculty with Award
- AAU Public Discipline Faculty with Award
- University of Delaware Faculty

Select Awards Time Frame
- Awards Received 2010-2014

Select Years Since Terminal Degree
- (All)

Select Academic Rank
- (All)

Select Discipline
- Chemical Engineering

Select Award Governing Society
- National Academy of Engineering

Select Award Name(s)
- Membership

AAD2014 Faculty Counts Sorted by Standard Index

<table>
<thead>
<tr>
<th>Faculty Name</th>
<th>Department Name</th>
<th>Standard Index</th>
<th>Total Number of Articles</th>
<th>Total Number of Citations</th>
<th>Total Number of Grants</th>
<th>Annual Grant Dollars</th>
<th>Mean Dollars per Grant</th>
<th>Total Number of Awards</th>
<th>Total Number of Books</th>
</tr>
</thead>
</table>
Tracking Ph.D. Graduates in Faculty Careers
## Delaware – Institutions With at Least 5 Graduates

Includes only those graduates at Ph.D. granting institutions in T/TT positions

<table>
<thead>
<tr>
<th>Institution Name</th>
<th>Number of Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Delaware</td>
<td>47</td>
</tr>
<tr>
<td>Lehigh University</td>
<td>10</td>
</tr>
<tr>
<td>City University of New York, The</td>
<td>8</td>
</tr>
<tr>
<td>Drexel University</td>
<td>8</td>
</tr>
<tr>
<td>University of Connecticut</td>
<td>8</td>
</tr>
<tr>
<td>Pennsylvania State University, The</td>
<td>7</td>
</tr>
<tr>
<td>East Carolina University</td>
<td>6</td>
</tr>
<tr>
<td>Louisiana State University</td>
<td>6</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>6</td>
</tr>
<tr>
<td>University of Kentucky</td>
<td>6</td>
</tr>
<tr>
<td>University of Maryland, College Park</td>
<td>6</td>
</tr>
<tr>
<td>Arizona State University</td>
<td>5</td>
</tr>
<tr>
<td>Carnegie Mellon University</td>
<td>5</td>
</tr>
<tr>
<td>Indiana University-Purdue University</td>
<td>5</td>
</tr>
<tr>
<td>Indianapolis</td>
<td></td>
</tr>
<tr>
<td>Johns Hopkins University</td>
<td>5</td>
</tr>
<tr>
<td>Ohio State University, The</td>
<td>5</td>
</tr>
<tr>
<td>University of Dayton</td>
<td>5</td>
</tr>
<tr>
<td>University of Maine, The</td>
<td>5</td>
</tr>
<tr>
<td>University of Oklahoma</td>
<td>5</td>
</tr>
<tr>
<td>University of Pittsburgh</td>
<td>5</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>5</td>
</tr>
<tr>
<td>University of Wisconsin - Madison</td>
<td>5</td>
</tr>
<tr>
<td>Virginia Commonwealth University</td>
<td>5</td>
</tr>
<tr>
<td>Virginia Polytechnic Institute and</td>
<td>5</td>
</tr>
<tr>
<td>State University</td>
<td></td>
</tr>
</tbody>
</table>

165 Ph.D. Graduates currently working at research institutions.
Understanding Department Profile and Identifying Opportunities
# Department of Chemical and Biomolecular Engineering

## Letting the Data Indicate Peers: Citations per Faculty

<table>
<thead>
<tr>
<th>Institution Name</th>
<th>Department Name</th>
<th>No. Fac</th>
<th>Citations per Faculty Member</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of California, Berkeley</td>
<td>Chemical and Biomedical Engineering, Department of</td>
<td>21</td>
<td>996.86</td>
</tr>
<tr>
<td>California Institute of Technology</td>
<td>Chemistry and Chemical Engineering, Division of</td>
<td>44</td>
<td>950.77</td>
</tr>
<tr>
<td>University of California, Los Angeles</td>
<td>Chemical and Biomolecular Engineering, Department of</td>
<td>18</td>
<td>780.06</td>
</tr>
<tr>
<td>Princeton University</td>
<td>Chemical and Biological Engineering, Department of</td>
<td>16</td>
<td>771.50</td>
</tr>
<tr>
<td>University of Texas at Austin, The</td>
<td>Chemical Engineering, Department of</td>
<td>27</td>
<td>720.11</td>
</tr>
<tr>
<td>University of Wisconsin - Madison</td>
<td>Chemical and Biological Engineering, Department of</td>
<td>19</td>
<td>712.11</td>
</tr>
<tr>
<td>University of California, Santa Barbara</td>
<td>Chemical Engineering, Department of</td>
<td>20</td>
<td>664.65</td>
</tr>
<tr>
<td>University of Illinois at Urbana-Champaign</td>
<td>Chemical and Biomolecular Engineering, Department of</td>
<td>19</td>
<td>625.32</td>
</tr>
<tr>
<td>Yale University</td>
<td>Chemical and Environmental Engineering, Department of</td>
<td>15</td>
<td>620.33</td>
</tr>
<tr>
<td>University of California, Riverside</td>
<td>Chemical and Environmental Engineering, Department of</td>
<td>17</td>
<td>596.71</td>
</tr>
<tr>
<td>University of Delaware</td>
<td>Chemical and Biomolecular Engineering, Department of</td>
<td>27</td>
<td>547.48</td>
</tr>
<tr>
<td>Johns Hopkins University</td>
<td>Chemical and Biomolecular Engineering, Department of</td>
<td>14</td>
<td>526.29</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>Chemical Engineering, Department of</td>
<td>23</td>
<td>517.00</td>
</tr>
<tr>
<td>University of Washington</td>
<td>Chemical Engineering, Department of</td>
<td>21</td>
<td>513.57</td>
</tr>
<tr>
<td>University of Colorado Boulder</td>
<td>Chemical and Biological Engineering, Department of</td>
<td>24</td>
<td>505.29</td>
</tr>
<tr>
<td>University of Minnesota, Twin Cities</td>
<td>Chemical Engineering and Materials Science, Department of</td>
<td>37</td>
<td>501.86</td>
</tr>
</tbody>
</table>
Department of Chemical and Biomolecular Engineering

Review Current Funding Profile and Opportunities

University of Delaware

Emerging Set of Peers

University of Illinois at Urbana - Champaign
Understanding the Level of Interdisciplinarity Collaborations

Inter-Institutional Collaborations for Department – Article Coauthors
Questions and Discussion