AGENDA
Formal Session of the Board of Trustees
Michigan Technological University
9:00 a.m. – April 28, 2017
Ballroom B – Memorial Union Building

I. Approval of Agenda

II. Opening Remarks
   A. Chair’s Comments
   B. President’s Comments

III. Committee Reports
   A. Academic Affairs Committee
      - Provost Report- Dr. Jackie Huntoon, Provost & Vice President for Academic Affairs
      - Research and Sponsored Programs Report- Dr. David Reed, Vice President for Research
      - Student Affairs and Advancement Report- Dr. Les Cook, Vice President for Student Affairs and Advancement
   B. Audit and Finance Committee
      - Treasurer’s Report-Ms. Julie Seppala, Treasurer
   C. Leadership Committee

IV. Consent Agenda
   A. Approval of Minutes
   B. Gifts
   C. Resignations, Retirements and Off Payroll
   D. Approval of External Auditor

V. Action/Discussion Items
   A. Employee Recognition
   B. Emeritus Rank
   C. Appointments with Tenure
   D. Appointments, Not Involving Tenure and/or Promotion
   E. Appointments, Involving Tenure and/or Promotion
   F. Promotions
   G. FY18 General Fund Operating Budget
   H. Election of Chair and Vice Chair
   I. Proposal for a PhD in Integrative Physiology

VI. Reports
   A. University Senate Report - Dr. Martin Thompson
   B. Undergraduate Student Government Report - Mitchell Sanford
   C. Graduate Student Government Report- William Lytle and Hossein Tavakoli
VII. Informational Items
   A. Analysis of Investments
   B. University Issued Bond Balances
   C. Research and Sponsored Programs Report
   D. Advancement and Alumni Engagement Report
   E. Recent Media Coverage
   F. Employee Safety Statistics

VIII. Other Business

IX. Public Comments

X. Informal Closed Session for Review of Pending Litigation and a Periodic Personnel Evaluation of President Mroz

XI. Adjournment
I. APPROVAL OF AGENDA

RECOMMENDATION: That the Board of Trustees approves the agenda of the formal session of April 28, 2017 as distributed to the Board.
II. OPENING REMARKS

A. Chair’s Comments

B. President’s Comments
III. COMMITTEE REPORTS

A. ACADEMIC AFFAIRS COMMITTEE
   - Provost Report - Dr. Jackie Huntoon, Provost & Vice President for Academic Affairs
   - Research and Sponsored Programs Report – Dr. David Reed, Vice President for Research
   - Student Affairs and Advancement Report – Dr. Les Cook, Vice President for Student Affairs and Advancement

B. AUDIT AND FINANCE COMMITTEE
   - Treasurer’s Report - Ms. Julie Seppala, Treasurer

C. LEADERSHIP COMMITTEE
Provost’s Report

Jackie Huntoon

April 28, 2017
Tenure, Promotion and Reappointments

5 Recommendations for Promotion from Lecturer to Senior Lecturer
• Leyre Alegre-Figuero - Humanities
• Stephanie Carpenter – Humanities
• Mary Fraley - Engineering Fundamentals
• Jason Gregersen - Mathematical Sciences
• Brigitte Morin - Biological Sciences

1 Recommendation for Promotion from Senior Lecturer to Principal Lecturer
• Rupak Rajachar - Biomedical Engineering
Tenure, Promotion and Reappointments

• 14 Recommendations for Promotions from
  Assistant Professor without Tenure to Associate Professor with Tenure

• 8 Recommendations for Promotions from
  Associate Professor with Tenure to Full Professor with Tenure
Kudos to Faculty Considered for Tenure and Promotion

From Woods Hole:
“As a result of their publication record, Dr. X is known nationally and internationally and respected by peers.”

From Tufts University:
“...their ability to lead some of these grants as PI, and participate in others as coPI, reflects further on sustainability for their programs as well as their collegiality within the University.”

From Oregon State University:
“Dr. X’s research portfolio is much more diverse and substantial than is typical of many assistant professors being considered for promotion and tenure, more importantly, their research has both a national and international impact.”

From The Ohio State University:
“I would comfortably place Professor X among the top 3-4 young researchers in the country.”
Kudos Continued

From MIT:
“Tenure is a “forever” commitment on the part of any university, and therefore it behooves us all to be cautious in granting it. Professor X has various characteristics that make me comfortable with the idea that tenure is an appropriate step...They are entrepreneurial in spirit, always thinking about new ways to interact with industry and other constituents. And I believe they can be counted on to keep MTU “on the map” for years to come.”

From Colorado State University:
“It says something about a junior scholar when their work is being read in classes where future scholars are being trained.”

From University of CA – Santa Barbara:
“I would predict that their achievement in the first two is sufficiently impressive to earn promotion at UCSB which is typically ranked in the top ten research universities worldwide (Leiden Rankings).”
From University of Michigan:
“Dr. X can position Tech at the leading edge of the incoming wave of change: as a place where accelerated scientific discovery and engineering explorations are conducted in ways that are sustainable both economically and environmentally, and as a place where vision, innovation and technology help democratize the evolution of higher living standards and quality-of-life experiences.”

From Georgia Institute of Technology:
“There are very few people in the field that can bridge theory and practice so well and in my mind they are one of the top researchers in this area globally.”

From Duke University:
“This work is set to unlock a massive amount of knowledge. They are a scientific star and you are fortunate to have them.”
Emphasizing **Continual Improvement** of Undergraduate Degree Programs

<table>
<thead>
<tr>
<th>Year</th>
<th>Goal 3 Plan</th>
<th>Goal 3 Assess + GoC</th>
<th>Goal 4 Plan</th>
<th>Goal 4 Assess + GoC</th>
<th>Goal 8 Plan</th>
<th>Goal 8 Assess + GoC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2016</td>
<td>Close the Loop Reports</td>
<td>Reflection</td>
<td>Goal 3 Plan</td>
<td>Goal 3 Assess + GoC</td>
<td>Goal 4 Plan</td>
<td>Goal 4 Assess + GoC</td>
</tr>
<tr>
<td>Fall 2017</td>
<td>Close the Loop Reports</td>
<td>Reflection</td>
<td>Goal 4 Plan</td>
<td>Goal 4 Assess + GoC</td>
<td>Goal 8 Plan</td>
<td>Goal 8 Assess + GoC</td>
</tr>
<tr>
<td>Fall 2018</td>
<td>Goal 4 Plan</td>
<td>Goal 4 Assess + GoC</td>
<td>Goal 8 Plan</td>
<td>Goal 8 Assess + GoC</td>
<td>Goal 5 was assessed in fall 2014</td>
<td></td>
</tr>
<tr>
<td>Fall 2019</td>
<td>Goal 8 Plan</td>
<td>Goal 8 Assess + GoC</td>
<td>Goal 5 was assessed in fall 2014</td>
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</tr>
<tr>
<td>Fall 2020</td>
<td>Goal 8 Plan</td>
<td>Goal 8 Assess + GoC</td>
<td>Goal 5 was assessed in fall 2014</td>
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<tr>
<td>Fall 2021</td>
<td>Goal 8 Plan</td>
<td>Goal 8 Assess + GoC</td>
<td>Goal 5 was assessed in fall 2014</td>
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</table>

Numbered Goals = University Student Learning Goals; GoC = Goal of Choice
Undergraduate: Closing the Loop and Making Changes - Examples

• CSA: Biological Sciences
  o Assessment of Goals 5 and 6 →
    • New course (BL3782 Writing Practicum in Biology)
    • Faculty goals to strengthen student skills in
      – Lab report writing
      – Journal searching and citing
      – Synthesis and expression of content
  o Assessment of Goal 2 (as GoC) →
    • New course (BL3012 Essential Cell Biology)

“Overall, assessment has allowed us to take a critical look at our program and make crucial decisions that will benefit our students and strengthen the Biology department as a whole.”

• COE: Biomedical Engineering
  o Planning for Assessment of Goal 3 →
    “We have increased the exposure EBE students get to global issues, primarily as they relate to cultural differences in medical device regulations and quality assurance programs. This has been a significant improvement in our program ... especially true as medical device manufacturing moves off shore ...”

• COE: Material Science and Engineering
  o Assessment of Goals 5, 6, and 3 →
    • UG Curriculum Committee → UG Curriculum and Assessment Committee
    • Longitudinal assessment of students through degree program
    • Faculty discussions on how students are doing on other aspects of artifacts—not just assessed goal
Assessment of Graduate Student Learning Outcomes

- 2016-17: Developed a system of assessment of student learning outcomes at the graduate level
- 2017: 8 programs developed assessment plans and are collecting assessment data
- 2017-18: Remaining programs complete their plans by December 2017 (all workshops scheduled); all programs collecting data by Spring 2018, in compliance with Higher Learning Commission expectations.

Biomedical Engineering
Chemistry
Computer Science
Geological and Mining Engineering & Science
Humanities
Materials Science & Engineering
School of Forest Resources & Environmental Science
Social Sciences
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Business</td>
<td></td>
<td></td>
<td></td>
<td><strong>AASCB</strong></td>
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<td></td>
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<td></td>
<td></td>
<td>non-AASCB</td>
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<tr>
<td>COE</td>
<td><strong>ABET</strong>: all undergrad Eng.</td>
<td></td>
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<tr>
<td></td>
<td>(grad) BioMed, CEE, Computer Eng, EE, MSE</td>
<td></td>
<td></td>
<td>(grad &amp; non-ABET): Chemical Eng, Engineering, Geology Dept., MEEM</td>
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<tr>
<td></td>
<td><strong>ABET</strong>: all undergrad Eng.</td>
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<tr>
<td>CSA</td>
<td><strong>ABET (CS)</strong></td>
<td><strong>NAACLS</strong>: MLS</td>
<td></td>
<td><strong>CAEP</strong>: Teacher Ed/Prep</td>
<td>(undergrad): V&amp;P Arts, Sciences and Arts General</td>
<td><strong>APA</strong>: Psych</td>
<td><strong>HFES</strong>: App. Cog. Sci., Human Factors</td>
</tr>
<tr>
<td></td>
<td>(grad &amp; undergrad): Biological Sciences, Humanities, KIP, Math</td>
<td></td>
<td></td>
<td><strong>ACS</strong>: Chemistry</td>
<td>(grad &amp; undergrad): Chemistry (non-ACS)</td>
<td></td>
<td><strong>ABET (CS)</strong></td>
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<tr>
<td>SFRES</td>
<td><strong>SAF</strong>: Forestry, Nat. Res. Mgmt.</td>
<td></td>
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<tr>
<td></td>
<td>non-SAF</td>
<td></td>
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</tr>
<tr>
<td>SoT</td>
<td><strong>ABET</strong>: all undergrad Eng. Tech., Surveying, CNSA</td>
<td></td>
<td></td>
<td>Integrated Geospatial Tech., Medical Informatics</td>
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<td></td>
<td><strong>ACCE</strong>: Const. Mgmt.</td>
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<tr>
<td>Interdisp.</td>
<td>BMB</td>
<td>Environmental Engineering</td>
<td>CS&amp;E, Data Science, Atmospheric Sci.</td>
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<tr>
<td></td>
<td><strong>ACCE</strong>: Const. Mgmt.</td>
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</tbody>
</table>
1st Female ECE Graduate

• Patricia “Pat” E. Anthony
• BS in Electrical Engineering – 1967
• 50 year anniversary
• Spent most of career with IBM
Thank you
Sponsored Program Summary
3rd Quarter FY17
April, 2017

David Reed
Vice President for Research
Outline

• Sponsored Awards, 3rd Quarter FY17
• Research Expenditures, 3rd Quarter FY17
• Intellectual Property/Commercialization, 3rd Quarter FY17
• Corporate Sponsorship, 3rd Quarter FY17
• “The Next Level”
Sponsored Awards, 3rd Quarter FY17

Sponsored Awards
Fiscal Year 2017
3rd Quarter
 Ended March 31, 2017
TOTAL: $44,137,186

Pre-Proposals Submitted
(excluded from Proposals Submitted figures below)
FYTD 2016: 55

Formal Session of the Board of Trustees - III. Committee Reports
## Sponsored Awards, 3rd Quarter FY17

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>FY '17 Proposals Submitted</th>
<th>FY '16 Proposals Submitted</th>
<th>FY '17 Awards Received</th>
<th>FY '16 Awards Received</th>
<th>Awards Received ($)</th>
<th>FY '17 Variance</th>
<th>FY '16 Variance</th>
<th>Variance ($</th>
<th>Variance (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASA</td>
<td>47</td>
<td>61</td>
<td>19</td>
<td>13</td>
<td>1,519,130</td>
<td>1,134,350</td>
<td>384,780</td>
<td>33.9%</td>
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</tr>
<tr>
<td>National Science Foundation</td>
<td>153</td>
<td>162</td>
<td>38</td>
<td>47</td>
<td>7,005,727</td>
<td>5,707,496</td>
<td>1,298,231</td>
<td>22.7%</td>
<td></td>
</tr>
<tr>
<td>US Department of Agriculture</td>
<td>57</td>
<td>35</td>
<td>29</td>
<td>16</td>
<td>2,780,051</td>
<td>1,295,037</td>
<td>1,485,014</td>
<td>114.7%</td>
<td></td>
</tr>
<tr>
<td>US Department of Defense</td>
<td>77</td>
<td>53</td>
<td>75</td>
<td>47</td>
<td>9,831,297</td>
<td>6,546,594</td>
<td>3,284,703</td>
<td>50.2%</td>
<td></td>
</tr>
<tr>
<td>US Department of Education</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>329,907</td>
<td>92,155</td>
<td>237,752</td>
<td>258.0%</td>
<td></td>
</tr>
<tr>
<td>US Department of HHS</td>
<td>32</td>
<td>30</td>
<td>9</td>
<td>10</td>
<td>1,685,759</td>
<td>2,141,734</td>
<td>-455,975</td>
<td>-21.3%</td>
<td></td>
</tr>
<tr>
<td>US Department of Transportation</td>
<td>12</td>
<td>13</td>
<td>17</td>
<td>15</td>
<td>2,856,231</td>
<td>1,007,636</td>
<td>1,848,595</td>
<td>183.5%</td>
<td></td>
</tr>
<tr>
<td>Other Federal Agencies*</td>
<td>34</td>
<td>41</td>
<td>26</td>
<td>17</td>
<td>1,735,309</td>
<td>794,833</td>
<td>940,416</td>
<td>118.3%</td>
<td></td>
</tr>
<tr>
<td>Federal Agency Total</td>
<td>436</td>
<td>429</td>
<td>229</td>
<td>180</td>
<td>32,534,777</td>
<td>20,115,844</td>
<td>12,418,933</td>
<td>61.7%</td>
<td></td>
</tr>
<tr>
<td>State of Michigan</td>
<td>21</td>
<td>36</td>
<td>11</td>
<td>20</td>
<td>754,878</td>
<td>2,917,420</td>
<td>-2,162,542</td>
<td>-74.1%</td>
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<tr>
<td>Industrial</td>
<td>167</td>
<td>149</td>
<td>154</td>
<td>149</td>
<td>6,176,321</td>
<td>6,145,001</td>
<td>31,320</td>
<td>0.5%</td>
<td></td>
</tr>
<tr>
<td>Foreign</td>
<td>13</td>
<td>18</td>
<td>13</td>
<td>14</td>
<td>1,097,578</td>
<td>722,054</td>
<td>375,524</td>
<td>52.0%</td>
<td></td>
</tr>
<tr>
<td>All Other Sponsors</td>
<td>69</td>
<td>58</td>
<td>26</td>
<td>22</td>
<td>1,193,959</td>
<td>1,452,638</td>
<td>-258,679</td>
<td>-17.8%</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>706</td>
<td>690</td>
<td>433</td>
<td>385</td>
<td>41,757,513</td>
<td>31,352,957</td>
<td>10,404,556</td>
<td>33.2%</td>
<td></td>
</tr>
<tr>
<td>Gifts**</td>
<td>N/A</td>
<td>N/A</td>
<td>231</td>
<td>271</td>
<td>2,366,672</td>
<td>6,753,353</td>
<td>-4,386,681</td>
<td>-65.0%</td>
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<tr>
<td>Crowd Funding</td>
<td>N/A</td>
<td>N/A</td>
<td>10</td>
<td>20</td>
<td>13,001</td>
<td>20,450</td>
<td>-7,449</td>
<td>-36.4%</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>706</td>
<td>690</td>
<td>674</td>
<td>676</td>
<td>44,137,186</td>
<td>38,126,760</td>
<td>$6,010,426</td>
<td>15.8%</td>
<td></td>
</tr>
</tbody>
</table>


**Gifts represent non-contractual funding from corporations, foundations, associations and societies in support of academic programs, scholarships/fellowships, student design & enterprise, research, youth programs and special programs.
## Research Expenditures, 3rd Quarter FY17

<table>
<thead>
<tr>
<th>College/School/Division</th>
<th>FY2017</th>
<th>FY2016</th>
<th>Variance</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration*</td>
<td>2,819,246</td>
<td>3,330,453</td>
<td>(511,207)</td>
<td>-15.3%</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>17,796,598</td>
<td>20,784,905</td>
<td>(2,988,307)</td>
<td>-14.4%</td>
</tr>
<tr>
<td>College of Science &amp; Arts</td>
<td>12,507,981</td>
<td>11,717,273</td>
<td>790,708</td>
<td>6.7%</td>
</tr>
<tr>
<td>Great Lakes Research Center</td>
<td>108,305</td>
<td>N/A</td>
<td>108,305</td>
<td>N/A</td>
</tr>
<tr>
<td>Pavlis Honors College</td>
<td>215,057</td>
<td>175,769</td>
<td>39,288</td>
<td>22.4%</td>
</tr>
<tr>
<td>Keweenaw Research Center (KRC)</td>
<td>5,251,037</td>
<td>5,031,408</td>
<td>219,629</td>
<td>4.4%</td>
</tr>
<tr>
<td>Michigan Tech Research Institute (MTRI)</td>
<td>6,089,643</td>
<td>6,326,435</td>
<td>(236,792)</td>
<td>-3.7%</td>
</tr>
<tr>
<td>School of Business &amp; Economics</td>
<td>1,136,021</td>
<td>1,276,976</td>
<td>(140,955)</td>
<td>-11.0%</td>
</tr>
<tr>
<td>School of Forest Resources &amp; Environmental Science</td>
<td>4,293,538</td>
<td>3,823,224</td>
<td>470,314</td>
<td>12.3%</td>
</tr>
<tr>
<td>School of Technology</td>
<td>419,228</td>
<td>561,402</td>
<td>(142,174)</td>
<td>-25.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50,636,654</strong></td>
<td><strong>53,027,845</strong></td>
<td><strong>(2,391,191)</strong></td>
<td><strong>-4.5%</strong></td>
</tr>
</tbody>
</table>

*Includes the Vice Presidents, Provost, and others who report to a VP, Provost or the President. Except for the research institutes that report to the VPR.
# Intellectual Property, 3rd Quarter FY17

<table>
<thead>
<tr>
<th>Category</th>
<th>FY17</th>
<th>FY16</th>
<th>+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosures Received</td>
<td>22</td>
<td>20</td>
<td>+ 10%</td>
</tr>
<tr>
<td>Nondisclosure Agreements</td>
<td>75</td>
<td>83</td>
<td>- 10%</td>
</tr>
<tr>
<td>Patents Filed or Issued</td>
<td>13</td>
<td>11</td>
<td>+ 18%</td>
</tr>
<tr>
<td>License Agreements</td>
<td>15</td>
<td>15</td>
<td>0 %</td>
</tr>
<tr>
<td>Gross Royalties</td>
<td>$311,184</td>
<td>$278,500</td>
<td>+ 12%</td>
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</table>
Corporate Sponsorship, 3rd Quarter FY17

Sponsored Awards
- Industry-
COMBINED
Fiscal Year 2017
3rd Quarter
Ended March 31, 2017

TOTAL: $11,936,417

- Energy
  713,083
- Environmental
  123,329
- Health
  502,658
- Industrial Engineering
  171,332
- IT Services
  696,069
- Mining & Metals
  389,852
- Other
  350,116
- Technology
  462,133

- Automotive
  5,159,545
- Business & Economics
  456,639
- Chemical
  619,246
- Civil
  177,651
- Consumer Products
  528,261
- Defense & Space
  1,586,503

Michigan Technological University
“The Next Level”

• In FY16 we had $72.5 MM in research expenditures, an increase of 3-4% from FY15.

• At that rate we will reach $100 MM, an increase of almost 40%, in about 8 years.

• Q: How do we accelerate that?

A: Everyone I ask says “we need to get to the next level”.
“The Next Level”

• What does it mean for Michigan Tech to reach “the next level” as a research institution?
  – We need to be the prime on an increasing number of large, multi-institutional funding programs.
  – These programs should be from a variety of sponsors, indicating a broad base of recognized research capacity.
  – Within any given funding program, awards should be to a range of nationally recognized research institutions, including Michigan Tech
Recent Examples

• Within the last year, Michigan Tech has been the lead on awards from the following programs:
  – EPA Regional Environmental Finance Center
  – DOE ARPA-E
  – NASA Space Technology Research Institute
  – DOT Beyond Traffic Innovation Center
EPA Regional Environmental Finance Center

- Tim Colling (CEE/MTTI-CTT), Lead, Six Years, $5.6 Million
- Goal: Assist counties, cities, villages, and state agencies in Michigan, Minnesota, Wisconsin, Illinois, Indiana, and Ohio find better ways to manage and maintain their infrastructure and to minimize their impact on the environment.
- Other Host Institutions:
  - University of Southern Maine, Syracuse University, University of Maryland *, University of North Carolina *, University of New Mexico, Wichita State University, CSU-Sacramento
DOE ARPA-E

• Jeff Naber (MEEM/APSRC), $2.8 Million
• Partner: GM
• Other Awardees:
  – General Motors, Oak Ridge National Laboratory, Ohio State University *, Pennsylvania State University *, Purdue University *, UC-Berkeley *, UC-Riverside, University of Michigan *, University of Minnesota *
NASA Space Technology Research Institute

• Greg Odegard (MEEM) Lead, $15 million, Five Years

• Partners:
  – Florida A&M University, Florida State University, Georgia Institute of Technology *, Johns Hopkins University *, Massachusetts Institute of Technology *, Pennsylvania State University *, University of Colorado *, University of Utah, Virginia Commonwealth University, Nanocomp Technologies, Solvay, US AFRL

• Goal is to “develop and deploy a carbon-nanotube based, ultra-high strength lightweight aerospace structural material within five years.”

• Other Awardee: UC Berkeley *
DOT Beyond Traffic Innovation Center

• Pasi Lautala (CEE/MTTI), Lead
• Centers “will be recognized by the DOT as forward-thinking and influential institutions that are capable of driving solutions to the challenges and trends identified in Beyond Traffic 2045, the US DOT’s report on current and future issues in transportation”. The Centers contribute by “convening decision-makers in their megaregion and coordinating related research, curriculum, outreach, and other activities.
• Other Awardees:
  – Northeastern University, Rutgers University *, University of Virginia *, Clemson University, Florida Atlantic University, Ohio State University *, University of Michigan *, University of Texas, Austin *, Texas Southern University, University of Denver, University of Arizona *, University of Washington *, UC Berkeley *, CS-San Bernardino
Summary

• Michigan Tech has been the lead on a number of significant programs from a variety of sponsors within the last year.
• These programs involve a wide range of participants across campus, and involve significant partner institutions.
• Other Universities with awards from these programs are included amongst the most prestigious research institutions in the United States

*Michigan Tech is increasingly receiving external recognition as a major national and international technological research institution*

The challenge in front of us is not to get to “the next level”, it is to sustain and accelerate activity.
Spring 2017 Commencement Statistics

Undergraduate
• 54 undergraduate degrees will be represented at commencement
• 675 undergraduates degrees will be announced
• 667 undergrads will be in attendance at the ceremony, with 8 students that will be earning more than one degree

Graduate
• 44 graduate degrees will be represented (17 PhD, 27 Master's programs)
• 270 graduate degrees will be announced
• 260 graduate students will be in attendance - with 10 earning both a Master's and PhD
• 51 PhDs (10 also earning a Master's degree), 209 Master's.
Challenge: Demographics and Migration

Production of High School Graduates in Michigan

2010 – 2015: Nearly 20,000 fewer H.S. Grads Annually
19% drop

Source: Knocking at the College Door, 2015, Western Interstate Commission for Higher Education
Michigan high school graduates vs. Michigan Tech’s in-state freshmen 2009 -2016
All Applicants
Admits
Formal Session of the Board of Trustees - III. Committee Reports
## Fall Undergraduate 2017 Applications

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>6090</td>
<td>5931</td>
<td>-159 -2.6%</td>
</tr>
<tr>
<td>Admits</td>
<td>4600</td>
<td>4390</td>
<td>-210 -4.6%</td>
</tr>
<tr>
<td>Paid deposits</td>
<td>1405</td>
<td>1364</td>
<td>-41 -2.9%</td>
</tr>
</tbody>
</table>
Fall Graduate 2017 Applications

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2017</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>4801</td>
<td>4678</td>
<td>-123 -2.6%</td>
</tr>
<tr>
<td>Admits*</td>
<td>1089</td>
<td>1429</td>
<td>340 31%</td>
</tr>
</tbody>
</table>
FY17 Funds Raised by Category
As of March 31, 2017

Total Raised: $46.80MM
Total Goal: $35MM
Total Funds Raised FY 2009-2017
As of March 31, 2017

Formal Session of the Board of Trustees - III. Committee Reports
Planned Giving Registry Historical Total
1985-2017

- $0MM
- $45MM
- $90MM
- $135MM
- $180MM
- $225MM


Michigan Tech
Thank you!
Financial Report
Board of Trustees Meeting
April 28, 2017
Overview

- Condensed Statement of Net Position
- Condensed Statement of Revenues, Expenses & Changes in Net Position
- Current Fund Projected Revenues & Expenses
- FY18 General Fund Operating Budget
### Balance Sheet

**Condensed Statement of Net Position**

**as of March 31, 2017**

*(in thousands)*

<table>
<thead>
<tr>
<th></th>
<th>University</th>
<th>Tech Fund</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Assets</td>
<td>$51,563</td>
<td>$3,617</td>
<td>$55,180</td>
</tr>
<tr>
<td>Noncurrent Assets:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Assets, net</td>
<td>235,074</td>
<td>-</td>
<td>235,074</td>
</tr>
<tr>
<td>Other Noncurrent Assets</td>
<td>67,099</td>
<td>134,081</td>
<td>201,180</td>
</tr>
<tr>
<td><strong>Total Assets</strong></td>
<td>$353,736</td>
<td>$137,698</td>
<td>$491,434</td>
</tr>
<tr>
<td><strong>Deferred Outflows of Resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deferred Pension Amounts</td>
<td>$5,010</td>
<td>-</td>
<td>$5,010</td>
</tr>
<tr>
<td><strong>Total Deferred Outflows of Resources</strong></td>
<td>$5,010</td>
<td>-</td>
<td>$5,010</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Liabilities</td>
<td>$24,808</td>
<td>$798</td>
<td>$25,606</td>
</tr>
<tr>
<td>Noncurrent Liabilities</td>
<td>151,433</td>
<td>4,970</td>
<td>156,403</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>$176,241</td>
<td>$5,768</td>
<td>$182,009</td>
</tr>
<tr>
<td><strong>Deferred Inflows of Resources</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deferred Pension Amounts</td>
<td>$349</td>
<td>-</td>
<td>$349</td>
</tr>
<tr>
<td><strong>Total Deferred Inflows of Resources</strong></td>
<td>$349</td>
<td>-</td>
<td>$349</td>
</tr>
<tr>
<td><strong>Net Position</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investments in capital assets, net of related debt</td>
<td>$158,889</td>
<td>-</td>
<td>$158,889</td>
</tr>
<tr>
<td>Other net position, restricted and unrestricted</td>
<td>23,267</td>
<td>131,930</td>
<td>155,197</td>
</tr>
<tr>
<td><strong>Total Net Position</strong></td>
<td>$182,156</td>
<td>$131,930</td>
<td>$314,086</td>
</tr>
</tbody>
</table>
## Income Statement

**Condensed Statement of Revenues, Expenses and Changes In Net Position**

**As of March 31, 2017**

*(in thousands)*

<table>
<thead>
<tr>
<th>FY17</th>
<th>Operating Revenues</th>
<th>Operating Expenses</th>
<th>Non Operating Revenues</th>
<th>Other Revenues</th>
<th>Change in Net Position</th>
<th>Net Position, Beginning</th>
<th>Net Position, End</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$ 295,720</td>
<td>$ 314,086</td>
</tr>
<tr>
<td>$</td>
<td>Student Tuition and fees</td>
<td>$ 125,538</td>
<td>Salaries &amp; Wages</td>
<td>$ 97,550</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grants and contracts</td>
<td>$ 29,213</td>
<td>Fringe Benefits</td>
<td>$ 28,701</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Educational Activities</td>
<td>$ 3,975</td>
<td>Student Financial Support</td>
<td>$ 50,709</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Department Activities</td>
<td>$ 8,341</td>
<td>Supplies, Services &amp; Other</td>
<td>$ 50,647</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Student Residence fees</td>
<td>$ 26,259</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Operating Revenues</strong></td>
<td><strong>$ 193,326</strong></td>
<td><strong>Total Operating Expenses</strong></td>
<td><strong>$ 227,607</strong></td>
<td><strong>$ 49,510</strong></td>
<td><strong>$ 3,137</strong></td>
<td><strong>$ 18,366</strong></td>
<td><strong>$ 314,086</strong></td>
</tr>
</tbody>
</table>
## FY2017 Current Funds
### Projected Revenues, Expenses & Change in Net Assets
(\textit{in thousands})

<table>
<thead>
<tr>
<th></th>
<th>Original Projection</th>
<th>3rd Quarter Projection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>$293,483</td>
<td>$289,056</td>
</tr>
<tr>
<td>Expenses</td>
<td>$(292,490)</td>
<td>$(286,221)</td>
</tr>
<tr>
<td>Change in Net Assets</td>
<td>$993</td>
<td>$2,835</td>
</tr>
</tbody>
</table>

\textit{Note: Current Fund includes General, Designated, Auxiliary, Retirement and Insurance, and Expendable Restricted Funds.}
# Proposed State Appropriations for Michigan Tech

<table>
<thead>
<tr>
<th></th>
<th>Governor</th>
<th>House</th>
<th>Senate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 Appropriation</td>
<td>2.5%</td>
<td>1.9%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Appropriation Revenue Increase</td>
<td>$1.200M</td>
<td>$.910M</td>
<td>$0.960M</td>
</tr>
<tr>
<td>Tuition Restraint</td>
<td>3.8%</td>
<td>3.8%</td>
<td>3.8%</td>
</tr>
</tbody>
</table>
## General Fund Revenues

### FY’18 Budget Planning Parameters

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Appropriations</td>
<td>1.9%</td>
</tr>
<tr>
<td>Enrollment</td>
<td>+100 students</td>
</tr>
<tr>
<td>Tuition &amp; Fees</td>
<td>3.8% overall</td>
</tr>
<tr>
<td>Undergraduate*</td>
<td></td>
</tr>
<tr>
<td>Resident</td>
<td></td>
</tr>
<tr>
<td>- Lower Division</td>
<td>3%</td>
</tr>
<tr>
<td>- Upper Division</td>
<td>4.5%</td>
</tr>
<tr>
<td>Non-Resident</td>
<td></td>
</tr>
<tr>
<td>- Lower Division</td>
<td>4.4%</td>
</tr>
<tr>
<td>- Upper Division</td>
<td>4.4%</td>
</tr>
<tr>
<td>Graduate</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Will be adjusted to be at or below any tuition restraint for Michigan residents included in legislation.*
### General Fund Expenses

#### FY’18 Budget Planning Parameters

<table>
<thead>
<tr>
<th>Item</th>
<th>Budget Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salary Pool</td>
<td>2.0 - 3.0%</td>
</tr>
<tr>
<td>Faculty Promotions</td>
<td>$235K</td>
</tr>
<tr>
<td>Graduate Stipend</td>
<td>+2%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>+$2.4M</td>
</tr>
<tr>
<td>Contingency Reserve</td>
<td>+$4.8M</td>
</tr>
<tr>
<td>Scholarships – Undergraduate</td>
<td>+$1.6M</td>
</tr>
<tr>
<td>Maintenance Budget</td>
<td>+$500K</td>
</tr>
</tbody>
</table>
Questions
IV. CONSENT AGENDA

These are routine matters that generally do not require discussion or debate. Any Board member can remove any consent item from the agenda by request. They will be considered as one resolution.

A. Approval of Minutes
B. Gifts
C. Resignations, Retirements and Off Payroll
D. Approval of External Auditor
IV-A. APPROVAL OF MINUTES

RECOMMENDATION: That the Board of Trustees approves the minutes of the formal session of March 3, 2017 as distributed to the Board.
IV-B. GIFTS

Attached is a fiscal year to date comparative report of gifts to Michigan Technological University and the Michigan Tech Fund.

RECOMMENDATION: That the Board of Trustees acknowledges the gifts to Michigan Technological University.
-- A planned gift of $25 million was documented on September 19, 2016 from a donor who has requested to remain anonymous.
-- Except for the Annual Fund, all totals include outright gifts and the full amount of new pledge commitments
-- Annual Fund includes cash from prior year pledges in addition to outright current year gifts and new pledge commitments due current year
-- An individual’s gifts given through another source (i.e. family foundation or closely held business) are credited to the individual

### Fundraising Productivity Report
July 1, 2016 through March 31, 2017
Compared to Prior Year

<table>
<thead>
<tr>
<th>Source</th>
<th>FY17 YTD Total</th>
<th>FY16 YTD Total</th>
<th>FY16 Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals - Major Gifts (25K and up)</td>
<td>1,938,319</td>
<td>7,021,161</td>
<td>10,872,520</td>
</tr>
<tr>
<td>Realized Planned Gifts (Unanticipated)</td>
<td>25</td>
<td>239,839</td>
<td>287,439</td>
</tr>
<tr>
<td>Individuals - non-Major Gifts</td>
<td>1,515,051</td>
<td>1,484,783</td>
<td>1,772,200</td>
</tr>
<tr>
<td>Full Value New Planned Gift Commitments</td>
<td>30,255,905</td>
<td>11,038,230</td>
<td>11,809,230</td>
</tr>
<tr>
<td>Annual Fund</td>
<td>1,184,820</td>
<td>1,230,622</td>
<td>1,491,595</td>
</tr>
<tr>
<td>Corporate Sponsored Research</td>
<td>10,230,489</td>
<td>460,485</td>
<td>3,025,560</td>
</tr>
<tr>
<td>Corporations</td>
<td>1,362,077</td>
<td>1,228,953</td>
<td>1,606,009</td>
</tr>
<tr>
<td>Foundations &amp; Other Organizations</td>
<td>242,577</td>
<td>240,300</td>
<td>319,300</td>
</tr>
<tr>
<td>Gifts-in-Kind</td>
<td>72,898</td>
<td>770,786</td>
<td>2,512,825</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>46,802,162</strong></td>
<td><strong>23,715,159</strong></td>
<td><strong>33,696,678</strong></td>
</tr>
</tbody>
</table>
IV-C. RESIGNATIONS, RETIREMENTS AND OFF PAYROLL

Attached is a report of resignations, retirements and off payroll which have been approved by the President and are included for his convenience in recommending acceptance by the Board.

RECOMMENDATION: That the Board of Trustees accepts the resignations, retirements and confirms the off payroll determinations.
# BOARD OF TRUSTEES OFF-PAYROLL REPORT

(February 3, 2017 – April 1, 2017)

## RETIRED

<table>
<thead>
<tr>
<th>Name</th>
<th>Class</th>
<th>Department</th>
<th>Title</th>
<th>Hire Date</th>
<th>Term Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gillis, James</td>
<td>Staff</td>
<td>Geological &amp; Mining Engineering &amp; Sciences</td>
<td>Director, Mine Safety</td>
<td>10/02/94</td>
<td>02/17/17</td>
</tr>
<tr>
<td>Olson, Allen</td>
<td>Staff</td>
<td>Facilities Management</td>
<td>Building Mechanic II</td>
<td>07/07/81</td>
<td>03/31/17</td>
</tr>
<tr>
<td>Sayen, Gina</td>
<td>Staff</td>
<td>Vice President for Administration</td>
<td>Administrative Assistant</td>
<td>05/30/89</td>
<td>02/10/17</td>
</tr>
<tr>
<td>Wilson, Rex</td>
<td>Staff</td>
<td>Office of Advancement</td>
<td>Senior Advancement Officer</td>
<td>07/20/07</td>
<td>03/07/17</td>
</tr>
</tbody>
</table>

## OFF-PAYROLL

<table>
<thead>
<tr>
<th>Name</th>
<th>Class</th>
<th>Department</th>
<th>Title</th>
<th>Hire Date</th>
<th>Term Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alvarado, Tressa</td>
<td>Staff</td>
<td>Jackson Center for Teaching &amp; Learning</td>
<td>Office Assistant 3</td>
<td>01/02/17</td>
<td>03/03/17</td>
</tr>
<tr>
<td>Blahnik, Jordan</td>
<td>Staff</td>
<td>University Marketing &amp; Communications</td>
<td>Design Specialist</td>
<td>02/15/16</td>
<td>03/03/17</td>
</tr>
<tr>
<td>Ciochetto, David</td>
<td>Staff</td>
<td>Physics</td>
<td>Assistant Research Engineer</td>
<td>04/22/13</td>
<td>02/15/17</td>
</tr>
<tr>
<td>Hagle, Rebecca</td>
<td>Staff</td>
<td>Rozsa Center for Performing Arts</td>
<td>Office Assistant 3</td>
<td>08/15/16</td>
<td>03/16/17</td>
</tr>
<tr>
<td>Kolehmainen, Angela</td>
<td>Staff</td>
<td>Facilities Management</td>
<td>Director of Transportation Services</td>
<td>01/21/13</td>
<td>03/01/17</td>
</tr>
<tr>
<td>Masarik, Matthew</td>
<td>Staff</td>
<td>Michigan Tech Research Institute (MTRI)</td>
<td>Senior Research Scientist/Engineer I</td>
<td>10/07/13</td>
<td>02/24/17</td>
</tr>
<tr>
<td>Parker, Jason</td>
<td>Staff</td>
<td>Facilities Management</td>
<td>Groundsperson</td>
<td>04/10/16</td>
<td>03/07/17</td>
</tr>
<tr>
<td>Woodhall, Jonathan</td>
<td>Staff</td>
<td>Information Technology</td>
<td>Telecommunications Tech/Engineer I</td>
<td>09/12/16</td>
<td>03/24/17</td>
</tr>
</tbody>
</table>
IV-D. APPROVAL OF EXTERNAL AUDITOR

The University's external auditors (certified public accountants) perform interim audit work prior to the close of our June 30 fiscal year, therefore, it is desirable that they be appointed prior to the end of the fiscal year.

RECOMMENDATION: That the Board of Control authorizes the Treasurer to engage the certified public accounting firm Andrews Hooper Pavlik, PLC to conduct the following audits for the fiscal year ending June 30, 2017:

1. The annual examination of the University's Financial Statements and Supplemental Information (all funds).

2. The annual examination of federal awards and federal student financial assistance programs, including Pell Grants, Education Opportunity Grants, Perkins Loans, College Work Study Programs and Part B Loans.

3. The financial audit of the University's intercollegiate athletics programs, as mandated by the National Collegiate Athletics Association.

V. ACTION/DISCUSSION ITEMS

A. Employee Recognition
B. Emeritus Rank
C. Appointments with Tenure
D. Appointments, Not Involving Tenure and/or Promotion
E. Appointments, Involving Tenure and/or Promotion
F. Promotions
G. FY18 General Fund Operating Budget
H. Election of Chair and Vice Chair
I. Proposal for a PhD in Integrative Physiology
V-A. EMPLOYEE RECOGNITION

For our employees that have worked for Michigan Tech for 35 or more years and in recognition of their distinguished service and outstanding contributions to Michigan Tech, the Board would like to honor them with a resolution of appreciation.

RECOMMENDATION: That the Board of Trustees adopts the Resolution of Appreciation for the following individual:

1.) Allen Olson – 35 years of service
V-B. EMERITUS RANK

Recommendation for the granting of faculty emeritus status originates within the retiree’s academic department and proceeds through the respective college and school. Once approved, the recommendation is presented to the Provost, and if successful, to the President of the University for presentation to the Board of Trustees.

RECOMMENDATION: That the Board of Trustees approves the following emeritus appointments:

Dr. Martin Auer, Professor Emeritus, 
Department of Civil and Environmental Engineering

Dr. Ralph Hodek, Professor Emeritus, 
Department of Civil and Environmental Engineering
OFFICE MEMO

TO: Michigan Technological University Board of Trustees

FROM: David Hand

DATE: April 11, 2017

SUBJECT: Recommendation for Emeritus Status

The Department of Civil and Environmental Engineering voted on April 11 to request that the Michigan Technological University Board of Trustees name Dr. Martin Auer as Professor Emeritus upon his retirement on May 5, 2017.

Professor Auer is well deserving of this award because of his exceptional contributions to the local, regional, national, and international research communities. He has left an indelible stamp on research and graduate programs at Michigan Tech over the past thirty-six years through his commitment to environmental engineering and Great Lakes research. Professor Auer’s arrival at Michigan Tech in 1980 resulted in the research programs in environmental engineering gaining national, and soon, international prominence. He has worked tirelessly on state, federal, and binational committees that deal with water quality and Great Lakes research. His research represents a comprehensive body of knowledge on the understanding of and management strategies to control algal blooms. This work has led to an improvement of the quality of life in the Nation through his work on predicting and controlling algal blooms.

Approved

Department Chair/School Dean

College Dean

Provost and Vice President for Academic Affairs

President

Date

Date

Date

Date

Revised 9/21/16
Michigan Tech

OFFICE MEMO

TO: Michigan Technological University Board of Trustees
FROM: David Hand
DATE: April 11, 2017
SUBJECT: Recommendation for Emeritus Status

The Department of Civil and Environmental Engineering voted on April 11 to request that the Michigan Technological University Board of Trustees name Dr. Ralph Hodek as Professor Emeritus upon his retirement on May 5, 2017.

Professor Hodek is well deserving of this award because of his exceptional service contributions at the state and national level. Dr. Hodek has been an ABET program visitor for twenty-four years. Becoming an ABET Expert is a highly selective process requiring specialized skills. Program evaluators are leaders in their field and demonstrate high-level competencies. He was appointed by the Governor in 2000 to the State of Michigan Board of Professional Engineers and the State of Michigan Board of Land Surveyors. He is a past Chairman of the Michigan Board of Professional Engineers. Dr. Hodek has professional service contributions with the American Society of Civil Engineers and has chaired the executive committee of the ASCE Technical Council on Cold Weather Engineering. Additionally, Dr. Hodek is a Fellow of ASCE. Dr. Hodek’s research interests include soil mechanics and foundational engineering with an emphasis on deep foundations.

Approved

Department Chair/School Dean

College Dean

Provost and Vice President for Academic Affairs

President

Date

Revised 9/21/16
V-C. APPOINTMENTS WITH TENURE

Included herein is a request for the appointment of Dr. Pradeep Agrawal and Dr. Audra Morse, whom, with their initial appointment, will receive tenure.

Dr. Pradeep Agrawal is being recommended for appointment as Chair and Professor with tenure in the Department of Chemical Engineering effective July 1, 2017. The Department and College of Engineering Promotion and Tenure Committees, the Dean, the Provost, and the President have endorsed the recommendation for tenure. Dr. Agrawal is currently a Professor, Associate Chair for Undergraduate Studies and ConocoPhillips Faculty Fellow at Georgia Tech's School of Chemical and Biomolecular Engineering. Pradeep earned his PhD in Chemical Engineering from the University of Delaware in 1979.

Dr. Audra Morse is being recommended for appointment as Chair and Professor with tenure in the Department of Civil and Environmental Engineering effective July 1, 2017. The Department and College of Engineering Promotion and Tenure Committees, the Dean, the Provost, and the President have endorsed the recommendation for tenure. Dr. Morse is currently a Professor in the Department of Civil, Environmental and Construction Engineering at Texas Tech University. From 2012 to 2016, she served as Associate Dean for Undergraduate Studies in the Edward E. Whitacre, Jr. College of Engineering at Texas Tech. Audra earned her PhD in Civil Engineering from Texas Tech University in 2003.

RECOMMENDATION: That the Board of Trustees approves the appointments of Dr. Pradeep Agrawal as Professor with tenure in the Department of Chemical Engineering and Dr. Audra Morse as Professor with tenure in the Department of Civil and Environmental Engineering, both effective July 1, 2017.
RECOMMENDATION FOR APPOINTMENT AS PROFESSOR WITH TENURE AND CHAIR OF THE DEPARTMENT OF CHEMICAL ENGINEERING
Pradeep Agrawal
GEORGIA INSTITUTE OF TECHNOLOGY

Recommendation:

Pradeep Agrawal, who is currently a full professor with tenure and serves as the Associate Chair for Undergraduate Studies in the School of Chemical and Biomolecular Engineering at the Georgia Institute of Technology, is recommended to be hired as professor with tenure and Chair of the Department of Chemical Engineering in the College of Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>1979</td>
<td>University of Delaware, Newark, DE</td>
</tr>
<tr>
<td>M.S.</td>
<td>1977</td>
<td>University of Delaware, Newark, DE</td>
</tr>
<tr>
<td>B.S.</td>
<td>1974</td>
<td>University of Roorkee (now IIT, Roorkee), Roorkee, India</td>
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</table>

Professional Record:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 – present</td>
<td>Professor, School of Chemical &amp; Biomolecular Engineering, Georgia Institute of Technology</td>
</tr>
<tr>
<td>2006 – present</td>
<td>Associate Chair for Undergraduate Studies, School of Chemical &amp; Biomolecular Engineering, Georgia Institute of Technology</td>
</tr>
<tr>
<td>2013 – present</td>
<td>Frank Dennis Senior Faculty Fellow, School of Chemical &amp; Biomolecular Engineering, Georgia Institute of Technology</td>
</tr>
<tr>
<td>1985 – 2010</td>
<td>Associate Professor, School of Chemical &amp; Biomolecular Engineering, Georgia Institute of Technology</td>
</tr>
<tr>
<td>1979 – 1985</td>
<td>Assistant Professor, School of Chemical &amp; Biomolecular Engineering, Georgia Institute of Technology</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**
  
  During the past 37 years Dr. Agrawal taught eight different undergraduate level courses (Kinetics and Reactor Design, Process Control, Plant Design, Synthetic Fuels, Chemical Process Principles, Heat Transfer, Transport Phenomena II, and Unit Operations Laboratories) and four different graduate level courses (Advanced Reactor Design, Heterogeneous Catalysis, Biochemical Engineering I & II). He co-developed the Synthetic Fuels course in 1982, developed the lab for the Process Control course in 1980-82, revamped the Transport Phenomena and Unit Operations lab in 1993, and revamped the Transport Phenomena II course in 2002. His teaching evaluations over the past 6 years have averaged 4.37 on a 5 point scale where the Institutes’ average is 3.6. His teaching has been recognized by 17 awards including being named in 2016 as one of the Top Ten Most Influential Persons from a survey of Georgia Tech Alumni and in 2009 receiving Georgia Tech’s Teaching Excellence Award from Women in Engineering.

- **Research/Scholarly Activity**
  
  Dr. Agrawal has supervised sixteen doctoral students and thirteen master’s students in the general area of heterogeneous catalysis and reaction engineering along with ten post-doctoral fellows (8 in the last 8 years). Presently, he has three doctoral students and one post-doctoral fellow in the group. To support this work he has been awarded over $7.7 million from government and industry and the work has resulted in over 65 referred publications.
His recent research efforts have included high temperature pyrolysis and gasification of (i) biomass, (ii) biomass blends (with coal), and (iii) municipal solid waste. The results obtained to date have significantly added to understanding the science and technical underpinnings of gasification at high heating rates (commercial-scale fluidized bed or entrained flow reactors). Recent projects include using renewable biomass as a source of fuels and feedstock with particular interest is pyrolysis and gasification of biomass and biomass coal blends. This work strengthens Michigan Tech’s expertise in converting biomass into economically usable fuels for a variety of applications.

• **Service**

As Associate Chair for Undergraduate Studies in the School of Chemical & Biomolecular Engineering at Georgia Tech, Dr. Agrawal’s role has three main components: (i) overseeing all aspects of the undergraduate program, including curricula matters and academic advising, (ii) making teaching assignments for all faculty members and follow-up on their teaching evaluations, and (iii) ABET accreditation during 2008 and 2014 cycles. While in this role the U.S. News & World Report ranking for the chemical engineering undergraduate program went from 9th in 2009 to 4th in 2016.

He served as faculty advisor to the AIChE student chapter from 1988 to 2005. The chapter was recognized as an outstanding chapter nationally in 14 of those 17 years. He built partnerships with the industry to support the chapter. The chapter hosted two successful Southern Regional Conferences (1991 and 2004) which drew more than 300 students from ~ 25 southeastern chemical engineering programs. Dr. Agrawal also served the AIChE Atlanta professional section for three years (1982-1985) as Secretary, Vice-President, and President successively

• **Recent and Significant Publications.**


RECOMMENDATION FOR APPOINTMENT AS PROFESSOR WITH TENURE AND
CHAIR OF THE DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

Audra Morse
TEXAS TEACH UNIVERSITY

Recommendation:

*Audra Morse*, who is currently a professor of civil engineering at Texas Tech University with tenure, is recommended to be hired as professor with tenure and Chair of the Department of Civil and Environmental Engineering in the College of Engineering.

**Academic Degrees:**

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D. Civil Engineering</td>
<td>2003</td>
<td>Texas Tech University</td>
</tr>
<tr>
<td>M. Environmental Engineering</td>
<td>1999</td>
<td>Texas Tech University</td>
</tr>
<tr>
<td>B.S. Environmental Engineering</td>
<td>1999</td>
<td>Texas Tech University</td>
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</table>

**Professional Record:**

<table>
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<tr>
<th>Years</th>
<th>Position and Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 – 2016</td>
<td>Associate Dean for Undergraduate Studies, Edward E. Whitacre, Jr. College of Engineering, Texas Tech University</td>
</tr>
<tr>
<td>2013 – present</td>
<td>Professor, Department of Civil and Environmental Engineering, Texas Tech University</td>
</tr>
<tr>
<td>2008 – 2013</td>
<td>Associate Professor, Department of Civil and Environmental Engineering, Texas Tech University</td>
</tr>
<tr>
<td>2003 – 2008</td>
<td>Assistant Professor, Department of Civil and Environmental Engineering, Texas Tech University</td>
</tr>
</tbody>
</table>

- **Teaching**

During Dr. Morse’s tenure (2001 – 2017) at TTU, she primarily taught graduate and undergraduate courses in environmental engineering. Dr. Morse’s teaching load is about the same as CEE research active faculty with respect to the number of SCH’s but higher in the number of courses taught per academic year. Her teaching load was is above average for a research faculty member. Dr. Morse’s student teaching evaluations were very good with a weighted average rating of 4.67 (Question: Overall this instructor was effective). Student evaluations account for 50 percent of a faculty’s teaching evaluation. With respect to the other 50 percent of the teaching evaluation, TTU recognized Dr. Morse’s teaching excellence by awarding her the President’s Excellence in Teaching Award and the Chancellor’s Council Distinguished Teaching Award. She has also been recognized by with other teaching awards including: Chi Epsilon Excellence in Teaching Award, TTU outstanding Educator Award, and the ASCE Regional Faculty Advisor of the Year Award. Dr. Morse’s teaching record is very impressive and acceptable at Michigan Tech.
• **Research/Scholarly Activity**

Dr Morse’s research is a mix of wastewater treatment research and educational research. Over the past 16 years, Dr. Morse was involved in writing 39 successful external proposals (14 as PI and 25 as Co-PI) totaling over $1.4M in research which included 7 projects related to education. Dr. Morse averages about $100k per year in real external funding excluding cost share dollars which is around the CEE department average value. Dr. Morse published 45 peer reviewed Journal papers and 46 peer reviewed conference proceedings. Dr. Morse successfully mentored 5 PhD and 14 thesis MS students to completion. One important aspect of graduate education is mentoring graduate students to publish their work in refereed journals. Dr. Morse’s students have authored/co-authored 19 peer-reviewed publications, and 23 conference proceedings. This demonstrates Dr. Morse’s mentoring encourages her students to produce and disseminate good quality publishable work. This rate of graduate production is good for a person with 16 years in academia. Dr. Morse’s research and scholarship accomplishments are good and acceptable at Michigan Tech.

• **Service**

Dr. Morse’s reported level of department and university service has been excellent for a faculty member at this stage in her career. On the national level, Dr. Morse’s professional service is outstanding which includes: past president of ASCE Texas Section, ABET program evaluator, and Associate Editor for Water Environment Research Journal. In addition, she serves on national committees such as the ASCE Body of Knowledge Committee, and the EWRI Health and Water Quality Committee. Both locally and nationally, she been involved with STEM and ExCEED programs. Dr. Morse’s level of service is excellent and acceptable at Michigan Tech.

• **Recent and Significant Publications/Exhibitions/Performance/Etc.**


V-D. APPOINTMENTS, NOT INVOLVING TENURE/PROMOTION

The departments, with the support of the college or school, have requested that the individuals listed herein be granted faculty appointments. The administration has reviewed these faculty appointments and supports the recommendations of the departments.

RECOMMENDATION: That the Board of Trustees approves the appointments listed herein. The appointments do not include tenure or promotion.
TO: Glenn Mroz, President
FROM: Jacqueline E. Huntoon, Provost & Vice President for Academic Affairs
DATE: April 12, 2017
SUBJECT: Tenure-Track Faculty Appointment Recommendations

In accordance with Board of Trustees Policy 2.2, Duties and Powers of the President, I am submitting the following faculty appointment recommendations for your review and subsequent approval by the Board of Trustees at their meeting on April 28, 2017.

Appointment without Tenure for Two Years
Effective August 21, 2017

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Durocher</td>
<td>Assistant Professor</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>Stephen Techtmann</td>
<td>Assistant Professor</td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>Kathryn Perrine</td>
<td>Assistant Professor</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Marina Tanasova</td>
<td>Assistant Professor</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Emily Dare</td>
<td>Assistant Professor</td>
<td>Cognitive and Learning Sciences</td>
</tr>
<tr>
<td>Joshua Ellis</td>
<td>Assistant Professor</td>
<td>Cognitive and Learning Sciences</td>
</tr>
<tr>
<td>Kelly Steelman</td>
<td>Assistant Professor</td>
<td>Cognitive and Learning Sciences</td>
</tr>
<tr>
<td>Kevin Trewartha</td>
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<td>Cognitive and Learning Sciences</td>
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<tr>
<td>Keith Vertanen</td>
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<tr>
<td>Sarah Bell</td>
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<td>Humanities</td>
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<tr>
<td>Lesley Morrison</td>
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<tr>
<td>Abraham Romney</td>
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<td>Humanities</td>
</tr>
<tr>
<td>Zhiying Shan</td>
<td>Assistant Professor</td>
<td>Kinesiology and Integrative Physiology</td>
</tr>
<tr>
<td>William Keith</td>
<td>Assistant Professor</td>
<td>Mathematical Sciences</td>
</tr>
<tr>
<td>Benjamin Ong</td>
<td>Assistant Professor</td>
<td>Mathematical Sciences</td>
</tr>
<tr>
<td>Melissa Baird</td>
<td>Assistant Professor</td>
<td>Social Sciences</td>
</tr>
<tr>
<td>Michael Christianson</td>
<td>Assistant Professor</td>
<td>Visual and Performing Arts</td>
</tr>
<tr>
<td>Kent Cyr</td>
<td>Assistant Professor</td>
<td>Visual and Performing Arts</td>
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</table>
Tenure Track Faculty Appointment Recommendations

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smitha Rao</td>
<td>Assistant Professor</td>
<td>Biomedical Engineering</td>
</tr>
<tr>
<td>Daisuke Minakata</td>
<td>Assistant Professor</td>
<td>Civil &amp; Environmental Engrg</td>
</tr>
<tr>
<td>Zhen Liu</td>
<td>Assistant Professor</td>
<td>Civil &amp; Environmental Engrg</td>
</tr>
<tr>
<td>Pengfei Xue</td>
<td>Assistant Professor</td>
<td>Civil and Environmental Engrg</td>
</tr>
<tr>
<td>Kuilin Zhang</td>
<td>Assistant Professor</td>
<td>Civil and Environmental Engrg</td>
</tr>
<tr>
<td>Jeremy Bos</td>
<td>Assistant Professor</td>
<td>Electrical and Computer Engrg</td>
</tr>
<tr>
<td>Lucia Gauchia Babe</td>
<td>Assistant Professor</td>
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<td>Zhen Liu</td>
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<td>Pengfei Xue</td>
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<td>Civil and Environmental Engrg</td>
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<tr>
<td>Kuilin Zhang</td>
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<td>Civil and Environmental Engrg</td>
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<tr>
<td>Jeremy Bos</td>
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<td>Electrical and Computer Engrg</td>
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<tr>
<td>Zhen Liu</td>
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<td>Electrical and Computer Engrg</td>
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<tr>
<td>Pengfei Xue</td>
<td>Assistant Professor</td>
<td>Civil and Environmental Engrg</td>
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<tr>
<td>Kuilin Zhang</td>
<td>Assistant Professor</td>
<td>Civil and Environmental Engrg</td>
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<tr>
<td>Jeremy Bos</td>
<td>Assistant Professor</td>
<td>Electrical and Computer Engrg</td>
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<tr>
<td>Zhen Liu</td>
<td>Assistant Professor</td>
<td>Electrical and Computer Engrg</td>
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<tr>
<td>Pengfei Xue</td>
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<td>Civil and Environmental Engrg</td>
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<td>Kuilin Zhang</td>
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<td>Civil and Environmental Engrg</td>
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<td>Jeremy Bos</td>
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<tr>
<td>Pengfei Xue</td>
<td>Assistant Professor</td>
<td>Civil and Environmental Engrg</td>
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<tr>
<td>Kuilin Zhang</td>
<td>Assistant Professor</td>
<td>Civil and Environmental Engrg</td>
</tr>
<tr>
<td>Rochollah Askari</td>
<td>Assistant Professor</td>
<td>Geol &amp; Mining Engrg &amp; Sciences</td>
</tr>
<tr>
<td>Ebrahim Tarshizi</td>
<td>Assistant Professor</td>
<td>Geol &amp; Mining Engrg &amp; Sciences</td>
</tr>
<tr>
<td>Erik Herbert</td>
<td>Assistant Professor</td>
<td>Materials Science and Engrg</td>
</tr>
<tr>
<td>Youngchul Ra</td>
<td>Associate Professor</td>
<td>Mech Engrg-Engrg Mechanics</td>
</tr>
<tr>
<td>Emanuel Castro de</td>
<td>Assistant Professor</td>
<td>School of Business &amp; Economics</td>
</tr>
<tr>
<td>Oliveira</td>
<td>John Eshleman</td>
<td>School of Business &amp; Economics</td>
</tr>
<tr>
<td>Peng Guo</td>
<td>Assistant Professor</td>
<td>School of Business &amp; Economics</td>
</tr>
<tr>
<td>Jeffrey Wall</td>
<td>Assistant Professor</td>
<td>School of Business &amp; Economics</td>
</tr>
<tr>
<td>Seyyedmohsen Azizi</td>
<td>Assistant Professor</td>
<td>School of Technology</td>
</tr>
<tr>
<td>Scott Wagner</td>
<td>Assistant Professor</td>
<td>School of Technology</td>
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<tr>
<td>Appointment without Tenure for One Year</td>
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<tr>
<td>Effective August 21, 2017</td>
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<tr>
<td>Erika Hersch-Green</td>
<td>Assistant Professor</td>
<td>Biological Sciences</td>
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<td>Tejin Yoon</td>
<td>Assistant Professor</td>
<td>Kinesiology &amp; Integrative Physiology</td>
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<td>Mark Rouleau</td>
<td>Assistant Professor</td>
<td>Social Sciences</td>
</tr>
<tr>
<td>Sarah Scarlett</td>
<td>Assistant Professor</td>
<td>Social Sciences</td>
</tr>
</tbody>
</table>

Notification of these recommendations were sent to each individual Tuesday, April 11, 2017.

APPROVED:

Glenn D. Mroz, President

Date
V-E. APPOINTMENTS, INVOLVING TENURE/PROMOTION

The policy for granting tenure and/or promotion to faculty members requires that the process begin with deliberations in the candidate’s department and proceed through the respective colleges and schools. Once approved, it is presented to the Provost, and if successful, to the President of the University. The candidates listed herein have met all the requirements and are being recommended for tenure and/or promotion.

RECOMMENDATION: That the Board of Trustees approves the appointments involving tenure and/or promotion listed herein.
TO: Glenn Mroz, President  
FROM: Jacqueline E. Hunkoon, Provost & Vice President for Academic Affairs  
DATE: April 12, 2017  
SUBJECT: Appointment and/or Tenure with Promotion Recommendations

In accordance with Board of Trustees Policy 6.4, Academic Tenure and Promotion, the following faculty members have been recommended for appointment and/or promotion with tenure. I have reviewed and support these recommendations and request that the Board of Trustees be asked to approve them at their April 28, 2017 meeting. If approved, the promotions will be effective August 21, 2017.

**Promotion from Assistant Professor without Tenure to Associate Professor with Tenure**

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adam Feltz</td>
<td>Cognitive and Learning Sciences</td>
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<tr>
<td>Stefka Hristova</td>
<td>Humanities</td>
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<td>L. Syd Johnson</td>
<td>Humanities</td>
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<tr>
<td>Min Wang</td>
<td>Mathematical Sciences</td>
</tr>
<tr>
<td>Yang Yang</td>
<td>Mathematical Sciences</td>
</tr>
<tr>
<td>Ramy El-Ganainy</td>
<td>Physics</td>
</tr>
<tr>
<td>Chelsea Schelly</td>
<td>Social Sciences</td>
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<tr>
<td>Bruce Lee</td>
<td>Biomedical Engineering</td>
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<td>Pasi Lautala</td>
<td>Civil and Environmental Engineering</td>
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<tr>
<td>Nina Mahmoudian</td>
<td>Mechanical Engrg-Engrg Mechanics</td>
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<tr>
<td>Mahdi Shahbakhti</td>
<td>Mechanical Engrg-Engrg Mechanics</td>
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<tr>
<td>Kazuya Tajiri</td>
<td>Mechanical Engrg-Engrg Mechanics</td>
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<tr>
<td>Evan Kane</td>
<td>School of Forest Res. and Env. Science</td>
</tr>
<tr>
<td>Yushin Ahn</td>
<td>School of Technology</td>
</tr>
</tbody>
</table>

APPROVED:  

Glenn D. Mroz, President  
Date: 4/12/17
RECOMMENDATION FOR PROMOTION AND TENURE
Adam Feltz
Michigan Technological University

Recommendation:

Adam Feltz, who is currently an assistant professor of psychology and applied ethics without tenure in the Department of Cognitive and Learning Sciences in the College of Sciences and Arts, is recommended for promotion to associate professor of psychology with tenure in the Department of Cognitive and Learning Sciences in the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
<th>Location</th>
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<tbody>
<tr>
<td>Ph.D.</td>
<td>2008</td>
<td>The Florida State University</td>
<td>Tallahassee, FL</td>
</tr>
<tr>
<td>M.S.</td>
<td>2004</td>
<td>The Northern Illinois University</td>
<td>DeKalb, IL</td>
</tr>
<tr>
<td>B.A.</td>
<td>1998</td>
<td>The University of South Carolina</td>
<td>Columbia, SC</td>
</tr>
</tbody>
</table>

Professional Record:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013-2019</td>
<td>Assistant Professor (without tenure), Department of Department of Cognitive and Learning Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2010-2019</td>
<td>Co-founder and co-managing director of RiskLiteracy.org</td>
</tr>
<tr>
<td>2008-2013</td>
<td>Assistant Professor of Philosophy and Interdisciplinary Studies, Schreiner University</td>
</tr>
<tr>
<td>2009-2012</td>
<td>Visiting Research Scientist, Max-Planck Institute for Human Development Center for Adaptive Behavior and Cognition, Berlin, Germany</td>
</tr>
<tr>
<td>2007-2008</td>
<td>Kingsbury Graduate Fellow, Florida State University</td>
</tr>
<tr>
<td>2004-2007</td>
<td>Graduate Teaching Assistant, Florida State University</td>
</tr>
<tr>
<td>2002-2004</td>
<td>Graduate Teaching Assistant, Northern Illinois University</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

• Teaching
  Dr. Feltz’s peer and student teaching evaluations are consistently excellent and one of his peer evaluations mentioned that his "students are receiving a first rate learning experience." His undergraduate research assistants have gone on to do graduate work in Law, Communications, Psychology, Political Science, and Public Policy. He has co-authored papers with one graduate student (MTU) and with four undergraduate students (Schreiner University). Dr. Feltz continues to supervise students outside of the classroom and encourages them to present and publish their work (aligning with College Goals 1 and 2). He has added new courses to the catalogue at MTU including undergraduate courses in Critical Thinking for Social and Behavioral Sciences, Moral Psychology, in addition to a graduate-level Meta-analytic and Survey Methods class.

• Research/Scholarly Activity
  Dr. Feltz’s current research program is concerned with applied, informed, ethical decision support in medical, cyber, weather, and financial domains. For example, he studies what constitutes the best interest of a patient who is not competent to make their own decisions (e.g., a person with Alzheimer’s disease who may undergo surgery), and how we can improve associated surrogate decision making systems. He is actively involved in designing ethical decision support systems to predict and inform individuals about risks associated with computing (e.g., phishing), weather-related events, and finance (consistent with University Goal 2). Since 2007, he has published over 40 peer-reviewed papers in
respected interdisciplinary journals (e.g., Current HIV Research; Consciousness & Cognition; Philosophical Studies; Mind and Language; Journal of Bioethical Inquiry; The American Journal of Bioethics; The Review of Philosophy and Psychology; Neuroethics; Philosophical Psychology, Journal of Research in Personality) (aligning with Departmental Goal 3). His work has been covered in popular science magazines like Scientific American and New Scientist along with The Journal of Higher Education. He is best known for his scholarship on individual differences in fundamental philosophical judgments. This research draws on experimental methods and statistical techniques (e.g., meta-analysis, psychometric test validation, structural path modeling), to show that heritable psychological traits predict fundamental philosophical judgments about moral responsibility, ethics, free will, and intentional action, with implications for both basic and applied cognitive science (e.g., jury selection, corporate whistle-blowing, medical decision making). He continues to apply these works to encourage scholarship from under-represented populations and focuses his research on helping traditionally underserved groups (e.g., Native Americans) make better, more informed decisions (consistent with Departmental Goal 1 and University Goal 1). His position as co-founder and co-managing director of RiskLiteracy.org ensures that he will continue to contribute to helping inform decisions across a host of applied domains (Consistent with Departmental Goal 2 and University Goal 3).

- **Service**
  Dr. Feltz is active and generous with service. He has served on three University committees at MTU and four at Schreiber. This university service is complimented by the service he offers to the Department of Cognitive and Learning sciences as the chair of the Undergraduate Program Evaluation Committee and as a current or former member of the Psychology Undergraduate Committee and the AC ShoF Graduate Committee. He has offered reviews for dozens of peer-reviewed journals and grant applications. He also co-founded and co-managed the first Annual Online Philosophy Conference with key figures from the field.

- **Recent and Significant Publications/Exhibitions/Performances/Etc.**
RECOMMENDATION FOR PROMOTION AND TENURE
STEFKA HRISTOVA
Michigan Technological University

Recommendation:
Stefka Hristova, who is currently an assistant professor of digital media without tenure in the Department of Humanities in the College of Sciences and Arts, is recommended for promotion to associate professor of digital media with tenure in the Department of Humanities in the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2010</td>
<td>University of California, Irvine, Irvine, CA</td>
</tr>
<tr>
<td>M.A.</td>
<td>2004</td>
<td>California State University Los Angeles, Los Angeles, CA</td>
</tr>
<tr>
<td>B.S.S.</td>
<td>1999</td>
<td>Emerson College, Boston, MA</td>
</tr>
</tbody>
</table>

Professional Record:

<table>
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<tr>
<th>Time</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>2011-present</td>
<td>Assistant Professor (without tenure) Department of Humanities, College of Sciences and Arts, Michigan Technological University</td>
</tr>
<tr>
<td>2010-2011</td>
<td>Part-Time Lecturer, Department of Art, California State University Long Beach</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

Teaching
Through a combination of practice and theory, Dr. Hristova teaches students to make and analyze digital media, to question the common-sense assumptions behind digital technologies and the representations they create, and, given a historical context, to reimagine what technology could be.

Research
Professor Hristova has established a research agenda that explores the relationships between visual media, visualizing technologies, and community in order to better understand how the visual constitutes and is constitutive of historical, political, and cultural processes.

Service
Dr. Hristova is actively involved in curriculum development as well as learning outcomes assessment at both graduate and undergraduate level. In her professional community, she has served as an external reviewer for a number of peer-reviewed journals.

Recent Significant Publications
RECOMMENDATION FOR PROMOTION AND TENURE
L. SYD M JOHNSON
Michigan Technological University

Recommendation:

L. Syd M Johnson, who is currently an assistant professor of philosophy without tenure in the Department of Humanities in the College of Sciences and Arts, is recommended for promotion to associate professor with tenure in the Department of Humanities in the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2009</td>
<td>University at Albany, State University of New York, Albany NY</td>
</tr>
<tr>
<td>M.A.</td>
<td>2002</td>
<td>University at Albany, State University of New York, Albany, NY</td>
</tr>
<tr>
<td>B.A.</td>
<td>1987</td>
<td>Bard College, Annandale-on-Hudson, NY</td>
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Professional Record:

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<tr>
<th>Year</th>
<th>Position and Affiliation</th>
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</thead>
<tbody>
<tr>
<td>2011-present</td>
<td>Assistant professor (without tenure), Department of Humanities, Michigan Technological University</td>
</tr>
<tr>
<td>2011-present</td>
<td>Affiliate assistant professor (without tenure), Department of Kinesiology &amp; Integrative Physiology, Michigan Technological University</td>
</tr>
<tr>
<td>2009-2011</td>
<td>Post-doctoral Research Fellow in Neuroethics, Novel Tech Ethics, Dalhousie University, Halifax, Nova Scotia, Canada</td>
</tr>
<tr>
<td>2005-2009</td>
<td>Adjunct Lecturer, Philosophy Department, State University of New York at New Paltz, New Paltz, NY</td>
</tr>
<tr>
<td>2000-2003</td>
<td>Adjunct Professor, Department of Philosophy and Religious Studies, Mount Saint Mary College, Newburgh, NY</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**
  Dr. Johnson teaches several philosophy courses and interdisciplinary bioethics courses for the Departments of Humanities, and Kinesiology & Integrative Physiology. She has developed two new courses, a graduate course, *Biomedical Research Ethics*, that satisfies NSF requirements for Advanced RCR Training, and *Sports Medicine & Ethics*. Her average student evaluation scores range from 4.09 to 4.73. In Spring 2016, she was recognized for an “exceptional Average of 7 Dimensions student evaluation score” in the top 10% (university-wide) for HU3711 Biomedical Ethics. In her peer evaluations, a colleague described her teaching as “creative and engaging.” In Fall 2016 she submitted a proposal for a new interdisciplinary undergraduate Bioethics Minor. The minor will be a forward-thinking endeavor that will further Tech’s goal of being a leader in “creating solutions for society’s challenges through education and interdisciplinary endeavors that advance sustainable economic prosperity, health and safety, [and] ethical conduct.”

- **Research/Scholarly Activity**
  Dr. Johnson is an active and productive scholar. Since 2011 she has completed an edited book manuscript (under submission), and published 9 peer-reviewed journal articles, 6 invited journal articles, 5 book chapters, one encyclopedia entry, and 10 blog articles for professional bioethics and philosophy blogs. She has also given oral presentations at 8 conferences, including sitting on panels, presented 3 posters, and been an invited speaker at 5 conferences, workshops, and public events. Her work has been...
featured in the media, and she is frequently interviewed about ethical issues related to sports and concussion.

- **Service**
  Dr. Johnson has served as a hearing officer on the University Academic Integrity Committee and Student Conduct Board (elected position) continuously since 2013. She is currently on the Department of Humanities Philosophy Committee, and has been IRB liaison since 2013, and has had four other committee and service positions in the department. She is faculty advisor to the Book Club at Tech. Dr. Johnson created and organized Undead U: A Zombie Symposium (2013 and 2014), a popular multidisciplinary event for students and the community that brought positive media attention to Michigan Tech.

  Dr. Johnson is co-founder and chair of the Animal Bioethics Affinity Group of the American Society for Bioethics and Humanities. She is past chair of the ASBH Neuroethics Affinity Group. She serves on the communications committee of the International Neuroethics Society. She is an editor for philpapers.org, editing the categories: Biomedical Ethics; Neuroethics; Ethics of Brain Imaging; Cognitive Enhancement; The Minimally Conscious State; Vegetative State and Coma; Biotechnology Ethics, and has served as a peer reviewer for several journals and presses. She has served seven times as a bioethicist reviewer of grant proposals for the Department of Defense, Veterans’ Administration, and the Centers for Disease Control and Prevention.

- **Recent Significant Publications/Exhibitions/Performances/Etc.**

  **Recent Books**

  **Recent Peer Reviewed Journal articles**

  **Recent Book chapters**
COMMENDATION FOR PROMOTION AND TENURE
Min Wang
Michigan Technological University

Recommendation:
Min Wang, who is currently an assistant professor of statistics without tenure in the Department of Mathematical Sciences in the College of Sciences and Arts, is recommended for promotion to associate professor of statistics with tenure in the Department of Mathematical Sciences in the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2013</td>
<td>Clemson University, Clemson, SC</td>
</tr>
<tr>
<td>M.S.</td>
<td>2010</td>
<td>Clemson University, Clemson, SC</td>
</tr>
<tr>
<td>B.A.</td>
<td>2007</td>
<td>Concordia University, Montreal, QC, Canada</td>
</tr>
<tr>
<td>A.A.</td>
<td>2003</td>
<td>Chaohu University, Anhui, China</td>
</tr>
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Professional Record:

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<tr>
<th>Year</th>
<th>Position</th>
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<tbody>
<tr>
<td>2013–present</td>
<td>Assistant Professor (without tenure), Department of Mathematical Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2008-2013</td>
<td>Graduate Teaching Assistant, Department of Mathematical Sciences, Clemson University, Clemson, SC</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

• **Teaching**
  Dr. Wang has taught six different statistics courses, ranging from introductory statistics for engineering students to advanced topics in statistics for PhD students. He has created two new courses, Introduction to SAS Programming and the graduate-level Bayesian Statistics. At all levels, Dr. Wang has earned outstanding evaluations from his students. On four occasions, his evaluation has been in the top 10% of similarly sized courses. As a result of his outstanding teaching performance, Dr. Wang was selected as a finalist for MTU 2016 Distinguished Teaching Award; he also received a departmental award for outstanding teaching in 2014.

• **Research/Scholarly Activity**
  Dr. Wang is an expert on Bayesian statistics, but his research has also encompassed hypothesis testing, variable selection, and statistical applications to different fields of study. He has published nearly 30 papers, many of which have appeared in top-ranked statistical journals. In addition, some of his interdisciplinary research has been published in journals covering fields such as biology, education, civil engineering, physiology, and psychology. It is noteworthy that 4 of his publications were coauthored with students he supervised. Dr. Wang has graduated 4 MS students and is currently supervising 2 doctoral students and 2 MS students in the Mathematical Sciences department.

Dr. Wang was a Co-PI on a University of Michigan Ml Initiative for Innovation and Entrepreneurship (MIE) grant for $44k (PI: Shivam Bharti). He is currently a Co-PI on an NSF grant for $330k (Subcontract PI: Adrienne Minerick) and is a statistical consultant on an NIH R15 grant (PI: Jason Carter).
• Service
At the department level, Dr. Wang served on both the Recruitment and Graduate committees three times in only four years. At the university level, Dr. Wang has served on 4 doctoral graduate committees and 8 masters graduate committees. At the national level, Dr. Wang is very active as a session organizer, a session chair for statistical conferences and workshops, and has refereed for more than 40 papers in more than 10 peer-reviewed journals. Dr. Wang is currently the organizer of the 3rd Kliakhandler conference (Bayesian inference in statistics and statistical genetics) to be held at Michigan Tech, August 16-20, 2017.

• Recent and Significant Publications/Exhibitions/Performances/Etc.
RECOMMENDATION FOR PROMOTION AND TENURE
Yang Yang
Michigan Technological University

Recommendation:
Yang Yang, who is currently an assistant professor of numerical analysis without tenure in the Department of Mathematical Sciences in the College of Sciences and Arts, is recommended for promotion to associate professor of numerical analysis with tenure in the Department of Mathematical Sciences in the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2013</td>
<td>Brown University, Providence, RI</td>
</tr>
<tr>
<td>M.S.</td>
<td>2011</td>
<td>Brown University, Providence, RI</td>
</tr>
<tr>
<td>B.S.</td>
<td></td>
<td>University of Science and Technology, Hefei, Anhui, China</td>
</tr>
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Professional Record:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
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</thead>
<tbody>
<tr>
<td>2013– present</td>
<td>Assistant Professor (without tenure), Department of Mathematical Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2009 - 2013</td>
<td>Graduate Teaching Assistant/Research Assistant, Division of Applied Mathematics, Brown University, Providence, RI</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

• Teaching
Dr. Yang has taught six different courses, ranging from first-semester calculus to advanced topics in computational mathematics for PhD students. He receives excellent evaluations from his students at all levels. The following evaluations (based on the question “Taking everything into account, I consider this instructor to be an excellent teacher”) are representative: MA4620 (Numerical Methods for PDEs) 4.67/5; MA3160 (Multivariable Calculus with Technology) 4.59/5; MA5524 (Functional Analysis) 4.88/5; MA1160 (Calculus with Technology I) 4.53/5; MA5401 (Real Analysis) 4.63/5.

• Research/Scholarly Activity
Dr. Yang’s research spans the gamut of computational mathematics, including numerical analysis, algorithm design, and applications. He has published 14 papers published in refereed journals, with three more accepted and two under review. Some of his papers were published in the very best journals, such as Journal of Computational Physics, SIAM Journal on Numerical Analysis and Numerische Mathematik. Moreover, one of the papers has 46 citations and another one has 32 in the past four years. Dr. Yang has given 39 presentations since joining Michigan Tech. In the past four years, Dr. Yang wrote five proposals to NSF, three to MSGC, one to ORAU, and one to the Simons Foundation. Dr. Yang has graduated one master’s student and is currently advising two Ph.D. candidates. Dr. Yang has received two departmental awards for outstanding research, a SIAM early career travel award in 2015, and the New World Mathematics Award in 2016.
• Service
Dr. Yang served on the departmental Graduate Committee in 2014-15 and 2016-17, the Advisory Committee in 2014-15, and the Recruitment Committee in 2015-16. Dr. Yang organized two mini-symposia at the 11th AIMS Conference on Dynamical Systems, Differential Equations and Applications and the SIAM Conference on Computational Science and Engineering. Moreover, Dr. Yang has reviewed 65 papers. Finally, Dr. Yang has written and graded seven PhD exams in the department.

• Recent and Significant Publications/Exhibitions/Performances/Etc.
RECOMMENDATION FOR PROMOTION AND TENURE
Ramy El-Ganainy
Michigan Technological University

Recommendation:

Ramy El-Ganainy, who is currently an assistant professor of physics without tenure in the Department of Physics in the College of Sciences and Arts, is recommended for promotion to associate professor of Physics with tenure in the Department of Physics the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2009</td>
<td>University of Central Florida, FL</td>
</tr>
<tr>
<td>M.S.</td>
<td>2007</td>
<td>University of Central Florida, FL</td>
</tr>
<tr>
<td>B.S.</td>
<td>1999</td>
<td>Cairo University, Cairo, Egypt</td>
</tr>
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Professional Record:

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<th>Position/Institution</th>
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<tbody>
<tr>
<td>2013 – present</td>
<td>Assistant Professor (without tenure), Department of Physics, Michigan Technological University</td>
</tr>
<tr>
<td>2012 – 2012</td>
<td>Guest Scientist at the Max Planck Institute for the Physics of Complex Systems, Germany</td>
</tr>
<tr>
<td>2009 – 2012</td>
<td>Post-Doctoral Fellow, Department of Physics at University of Toronto, Canada</td>
</tr>
<tr>
<td>2004 – 2009</td>
<td>Graduate Research Assistant, School of Optics and Photonics (CREOL), University of Central Florida, FL</td>
</tr>
<tr>
<td>2003-2004</td>
<td>Graduate Research Assistant, Chalmers University of Technology, Sweden</td>
</tr>
<tr>
<td>2000-2003</td>
<td>Graduate Research Assistant, Electronics Research Institute, Cairo, Egypt</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**
  The student teaching evaluations for courses taught by Dr. El-Ganainy at the Physics Department, indicate that his averages were consistently higher than the university averages in similar courses, often much higher as stated by his department chair (included in the teaching information provided). In addition, Dr. El-Ganainy developed an introductory course on contemporary topics in quantum optics such as quantum communications and quantum computations. This course covers also the history of quantum mechanics and how it was created as well as some of the different mathematical formalisms of the topic. He has taught eight undergraduate courses and supervised three senior projects.

- **Research/Scholarly Activity**
  Dr. El-Ganainy is a member of the Optical Society of America. He has published more than forty manuscripts in highly reputable Journals such as Phys. Rev. Lett., Nature Physics, Nature Photonics and Nature Communications. His total citations according to google scholar are more than 4500, with an h-factor of 19 and i10-factor of 27. His work on parity-time symmetry in optics was highlighted by Nature Physics as one of the top most important work in physics in the past ten years. He has been awarded an EAGER NSF proposal of ~$100000 to perform research on the emerging topic of parity-time symmetric lasers.
Dr. El-Ganainy’s research is very well aligned with the photonics and condensed matter research activity in the Department of Physics as well as other departments in Michigan Tech. In particular, he is a nationally and internationally recognized expert in the field of non-Hermitian photonics with applications to semiconductor lasers and optical sensors. The hiring of Dr. El-Ganainy will position Michigan Tech as one of the leading institutes in this emerging field and in turn introduce the undergraduate and graduate students to some of the cutting edge research topics in optics and photonics.

Service
A brief summary of Dr. El-Ganainy professional service includes guest editor, New Journal of Physics focus issue on parity-time symmetry in optics during 2015, organizer of a special session in the META 2016 conference in Spain, organizer of a workshop on non-Hermitian photonics to be held in Germany in 2018, and reviewer for Nature Physics, Nature Photonics, Physical Review, Optics Letters, and Optics Express. In the Department of Physics, he chaired the colloquium committee for three years where he also invited four female speakers as part of the Visiting Woman and Minority Lecturer & Scholar Series (VWMLSS). In addition, he served in the undergraduate assessment committee. He is also currently the adviser for the Society of Physics Students (SPS).

Recent and Significant Publications/Exhibitions/Performances/Etc.
Li Ge, R. El-Ganainy, “Nonlinear modal interactions in parity time (PT) symmetric lasers,” Scientific Reports 6, 24889 (2016).
Recommendation for Promotion and Tenure
Dr. Chelsea Schelly
Michigan Technological University

Recommendation: Dr. Chelsea Schelly, currently Assistant Professor of Sociology in the Department of Social Sciences in the College of Sciences and Arts, is recommended for promotion to Associate Professor of Sociology with tenure in the Department of Social Sciences in the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD</td>
<td>2013</td>
<td>University of Wisconsin-Madison</td>
</tr>
<tr>
<td>MA</td>
<td>2008</td>
<td>Colorado State University</td>
</tr>
<tr>
<td>BA</td>
<td>2005</td>
<td>University of Wisconsin-Madison</td>
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Professional Record:

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<tr>
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<tr>
<td>2013-Present</td>
<td>Assistant Professor of Sociology, Department of Social Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2010-2013</td>
<td>Environmental Protection Agency Science to Achieve Results (EPA-STAR) Graduate Fellowship</td>
</tr>
<tr>
<td>2008-2013</td>
<td>National Science Foundation Integrative Graduate Education and Research Traineeship Fellowship (NSF-IGERT), Humans and the Global Environment, UW-Madison</td>
</tr>
<tr>
<td>Spring 2011</td>
<td>Teaching Assistantship, Methods of Sociological Inquiry, University of Wisconsin-Madison</td>
</tr>
<tr>
<td>20110-2011</td>
<td>Visiting Instructor, Sociological Theory, The Colorado College</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

Teaching: Dr. Schelly was hired to teach sociology-related courses in the department’s undergraduate degree programs, the university’s general education program, and the department’s graduate program in Environmental and Energy policy. She has made strong contributions in each area. For the department’s undergraduate programs, Dr. Chelsea was chosen to teach one of the department’s four “cohort-building” courses, which are courses that all undergraduate Social Science majors take, regardless of their degree program. (Her cohort-building course is “History of Social Thought”). She also teaches “Ethnographic Methods,” a method central to the Social Sciences. In terms of delivering general education courses, she contributes at the lower level by teaching a large section (80 to 120 students) of “Introduction to Sociology” and at the higher level by teaching courses such as “Science, Technology, and Society: Interactions and Relationships.” At the graduate level, she has taught two required courses, “Research Design” and “Environmental Governance and Decision Making.” Through this suite of courses, Dr. Chelsea has integrated herself well into the department’s teaching.
Research/Scholarly Activity: Dr. Schelly’s research is highly relevant to the department’s graduate program in Environmental and Energy Policy. Among other things, she studies uses of and interactions with technological systems at the residential scale and how potential users of those systems respond to policies and other factors that either encourage or impede use. She has recently been funded as a co-PI on a major, interdisciplinary, 5-year research project through the NSF-INFEWs program, with the focus on choices and practices involving food, water, and energy at the residential scale. She has a strong publication record consisting of 2 books, 15 journal articles, 3 book chapters, almost all of which were published while an assistant professor at Michigan Tech. Her work has been cited over 220 times, with an increasing number of citations per year each year and an overall H-index of 8. She works collaboratively with colleagues across campus, and has demonstrated scholarly excellence and potential for significant future contributions aligned with the University and Department strategic plans to increase the visibility of the University’s research efforts on sustainability.

Service: Dr. Schelly currently serves as the book review editor for a quarterly academic journal, Social Science Journal. She also serves as the section coordinator for the Environmental Policy and Natural Resources Management section of the annual conference of the Western Social Sciences Association. She is a Council Member and currently Chair of the Awards and Endowment Committee of the Rural Sociological Society. She reviews submitted manuscripts for multiple renowned journals and serves as an ad-hoc reviewer of NSF proposals. In 2016, she helped to organize a large conference on Michigan Tech’s campus (the International Symposium for Society and Natural Resources Conference), which attracted over 400 attendees. She serves as the faculty mentor for two student organizations and is active in University Learning Goal committees and assessment activities. In the Department of Social Sciences, Dr. Schelly is currently serving as the chair of a faculty search committee.

Recent and Significant Publications
RECOMMENDATION FOR PROMOTION AND TENURE
BRUCE P. LEE
Michigan Technological University

Recommendation:

Bruce P. Lee, who is currently an assistant professor without tenure in the Department of Biomedical Engineering in the College of Engineering, is recommended for promotion to associate professor with tenure in the Department of Biomedical Engineering in the College of Engineering.

Academic Degrees:
Ph.D., Biomedical Engineering, Northwestern University, Evanston, IL, 2005
M.S., Biomedical Engineering, Northwestern University, Evanston, IL, 2001
B.S., Chemical Engineering, Cornell University, Ithaca, NY, 1999

Professional Records:
2011 – present Assistant Professor, Biomedical Engineering, Michigan Technological University, Houghton, MI
2011 R&D Manager – Chemistry, Kensey Nash Corporation, Madison, WI
2008 – 2011 Director of New Technology, Nerites Corporation, Madison, WI
2006 – 2008 Senior Research Scientist, Nerites Corporation, Madison, WI
2005 Postdoctoral Fellow, Biomedical Engineering, Northwestern University, Evanston, IL

Summary of Evaluation:

* Teaching:

Over the last 5 years, Dr. Lee has mentored 2 postdoctoral fellows, 2 research scientists, 7 graduate students, 20 undergraduate students, 5 community college students, and 2 high school students in conducting research. His students published 23 peer-reviewed publications and 6 invited book chapters, and presented at numerous national conferences. His students have also received multiple internal and external research awards and fellowships. Additionally, Dr. Lee contributed in revamping the curriculum within the Department of Biomedical Engineering to better reflect the needs of our students in pursuit of a career in the industry. Specifically, Dr. Lee updated two undergraduate core courses and developed two new graduate level elective courses. Dr. Lee has consistently received positive teaching evaluations. Dr. Lee’s instructor rating was in the top 10% among the Michigan Tech faculty in the Spring of 2014.

* Research/Scholarly Activity:

Dr. Lee’s research is focused on developing bioadhesives inspired by chemistries found in mussel adhesive proteins. These adhesives can potentially be used to repair connective tissues (i.e., Achilles tendon) or chronic wounds that are difficult to heal. Additionally, Dr. Lee’s lab is pioneering underwater smart adhesive that can bond and debond on command, which can be used to attach and detach underwater sensors as well as medical implants. Since joining Michigan Tech, Dr. Lee has received over $1.27 million in research funding as the principal
investigator from federal agencies such as the National Institutes of Health (NIH) and the Office of Naval Research (ONR). He was awarded an additional $1.5 million as a co-investigator. Most recently, Dr. Lee was awarded the 2016 Young Investigator Award by ONR.

*Service:*

Dr. Lee demonstrated substantial service at both the departmental and the university levels. He served as a university senator for 1 term. He also served on multiple committees at the university level (i.e., Library Resource Committee, Search Committee for the Director of the Center for Diversity and Inclusion). In relation to professional service, Dr. Lee served in the committee to initiate a “Bioadhesion Division” within the Adhesion Society. This will be the third division within the Society, which aims at disseminating scientific information in areas of tissue, cell or biomolecular adhesion, elucidation of natural interfacial phenomena, and incorporation of bio-inspired designs in designing adhesive materials. Dr. Lee also served on multiple review panels for both US (18 study sections for NIH) and foreign (6 times for Funds for Scientific Research – The National Fund for Scientific Research, Belgium) federal funding agencies. In 2013, Dr. Lee received the Continuous Submission Eligibility from NIH due to his substantial service to peer review. He actively reviews for numerous international journals. He received the Certificate of Appreciation from the American Chemical Society in 2011 for extended service as a reviewer.

*Recent and Significant Publications/Exhibitions/Performances/Etc.*

4. Y Li, H Meng, Y Liu, AR Narkar and BP Lee.* “Gelatin microgel incorporated poly(ethylene glycol)-based bioadhesive with enhanced adhesive property and bioactivity” ACS Applied Materials & Interfaces, 8, 11980-9, (2016).
RECOMMENDATION FOR PROMOTION AND TENURE

PASI LAUTALA
Michigan Technological University

Recommendation:

Pasi Lautala, who is currently an Assistant Professor of civil engineering without tenure in the Department of Civil and Environmental Engineering, is recommended for promotion to Associate Professor of civil engineering with tenure in the Department of Civil and Environmental Engineering in the College of Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2007</td>
<td>Michigan Technological University</td>
</tr>
<tr>
<td>M.S.</td>
<td>1997</td>
<td>Michigan Technological University</td>
</tr>
<tr>
<td>B.S.</td>
<td>1995</td>
<td>Tampere University of Technology, Tampere, Finland</td>
</tr>
<tr>
<td>Railway Operations Management Certificate</td>
<td>2010</td>
<td>Michigan State University</td>
</tr>
</tbody>
</table>

Professional Record:

- Teaching

The courses taught by Dr. Lautala are focused on railroad engineering and transportation design. Dr. Lautala has built the Rail Transportation Program since 2007 and designed the civil engineering courses that are part of this program. He has also taught civil engineering senior design projects and been a technical advisor for rail related senior design/enterprise projects in other departments, sponsored by the Rail Transportation Program and/or rail industry. He puts significant effort into incorporating active learning using student projects as a teaching tool and consistently scores above average on his student evaluations. The multi-disciplinary Rail Transportation Program has developed into a minor available to civil engineering, mechanical engineering, and electrical engineering degree programs. The Rail Transportation Program has been supported with over $1.0 million in gifts/endowments from industry and individuals.

- Research/Scholarly Activity

Dr. Lautala has lead a very successful rail transportation research initiative. In the past six years Dr. Lautala has secured over $2.0 million as PI and is involved with $1.8 million as a co-PI. He has been active with peer reviewed journal publications with seven publications in the past two years. Overall he has published 12 papers, 8 with his graduate students and 4 with other collaborators. The majority of his publications (33) are included with peer-reviewed conference proceedings. Rail transportation is a very "industry oriented" field, so a great majority of research gets disseminated through practical industry conferences. Dr. Lautala is very active in presenting at national and international professional conferences. Dr. Lautala's externally funded research has consisted of a combination of research
activities under the federally funded National University Rail Center (NU Rail), of participation in large research grants, and of other collaborative grants. The hiring of Dr. Lautala brought a cross-disciplinary strength through his rail expertise and initiatives and has brought together several departments on large collaborative grants. It is expected that more of the NU Rail research areas will mature to additional external funding in the future.

• Service
A brief summary of Dr. Lautala’s professional service includes assuming the position of Chair in 2017 for both Transportation Research Board AR040 – Freight Rail Committee and ASCE’s Rail Transportation Committee. He has also taken an active role as a paper reviewer for publications and in 2015, was invited to be an Associate Editor for Springer Journal in Urban Transport. His service also includes appointment by the Governor in the State of Michigan Commission for Logistics and Supply Chain Collaboration and he has been the Co-Chair of the Michigan Rail Conference, a collaborative effort between the Rail Transportation Program and Michigan Department of Transportation (MDOT) since it was established in 2013. Within the University, Dr. Lautala’s main service contributions have included the Directorship of the Rail Transportation Program since 2007 and membership in the Executive Board of the Michigan Tech Transportation Institute (MTTI) since 2011. Dr. Lautala was elected Director of MTTI in November of 2016.

• Recent and Significant Publications/Exhibitions/Performance/Etc.
Authors/coauthors noted with (*) are students advised or co-advised by Pasi Lautala
Authors/coauthors noted with (!) are post-doctoral research associates advised by Pasi Lautala
Recommendation for Promotion and Tenure
Nina Mahmoudian
Michigan Technological University

Recommendation:
Nina Mahmoudian, who is a currently assistant professor without tenure in the Department of Mechanical Engineering - Engineering Mechanics is recommended for promotion to associate professor with tenure in the Department of Mechanical Engineering - Engineering Mechanics, college of Engineering.

Academic Degrees:
Ph.D. Aerospace Engineering Virginia Tech (USA) 2009
M.S. Mechanical Engineering K.N. Toosi (Iran) 2003
B.S. Aerospace Engineering Tehran Polytechnic (Iran) 1999

Professional Record:
Michigan Technological University Assistant Professor 2011-present
University of Maryland Research Associate 2010-2011
Virginia Tech Graduate Research Assistant 2005-2009

Summary of Evaluation:
• Teaching
Dr. Mahmoudian has taught a graduate level Nonlinear System Analysis and Control and an undergraduate level Dynamic Systems and Controls as well as being the advisor of two Senior Capstone Design teams. From the student teaching evaluations of courses taught by Dr. Mahmoudian, her averages were consistently higher than the university averages in similar courses, often much higher (included in the teaching information provided). She has been active in course development, which included the development of a senior-level course in mobile autonomous systems and co-developed a new enterprise called SENSE (Strategic Education through Naval Systems Experiences).

• Research/Scholarly Activity
Dr. Mahmoudian is the founding director of the Nonlinear and Autonomous Systems Laboratory (NAS Lab). She has established NAS Lab in January 2011 after joining Michigan Tech to create a research environment for rigorous analysis, control, and navigation of autonomous vehicles. Her long-term research vision is to achieve robust continuous operation of unmanned autonomous systems. Her research approach combines fundamental research with applied research to facilitate a seamless transition between academic modeling/simulation problem solving approaches and real-world applications. She is a recipient of 2015 National Science Foundation CAREER award and 2015 Office of Naval Research YIP award. She is also 2016 inductee to Frontiers of Engineering of National Academy of Engineers. She has published ten...
journal publications, one book chapter, and twenty-five peer-reviewed conference publications. As a faculty at Michigan Tech, she has established collaborative efforts with faculty from other departments and colleges through Center for Agile and Interconnected Microgrids (AIM) and Great Lake Research Center (GLRC). She has also collaborated with colleagues in other institutions. She has secured total of $3.4 Million external funding as PI and co-PI of which $2.1 Million is under her care. Her secured funding is from government agencies including NSF, ONR, NIOSH $1.5 Million as PI and $1.85 Million as co-PI. Her research approach overcomes both fundamental hardware and network science challenges necessary to respond to energy needs of multi-robot coordination in dynamic environment conditions. The result of her studies will facilitate permanent deployment of large-scale network systems, extending the life from days to months or even years. Such a system will play a vital role in real-time controlled applications across multiple disciplines such as sensor networks, robotics, and transportation systems where limited power resources and unknown environmental dynamics pose major constraints.

- **Service**

A brief summary of Dr. Mahmoudian's professional service includes Associate Editor of ICRA 2017 and 2015 and IEEE/RSJ IROS 2016. She has served as program co-chair for 2015 IEEE International Symposium on SSRR. She has been and continues to be active as journal reviewer for Journal of Ocean Engineering, Journal of Aircraft, Naval Engineers Journal, IEEE Transactions on Robotics, Journal of Guidance, Control, and Dynamics, IEEE Transactions on Control of Network Systems and numerous conferences. She has been very active in university, department, and outreach including serving on university research advisory council, general education communication committee, serving on multiple hiring committees. She is very active to community outreach and has created and led new marine robotics outreach program for pre-college students and teachers. She is also engaged in encouraging underrepresented minorities especially female students and faculties as such she has served as Women faculty in Science and Engineering (WISE) Co-director and Women in ASME student group mentor.

- **Recent and Significant Publications/ Exhibition/ Performances/ Etc.**


RECOMMENDATION FOR PROMOTION AND TENURE
MAHDI SHAHBAKHTI
Michigan Technological University

Recommendation:

Mahdi Shahbakht, who is currently an assistant professor of mechanical engineering without tenure in the Department of Mechanical Engineering-Engineering Mechanics in the College of Engineering, is recommended for promotion to associate professor of mechanical engineering with tenure in the Department of Mechanical Engineering-Engineering Mechanics in the College of Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2009</td>
<td>University of Alberta, Edmonton, AB, Canada</td>
</tr>
<tr>
<td>M.S.</td>
<td>2003</td>
<td>KNT University of Technology, Tehran, Iran</td>
</tr>
<tr>
<td>B.S.</td>
<td>2000</td>
<td>KNT University of Technology, Tehran, Iran</td>
</tr>
</tbody>
</table>

Professional Record:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 – present</td>
<td>Assistant Professor (without tenure), Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University</td>
<td></td>
</tr>
<tr>
<td>2010 – 2012</td>
<td>Post-Doctoral Fellow, University of California, Berkeley, CA</td>
<td></td>
</tr>
<tr>
<td>2010 – 2010</td>
<td>Visiting Assistant Professor, KNT University of Technology, Tehran, Iran</td>
<td></td>
</tr>
<tr>
<td>2009 – 2009</td>
<td>Instructor and Research Scholar, University of Alberta, Edmonton, AB, Canada</td>
<td></td>
</tr>
<tr>
<td>2001 – 2004</td>
<td>R&amp;D Engineer, Iran Khodro Powertrain Company, Tehran, Iran</td>
<td></td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**
  Dr. Shahbakht has taught in mechanical engineering departments at three academic institutions from 2008 to 2016 as a primary instructor. The size of his classes ranged from 7 to 96 students for undergraduate and graduate level courses. His student evaluations have ranged from 86% to 98% for teaching excellence (2008-2016). He was recognized in the Provost’s List, Top 10% instructors among over 1050 evaluated sections/instructors university-wide, Michigan Tech. University, in two recent semesters including Fall 2015 and Fall 2016. He received the Society of Automotive Engineers (SAE) Ralph R. Teeter Educational Award in 2016. This international award “recognizes top engineering educators for outstanding contributions”.
  In addition, Shahbakht has been active in delivering industry short courses and international workshops on optimization and controls of energy systems. For instance, he co-organized and delivered a 4-day short course in the area of engine controls for employees of Denso in Southfield, Michigan. He led and co-organized an international workshop on “easily verifiable controller design” in 2016 American Control Conference.

- **Student Mentorship**
  The student supervision at Michigan Tech includes 9 PhD and 13 MS students. By Jan. 2017, 3 PhD students and 12 MS (10 theses, 2 reports) students graduated from Shahbakht’s Energy Mechatronics Lab (EML).
  Other supervisions at Michigan Tech include mentoring 26 (22 MS and 4 BS) short term scholars for research at EML for the periods ranging from 2 months to 1 year.
  First two PhD graduates received the Michigan Tech’s Dean award for Outstanding Research Scholar. The first PhD thesis resulted in five quality journal papers (4 published + 1 under review) and 7 peer-reviewed conference proceeding papers. The second PhD thesis resulted in four quality journal papers and 9 peer-
reviewed conference proceeding papers. The MS students' publication record includes an average number of 2.2 peer-reviewed journal/conference papers among the 12 MS students graduated from EML.

- **Research/Scholarly Activity**
  
  An ASME and SAE member, Shahbakhti has been doing research in the area of powertrains, buildings, and controls for the past 16 years. His research has centered on developing dynamical models and novel control techniques with application in powertrain control, reduction of vehicular emissions, hybrid electric vehicles, and building to smart grid integration. At Michigan Tech, he established Energy Mechatronics Laboratory (EML) that focuses on increasing efficiency of energy systems through utilization of advanced techniques of control, modeling, estimation and diagnosis. Current research involves the transportation and building sectors, which account for 68% of total consumed energy in the United States.

  Shahbakhti's research results are documented in 116 peer-reviewed publications including 40 journal papers and 76 conference proceeding papers. These publications include two best paper awards, three best student paper finalist awards, and six best presentation awards at international conferences. Publications at Michigan Tech include 29 journal papers and 41 peer-reviewed conference proceeding papers. Google Scholar (Jan 15, 2017) shows a record of 942 total citations and h-index of 18 for Shahbakhti's publications.

  Shahbakhti has been successful in securing funding for his research. He is PI of over $1.2M, co-PI of over $3.4M, and $591K equipment support from federal (NSF, DOE, ARPA-E) and industry funded projects in the area of energy systems and controls. He currently has ongoing funded research with Toyota, Ford, and GM.

  Dr. Shahbakhti's research activities are well aligned with the goals of two major Michigan Tech's research centers, including Advanced Power Systems Research Center (APSR) and Agile Interconnected Microgrid (AIM) Research Center. Shahbakhti's automotive research and educational programs are of particular interest to Michigan Tech, due to Michigan Tech's emphasis on automotive education, high interest from the existing student body, and the needs for automotive engineers in Michigan.

- **Service**
  
  A brief summary of Dr. Shahbakhti's professional service includes associate editor (2014-) for International Journal of Powertrains (Inderscience); Vice-chair of Energy Systems Technical Committee (TC) in ASME Dynamic Systems Control Division (DSCD); Secretary of Automotive and Transportation Systems TC in ASME-DSCD; Served on NSF and DOE review panels in the areas of energy systems, and controls; Reviewer for international grant proposals from funding agencies from Croatia, France, Germany, and Netherlands; Reviewer for US Academy of Engineering; Reviewer for 23 international journals mostly in the area of energy systems, and controls; Chaired/co-chaired 20 technical sessions and co-organized over 55 invited technical sessions in the area of modeling, diagnosis and control of combustion and energy systems in American Control Conference, SAE World Congress, and ASME-DSC Conferences.

- **Recent and Significant Publications/Exhibitions/Performances/Etc.**
  
RECOMMENDATION FOR PROMOTION AND TENURE

Kazuya Tajiri
Michigan Technological University

Recommendation:

Kazuya Tajiri, who is currently an assistant professor without tenure in the Department of Mechanical Engineering-Engineering Mechanics in the College of Engineering, is recommended for promotion to associate professor with tenure in the Department of Mechanical Engineering-Engineering Mechanics in the College of Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2008</td>
<td>The Pennsylvania State University, State College, PA</td>
</tr>
<tr>
<td>M.S.</td>
<td>2001</td>
<td>Georgia Institute of Technology, Atlanta, GA</td>
</tr>
<tr>
<td>B.Eng.</td>
<td>1995</td>
<td>University of Tokyo, Tokyo, Japan</td>
</tr>
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Professional Record:

<table>
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<tr>
<th>Year</th>
<th>Position/Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 - present</td>
<td>Assistant Professor (without tenure), Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University</td>
</tr>
<tr>
<td>2008 - 2010</td>
<td>Postdoctoral Appointee, Argonne National Laboratory</td>
</tr>
<tr>
<td>2005 - 2008</td>
<td>Graduate Research Assistant, Department of Mechanical Engineering, The Pennsylvania State University, State College, PA</td>
</tr>
<tr>
<td>2001 - 2004</td>
<td>Research Engineer, Nissan Research Center, Nissan Motor, Yokosuka, Japan</td>
</tr>
<tr>
<td>2000 - 2001</td>
<td>Graduate Research Assistant, School of Aerospace Engineering, Georgia Institute of Technology, Atlanta, GA</td>
</tr>
<tr>
<td>1995 - 1999</td>
<td>Engineer, Tsukasa Sokken Co. Ltd., Tokyo, Japan</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**
  
  Dr. Tajiri has taught three different courses, total of 17 sections at Michigan Tech. The student evaluation for these courses range from 4.0 to 4.93 for 5-point scale. Among them, three sections he taught were in the top 10% for the student responses. In 2013, He was selected as one of the finalist for the Distinguished Teaching Award (Lecturer, Professor of Practice, Assistant Professor category).
  
  Dr. Tajiri developed a senior/graduate course “Fuel Cell Technology” with several innovative approaches. For example, the fuel cell operation is demonstrated during the class, and the screen of a PC for an instrument is displayed with a projector. The students are to process the data as an assignment. Another example is that the students write a term paper for the course, and then each of them is asked some questions about their term paper. This process imitates the discussion session after the conference presentation.
  
  Dr. Tajiri also is developing a new course “Aerospace Propulsion” to be started in Spring 2018. Propulsion system is an integral part of the aerospace systems, and this course will complement the Aerospace minor offered in ME-EM department.

- **Research/Scholarly Activity**
  
  Dr. Tajiri has published twelve journal publications and seven peer-reviewed conference publications. Among them, eight journal publications and five peer-reviewed conference publications are with Michigan Tech.
students. He has secured over $340,000 as PI and over $820,000 as co-PI in research funding. The sources of funding include DOE (subcontract from 3M) and automotive industry, such as Toyota Motor, Nissan Motor. Dr. Tajiri’s research expertise is transport phenomena in proton exchange membrane fuel cells for automotive application and other electrochemical devices. This is well aligned with the Department of Mechanical Engineering-Engineering Mechanics and Michigan Tech’s strategic plan in the energy area. His contribution to the fuel cell community includes the fuel cell cold start in which the experimental procedure he developed has been consistently utilized. Recently his research group at Michigan Tech developed a novel technique to measure the distribution of electric current generation and other factors in sub-millimeter scale resolution in fuel cells. Currently they are the only group who has capability to measure such data, and some other groups are following their methods.

• Service
Dr. Tajiri has served NSF Review Panel, proposal review for Mitacs (Canada) and AAAS, and journal reviewer for more than 10 journals including Journal of The Electrochemical Society and Journal of Power Sources. He also served session/symposium organizer of ASME Fuel Cell Conference, American Chemical Society Symposia, and International Conference on Porous Media.
At Michigan Tech, he has served a committee member of ME-EM Graduate Seminar Organizing Committee (2010-present), Faculty Search Committee (2015-2016), and Curriculum Committee (2016-present).

• Recent and Significant Publications/Exhibitions/Performances/Etc.
  ➢ “Effect of the PTFE content in the gas diffusion layer on water transport in polymer electrolyte fuel cells (PEFCs)”, J. Power Sources, M. Mortazavi and K. Tajiri (2014)
RECOMMENDATION FOR PROMOTION AND TENURE
EVAN S. KANE
Michigan Technological University

Recommendation:

Evan S. Kane, who is currently an assistant professor of soil science without tenure in the School of Forest Resources and Environmental Science, is recommended for promotion to associate professor of soil science with tenure in the School of Forest Resources and Environmental Science.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Ph.D.</td>
<td>2006</td>
<td>The University of Alaska, Fairbanks, AK</td>
</tr>
<tr>
<td>M.S.</td>
<td>2001</td>
<td>Michigan Technological University, Houghton, MI</td>
</tr>
<tr>
<td>B.S.</td>
<td>1999</td>
<td>Michigan Technological University, Houghton, MI</td>
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Professional Record:

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<tr>
<th>Year</th>
<th>Position and Institution</th>
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</thead>
<tbody>
<tr>
<td>2012-present</td>
<td>Assistant Professor (without tenure)- School of Forest Resources and Environmental Science, Michigan Technological University; and Research Scientist- U.S. Forest Service, Northern Research Station. Joint Position.</td>
</tr>
<tr>
<td>2009-2012</td>
<td>Research Assistant Professor- School of Forest Resources and Environmental Science, Michigan Technological University; and Research Scientist- U.S. Forest Service, Northern Research Station. Joint Position.</td>
</tr>
<tr>
<td>2007-2009</td>
<td>Center for Water Sciences Research Fellow, Michigan State University, East Lansing, MI</td>
</tr>
<tr>
<td>2006-2007</td>
<td>Post-Doctoral Researcher, Department of Plant Biology, Michigan State University, East Lansing, MI</td>
</tr>
<tr>
<td>2003-2005</td>
<td>Inland Northwest Research Alliance Fellow (U.S. Dept. of Energy); Subsurface Science Graduate Research Program.</td>
</tr>
<tr>
<td>2001-2002</td>
<td>Research Assistant in the Ecosystem Science Center, Michigan Technological University</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

Teaching
Kane has taught Soil Science (FW3330), a required course in three majors within the School as well as satisfying a requirement in the College of Engineering, every fall semester since 2009. This course is co-listed as a graduate class (FW5060), which has its own laboratory section separate from the three to four undergraduate sections. Course reviews have been favorable. For Question 19 (now 26), “Given the opportunity, I would take another course from this instructor”, and Question 20 (now 12), “…I consider this instructor to be an excellent teacher”, Kane received mean ranks (out of 5) of 4.4 and 4.5, respectively, with range of 4.2-4.7. In addition, Kane has offered graduate seminar and undergraduate courses in wildland fire, has lead the Distinguished Ecologist Lecture Series, and taught a graduate course in advanced methods of soil organic matter characterization. Kane integrates his research
program focused on belowground processes and wildland fire into his course offerings, and has recruited and mentored many undergraduates from his classes in his field research in Alaska, Canada, and the Lake States (see mentorship in Form F). As such, graduate students have been paired with undergraduates in field research, which has benefited mentoring at both levels of education.

Research/Scholarly Activity
Kane’s research focuses on belowground processes, with emphasis on carbon cycle dynamics in boreal and temperate forested and wetland ecosystems. He has grown a research program focused on belowground responses to climate change, bringing in over $3.8 million dollars in competitive grants and over $250,000 in joint venture agreements with the US Forest Service over the last six years. Notably, Kane was lead PI on two grants from NSF, fostering research on peatland ecosystems in Michigan and Alaska. These research activities have resulted in the support and mentorship of four post-doctoral scientists, two PhD students, nine MS students, and dozens of undergraduate researchers. Kane has also co-managed the Graphite Lab, as part of the Radiocarbon Collaborative between the USFS and MTU.

Kane has ~40 publications, with an average of 100 citations per year and 20 citations per publication (since 2011), resulting in a current h-index of 15 (Web of Science). Ten of Kane’s peer-reviewed publications were either led or co-authored by student mentees, with two of those papers being led by undergraduate students.

Service
Kane’s service to the profession has been demonstrated through active participation in public education workshops, such as: i) conducting a Global Change Teacher Institute in the summers of 2013, 2014, 2015, 2016; ii) Engaging Teachers in Authentic Science Research Teacher Institute in June of 2016; iii) Great Lakes Teacher Institute in July 2014; and iv) teaching Houghton HS Biology Classes in 2013 and 2014 (120 students) as part of GK12 Fellowships.

Kane is an ad hoc proposal reviewer for NSF and regularly reviews articles as part of the peer review process (approximately eight per year).

Recent Significant Publications

Commentary:

Syntheses:

INFORMATION SHEET FOR BOARD OF TRUSTEES

Yushin Ahn
Michigan Technological University

Yushin Ahn, who is currently an assistant professor of Surveying Engineering without tenure in the School of Technology, is being considered for promotion to associate professor of Surveying Engineering with tenure in the School of Technology.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2008</td>
<td>Ohio State University</td>
<td>Columbus, OH</td>
</tr>
<tr>
<td>M.S.</td>
<td>2005</td>
<td>Ohio State University</td>
<td>Columbus, OH</td>
</tr>
<tr>
<td>M.S.</td>
<td>2000</td>
<td>Inha University</td>
<td>Inchun, Korea</td>
</tr>
<tr>
<td>B.S.</td>
<td>1998</td>
<td>Inha University</td>
<td>Inchun, Korea</td>
</tr>
</tbody>
</table>

Professional Record:

<table>
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<tr>
<th>Date</th>
<th>Position/Title</th>
<th>Institution/Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011 – present</td>
<td>Assistant Professor (without tenure), Surveying Engineering, the School of Technology</td>
<td>Michigan Technological University</td>
</tr>
<tr>
<td>2014 – present</td>
<td>Adjunct Professor, Civil and Environmental Engineering</td>
<td>Michigan Technological University</td>
</tr>
<tr>
<td>2008 Sep – 2011 Aug</td>
<td>Post-Doctoral Fellow</td>
<td>Byrd Polar Research Center, Columbus, OH</td>
</tr>
</tbody>
</table>

Summary of Accomplishments:

- **Teaching**
  I have taught 27 courses in 11 semesters. Student evaluations for the last three semesters are: 2015 Fall (3.39, 3.92), 2016 Spring (4.08, 3.71), and 2016 Fall (4.50, 4.53) which show an increasing trend.

  I have developed three new (or combined) courses – SU5045 Geospatial Data Fusion, SU4060 Geodesy and SU3600 Surveying Computations and Adjustments. For SU3110 Surveying Field Practice, I integrated the use of new equipment including the Trimble S7 Total Station, Trimble GNSS, Digital Level and Faro 3D laser scanner to provide students with more hands-on practice, and additional preparation for the National Society of Professional Surveyors (NSPS) student competition.

  My lectures and class materials focus on applying classroom learning to solving problems that will be encountered in practice. Class materials prepared for SU4060 Geodesy were the basis for a journal publication.

- **Research/Scholarly Activity**
  I have submitted 11 proposals for funding. I received one external award ($1.2M) as a co-PI from a project started while I was a researcher at the Byrd Polar and Climate Research Center at Ohio State University, 3 internal awards as PI ($89K) and one external award ($10K, PI).

  The funded projects supported undergraduate and graduate students, equipment purchases (DSLR camera, Velodyne 3D scanner, Faro 3D scanner) and presentations at conferences.
I have formed a research network with GMES (proposal work, fieldwork), Social Science (proposal, field campaign), CEE (senior design project), and SFRES (course development in progress). Upcoming projects include construction of a 3D model of the Henry Ford Dymaxion House (with Social Sciences), active involvement in the UAV committee of ASPRS, seashore extraction research with Kwandong University in Korea, and an education proposal with Florida Atlantic University.

- **Service**
  I have served on various committees — assessment committee (So&T), safety committee (So&T) and faculty/staff/graduate dean search committee (So&T, Graduate School, SFRES, SS).

  I have been an advisor since 2011 for the Douglas Houghton Chapter of the Michigan Society of Professional Surveyors and an undergraduate Research Expo judge since 2014. I am actively involved in outreach for the surveying engineering program both on campus and at national and regional professional surveying conferences.


- **Recent and Significant Publications/Exhibitions/Performances/Etc.**
  From 2011 fall to the present, I have published 7 journal papers, 3 peer-reviewed conference proceedings, and 16 conference presentations. There is one journal paper under revision. Total citations of published journal articles is 509 and the h-index is 13 according to Google Scholar.

  In 2014 I completed the ASPRS requirements necessary to become a Certified Photogrammetrist. I was awarded the GeoEye Foundation Imagery Award from Digital Globe in 2012. Recently, the Surveying Education Award from NCEES was awarded to the Surveying Engineering program.

  I have advised 3 PhD, 17 master's students as an Advisor/Co-advisor/Committee Member and am currently advising 2 master's students.


V-F. PROMOTIONS

The policy for promotions of faculty members requires that the process starts with deliberations in the candidate’s department and proceed through the respective colleges and schools. Once approved, it is presented to the Provost, and if successful, to the President of the University. The candidates listed herein have met all the requirements and have been approved for promotion.

RECOMMENDATION: That the Board of Trustees approves the promotions listed herein.
TO: Glenn Mroz, President
FROM: Jacqueline E. Huntoon, Provost & Vice President for Academic Affairs
DATE: April 12, 2017
SUBJECT: Promotion Recommendations

In accordance with Board of Trustees Policy 6.4, Academic Tenure and Promotion, the following faculty members have been recommended for promotion. I have reviewed and support these recommendations and request that the Board of Trustees be asked to approve them at their April 28, 2017 meeting. If approved, the promotions will be effective August 21, 2017.

Promotion from Associate Professor with Tenure to Professor with Tenure

Kedmon Hungwe
Shari Stockero
Jeremy Goldman
Keat Ghee Ong
Aleksey Smirnov
Joshua Pearce
Jason Blough
Rodney Chimner

Cognitive and Learning Sciences
Cognitive and Learning Sciences
Biomedical Engineering
Biomedical Engineering
Geological and Mining Engrg and Sciences
Materials Science and Engineering
Mechanical Engrg-Engrg Mechanics
School of Forest Res. and Env. Science

APPROVED:

Glenn D. Mroz, President

Date: 11/13/17
RECOMMENDATION FOR PROMOTION AND TENURE
KEDMON N. HUNGWE
Michigan Technological University

Recommendation:

Kedmon N. Hungwe, who is currently an associate professor of Teacher Education with tenure in the Department of Cognitive and Learning Sciences in the College of Sciences and Arts, is recommended for promotion to professor of Teacher Education with tenure in the Department of Cognitive and Learning Sciences in the College of Sciences and Arts.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>Michigan State University</td>
</tr>
<tr>
<td>M.S.</td>
<td>The University of Wisconsin-Madison</td>
</tr>
<tr>
<td>T. Cert.</td>
<td>The University of Zimbabwe</td>
</tr>
<tr>
<td>B.S.</td>
<td>The University of Rhodesia</td>
</tr>
</tbody>
</table>

Professional Record:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position and Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008 – present</td>
<td>Associate Professor (with tenure), Department of Cognitive and Learning Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2012</td>
<td>Visiting Scholar, University of Oxford, England</td>
</tr>
<tr>
<td>2002 – 2008</td>
<td>Assistant Professor, Department of Cognitive and Learning Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>1992-2002</td>
<td>Senior Lecturer, Center for Educational Technology, University of Zimbabwe</td>
</tr>
<tr>
<td>1997-2000</td>
<td>Department Chair, Center for Educational Technology, University of Zimbabwe</td>
</tr>
<tr>
<td>2001</td>
<td>Visiting Scholar, Michigan State University</td>
</tr>
<tr>
<td>1987-1992</td>
<td>Lecturer, Center for Educational Technology, University of Zimbabwe</td>
</tr>
<tr>
<td>1985-1987</td>
<td>Staff Development Fellow, Center for Educational Technology, University of Zimbabwe</td>
</tr>
<tr>
<td>1984-1985</td>
<td>Lecturer, Zimbabwe Secondary Schools Science Project, Ministry of Education</td>
</tr>
<tr>
<td>1980-1983</td>
<td>High school teacher of mathematics and science, Zimbabwe</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**

Dr. Hungwe’s teaching has made a strong impact on students learning as assessed through student course evaluations, peer feedback, and unsolicited feedback from students. In addition to classroom teaching, he has been advisor to 16 masters students who have graduated. He has also served on committees for 25 masters and 8 doctoral students who have graduated. Dr. Hungwe has designed and co-designed a total of eight new courses in his department. The courses have enhanced the quality and relevance of educational programs and most significantly, they have increased the capacity to attract graduate students. Dr. Hungwe has also engaged in collaborative research on learning and teaching with colleagues in the School of...
Technology, Electrical and Computer Engineering, and Chemistry. Three courses have been re-designed and an Electrical Engineering textbook has been published as a direct result of this work.

* Research/Scholarly Activity
Dr. Hungwe's research has primarily focused on the development of spatial visualization in relation to STEM education, cognitive studies of work, and learning and instruction. He has published 45 publications, and presented in a wide range of national and international forums. His work has appeared in leading journals in psychology, education, and media, including Mind, Culture and Activity, Journal of Adult Development, Journal of Curriculum Studies, Media Culture and Society, Compare: A Journal of Comparative and International Education, and the Historical Journal of Film, Radio and Television. His work on media has been translated and published in a high impact Chinese journal. More recently Dr. Hungwe has initiated research on children and youth, and has presented and published on that theme. He is a contributing author to four secondary school science textbooks that have been cited as exemplary by the USAID and the World Bank. Dr. Hungwe is associated with external research funding in excess of $3.5 million. He has supported Michigan’s Tech’s mission by recruiting graduate students (University Goal 1.1); participating in new course development including online courses (University Goal 2.1); and engaging in collaborative interdisciplinary research (University Goal 2.3). Departmental goals align with departmental goals.

* Professional and University Service
Dr. Hungwe has served as an associate editor for the International Journal of Learning. He has also served as a reviewer for eight professional journals including Science Education, Journal for Research in Mathematics Education, and Comparative and International Education. He has provided critical reviews for a professional handbook on technology and reviewed a manuscript for a new Educational Psychology textbook. He has also served on professional panels of the Michigan Department of Education, and the American Psychological Association Panel on Women with Disabilities in STEM Education (WWDSE) to develop criteria for inclusion. Internationally Dr. Hungwe has reviewed grant proposals for the Social Sciences and Humanities Research Council of Canada, and has been appointed as an external PhD examiner by the Bahauddin Zakariya University of Pakistan. He has been an active member of the American Educational Research Association and has served as a reviewer and conference discussant on topics related to his area of expertise. He has previously convened and co-chaired an international conference on spatial visualization which was held in Chicago. He wrote the proposal for the NSF funded conference. His university service includes chairing the Senate Curricular Policy Committee, the General Education & Assessment Committee, as well as membership of the College Promotions and Tenure Committee, and Graduate Faculty Committee.

* Recent and Significant Publications/Exhibitions/Performances/Etc.
Recommendation:

Shari L. Stockero, who is currently an associate professor of mathematics education with a joint appointment in the Department of Cognitive and Learning and the Department of Mathematical Sciences, is recommended for promotion to professor in the Department of Cognitive and Learning and the Department of Mathematical Sciences.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Ph.D.</td>
<td>2006</td>
<td>Western Michigan University, Kalamazoo, MI</td>
</tr>
<tr>
<td>M.A.</td>
<td>1997</td>
<td>Western Michigan University, Kalamazoo, MI</td>
</tr>
<tr>
<td>B.S.</td>
<td>1991</td>
<td>Northern Michigan University, Marquette, MI</td>
</tr>
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Professional Record:

<table>
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<tr>
<th>Year</th>
<th>Position and Affiliation</th>
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</thead>
<tbody>
<tr>
<td>2012-present</td>
<td>Associate Professor, Department of Cognitive and Learning Sciences/Department of Mathematical Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2014-present</td>
<td>Director of Teacher Education, Michigan Technological University</td>
</tr>
<tr>
<td>2006-2012</td>
<td>Assistant Professor, Department of Cognitive and Learning Sciences/Department of Mathematical Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2001-2006</td>
<td>Lecturer and Director of First Year Mathematics, Michigan Technological University</td>
</tr>
<tr>
<td>2001-2005</td>
<td>MaCH-1 Summer Program Director, Michigan Technological University</td>
</tr>
<tr>
<td>1992-2001</td>
<td>Mathematics and Physics Teacher, West Iron County High School, Iron River, MI</td>
</tr>
<tr>
<td>1991-1992</td>
<td>Mathematics and Science Teacher, Forest Park High School, Crystal Falls, MI</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**
  Dr. Stockero has had consistently high teaching evaluations, being recognized twice in recent years by the provost as having student ratings in the "top 10% of similarly sized sections university-wide". She has been very active in improving the teacher education courses at the university by leading the department's efforts to align the teacher education curriculum to the InTASC Standards (adopted by Michigan as its standards for teacher preparation). At the graduate level, she has redesigned the graduate research course to better prepare our students to engage in action research and, with colleagues, secured a Jackson Center Online Learning Grant to redesign three online courses that make up the core of the Applied Science Education master's program. In addition, she has provided professional development to over 100 elementary, middle and high school mathematics teachers (mainly from the Western UP) to help them develop teaching practices that are consistent with current research on mathematics teaching and learning.

- **Research/Scholarly Activity**
  Dr. Stockero was the recipient of a 2011 National Science Foundation CAREER grant to study ways to promote mathematics teachers' ability to notice and respond to high-leverage instances of student mathematical thinking, something that is recognized as critical to effective mathematics instruction. Including this grant, she has been awarded over $1.2 Million as PI and nearly $1.1 Million as co-PI in
external funding. She has 44 refereed publications in research, teacher educator, and practitioner journals, and has given over 50 presentations of her work.

Dr. Stockero’s research is very well aligned with Michigan Tech’s and the College of Sciences and Arts strategic plans to provide transformative educational experiences. Specifically, her work focuses on using innovative techniques to not only enhance mathematics teacher learning, but that has the likelihood to support them in improving the mathematics instruction provided to K-12 students.

- **Service**
  
  Dr. Stockero is the chair-elect of the steering committee of the North American Chapter of the Psychology of Mathematics Education, and is completing her term as the inaugural president of the Michigan Association of Mathematics Teacher Educators. She has served on the Association of Mathematics Teacher Educator’s emerging issues committee, conference program committee, and on a monograph editorial board. She is also a member of the TeachingWorks Michigan Program Network steering committee and a member of the Upper Peninsula Center of Educational Development board.

At the university level, Dr. Stockero serves as the Director of Teacher Education, which includes directing the undergraduate teacher education, Applied Science Education Master’s, and STEM Education Certificate programs. She has led the effort to develop a new graduate certificate program in STEM Education – which aligns nicely with the goals stated in the department strategic plan (develop graduate programs). She is also leading the CAEP accreditation process for the teacher education graduate and undergraduate programs. She has served on numerous university and department committees, including the sabbatical leave committee, the compensation strategy task force, and the university senate. Dr. Stockero also mentors several new Education faculty, and supervises a staff member.

- **Recent and Significant Publications**


RECOMMENDATION FOR PROMOTION AND TENURE

JEREMY GOLDMAN
Michigan Technological University

Recommendation:

Jeremy Goldman, who is currently an associate professor of biomedical engineering with tenure in the Department of Biomedical Engineering in the College of Engineering, is recommended for promotion to full professor in biomedical engineering in the Department of Biomedical Engineering in the College of Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Ph.D.</td>
<td>2002</td>
<td>Northwestern University, Evanston, IL</td>
</tr>
<tr>
<td>M.S.</td>
<td>2000</td>
<td>Northwestern University, Evanston, IL</td>
</tr>
<tr>
<td>B.S.</td>
<td>1998</td>
<td>Cornell University, Ithaca, NY</td>
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Professional Record:

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<tr>
<th>Year</th>
<th>Position</th>
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<tbody>
<tr>
<td>2010 - present</td>
<td>Associate Professor (with tenure), Department of Biomedical Engineering, Michigan Technological University</td>
</tr>
<tr>
<td>2012 - 2013</td>
<td>Visiting Professor at the Technion, Haifa, Israel, Materials Science and Engineering Department (Research), Biomedical Engineering Department (Teaching)</td>
</tr>
<tr>
<td>2004 - 2010</td>
<td>Assistant Professor (without tenure), Michigan Technological University, Houghton, Michigan, Biomedical Engineering Department</td>
</tr>
<tr>
<td>2003 - 2004</td>
<td>Post-Doctoral Fellow, Swiss Federal Polytechnic Institute (EPFL), Lausanne, Switzerland, Institute for Biological and Chemical Engineering</td>
</tr>
<tr>
<td>2002 - 2003</td>
<td>Post-Doctoral Fellow, Northwestern University, Biomedical Engineering Department</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- **Teaching**
  Dr. Goldman has been active in course development and has developed introductory and advanced (undergraduate and graduate) cell and molecular biology courses specifically for biomedical engineering students. He has also developed a tissue engineering course for upper level undergraduate and graduate students.
• **Research/Scholarly Activity**

Dr. Goldman has published 45 peer reviewed scientific journal papers, including 31 in the past 5 years. His work was cited nearly 200 times in 2016 alone. This strong record highlights his tremendous productivity in terms of making high impact research discoveries. He has secured over $3.5 million in external funding as PI and Co-PI since joining MTU. He has helped assemble a national team that recently secured $3.4 million in NIH SBIR funding (not included in the above external funding amount) to expand the testing and development of novel materials that he developed at MTU. He has established international scientific collaborations, in Israel, which has lead to 5 publications in leading journals.

• **Service**

Dr. Goldman serves on numerous departmental committees, including as faculty search committee chair, promotion and tenure committee chair, and chair of the departmental seminar committee. He serves the university as the executive advisor to the Chair of the Life Science and Technology Institute (LSTI). He is an active mentor within the department, including to faculty and students.

• **Recent and Significant Publications**


**RECOMMENDATION FOR PROMOTION AND TENURE**

KEAT GHEE ONG

Michigan Technological University

**Recommendation:**

Keat Ghee Ong, who is currently an associate professor with tenure in the Department of Biomedical Engineering in the College of Engineering, is recommended for promotion to professor with tenure in the Department of Biomedical Engineering in the College of Engineering.

**Academic Degrees:**

<table>
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<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
<th>Location</th>
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<tr>
<td>Ph.D.</td>
<td>2000</td>
<td>Electrical Engineering</td>
<td>University of Kentucky, Lexington, KY</td>
</tr>
<tr>
<td>M.S.</td>
<td>1998</td>
<td>Electrical Engineering</td>
<td>University of Kentucky, Lexington, KY</td>
</tr>
<tr>
<td>B.S.</td>
<td>1997</td>
<td>Electrical Engineering</td>
<td>University of Kentucky, Lexington, KY</td>
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**Professional Record:**

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<th>Year</th>
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<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011 – present</td>
<td>Associate Professor (with tenure), Department of Biomedical Engineering, Michigan Technological University</td>
<td>Michigan Technological University</td>
<td></td>
</tr>
<tr>
<td>2006 – 2011</td>
<td>Assistant Professor (without tenure), Department of Biomedical Engineering, Michigan Technological University</td>
<td>Michigan Technological University</td>
<td></td>
</tr>
<tr>
<td>2002 – 2006</td>
<td>Postdoctoral Researcher, Electrical Engineering, Penn State University, State College, PA</td>
<td>KMG2 Sensors Corporation, State College, PA</td>
<td></td>
</tr>
<tr>
<td>2001 – 2002</td>
<td>Postdoctoral Researcher, Electrical Engineering, University of Kentucky, Lexington, KY</td>
<td>Postdoctoral Researcher, Electrical Engineering, Penn State University, State College, PA</td>
<td></td>
</tr>
<tr>
<td>2000 – 2001</td>
<td>Postdoctoral Researcher, Electrical Engineering, University of Kentucky, Lexington, KY</td>
<td>Postdoctoral Researcher, Electrical Engineering, University of Kentucky, Lexington, KY</td>
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</tr>
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</table>

**Summary of Evaluation:**

- **Teaching**
  
  Ong teaches senior design fundamentals and coordinates senior design projects in the department. He focuses on honing the students' practical skills so they can excel in their careers, especially in the medical industry. He also provides knowledge in medical devices, electronics, and programming to biomedical engineering students from his Biosensors and Microcontroller classes. He has consistently receive good teaching evaluations in his classes. Ong encourages students to showcase their knowledge outside of the university. For example, Ong led a senior design team in the 2015 BMES Coulter College design competition, and his team won the best design in its category.

  In terms of graduate and undergraduate advising, Ong has graduated 3 PhD and 3 MS students, and is currently advising 3 graduate students. He has or is supervising more than 30 undergraduate student researchers, most of them have published in competitive technical journals.

- **Research/Scholarly Activity**
  
  Keat Ghee Ong has an internationally recognized research program in the areas of implantable sensors, wireless sensors, and magnetoelastic materials. He was involved in the development and implementation of a number of wireless sensor technologies including the magnetoelastic resonant sensors and inductive-capacitive resonant circuit sensors for biomedical applications. Currently, Ong focuses on the development of “smart implants”, which are based on wireless sensor/actuator platforms that not only can monitor physiological conditions in real time, but also react and adapt to
TENURE AND/OR PROMOTION INFORMATION SHEET FOR BOARD OF TRUSTEES

changes for improving treatment outcomes.

Ong's research effort has been externally supported nationally and internationally by a number of federal agencies, organizations, and industrial partners such as National Institutes of Health, Centers for Disease Control, Department of Defense, NATO, Michigan Space Grant Consortium, Michigan Universities Commercialization Initiative, and 3M Corporation. Ong is expecting an NIH funding on the development of a smart orthopaedic implant of about $0.48 million, starting in early 2017. In addition, Ong is a co-I of a foundation grant of $2.5 million to improve the university's medical research capability and local community.

• **Service**

Ong has participated in international society, chairing sessions in professional meetings and giving seminars outside of the country. At Michigan Tech, Ong served as the graduate program director in the Biomedical Engineering department from 2011 to 2015, and helped established the MS program. He also served in multiple departmental and university committees. From 2013 to 2015, he was elected as the director of Life Science and Technology Institute, which is consists of 30-40 faculty with an annual expenditure of about $4 million. In 2016, he received an endowed professorship, the Portage Health Foundation Endowed Professor of Technological Innovations in Health, to help Michigan Tech to improve medical research and commercialization, as well as integrate Michigan Tech's research activities with the local community.

• **Recent and Significant Publications/Exhibitions/Performances/Etc.**


RECOMMENDATION FOR PROMOTION TO PROFESSOR WITH TENURE
Dr. Aleksey V. Smirnov
Michigan Technological University

Recommendation:

Aleksey V. Smirnov, who is currently an associate professor of geophysics with tenure in the Department of Geological and Mining Engineering and Sciences in the College of Engineering, is recommended for promotion to professor of geophysics with tenure in the Department of Geological and Mining Engineering and Sciences in the College of Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2002</td>
<td>University of Rochester, Rochester, NY</td>
</tr>
<tr>
<td>M.S.</td>
<td>2000</td>
<td>University of Rochester, Rochester, NY</td>
</tr>
<tr>
<td>Can. Sci.</td>
<td>1991</td>
<td>Saint-Petersburg State University, Saint-Petersburg, Russia</td>
</tr>
<tr>
<td>B.S.</td>
<td>1987</td>
<td>Saint-Petersburg State University, Saint-Petersburg, Russia</td>
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Professional Record:

<table>
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<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012-present</td>
<td>Associate Professor (with tenure)</td>
<td>Department of Geological and Mining Engineering and Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2007-2012</td>
<td>Assistant Professor (without tenure)</td>
<td>Department of Geological and Mining Engineering and Sciences, Michigan Technological University</td>
</tr>
<tr>
<td>2005-2007</td>
<td>Research Scientist</td>
<td>Department of Geology and Geophysics, Yale University, CT</td>
</tr>
<tr>
<td>2003-2005</td>
<td>Research Scientist</td>
<td>Department of Earth and Environmental Sciences, University of Rochester, NY</td>
</tr>
<tr>
<td>2002-2003</td>
<td>Postdoctoral Fellow</td>
<td>Department of Earth and Environmental Sciences, University of Rochester, NY</td>
</tr>
<tr>
<td>1991-1998</td>
<td>Scientist and Lecturer (equivalent to assistant professor)</td>
<td>Department of Earth Physics, Saint-Petersburg State University, Russia</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

Teaching: Dr. Smirnov’s teaching interests include applied and environmental geophysics, global geophysics and plate tectonics, and planetary science. He also regularly teaches special topic courses and advises independent research projects for undergraduate and graduate students to provide them with real-world laboratory experiences. His student evaluations have been consistently well above average in all of his courses, including both undergraduate and graduate levels. Dr. Smirnov has developed a new senior/graduate-level course on planetary geology and geophysics and has substantially revised the courses on applied and environmental geophysics and on global geophysics. He has graduated two PhD and four MS students and is currently advising two PhD and four MS students. He also advised a post-doctoral researcher at MTU. Dr. Smirnov effectively integrates his cutting-edge research with his educational goals and has been proactive in attracting undergraduate students to science. He has supervised nineteen undergraduate research assistants many of which are now pursuing their Ph.D. or M.S. degrees, or work in industry. Dr. Smirnov has been fostering broadening participation of underrepresented groups in research. Half of his doctoral students and over half of his undergraduate research assistants are women. His students are frequently cited for excellence in research awards. Several of his undergraduate students have altered their educational and career plans to focus more on...
research in paleomagnetism and planetary science. They have worked in remarkable places around the world and locally, and participated in research work that is distinctive and unique in terms of the laboratory instrumentation they use and the nature of the questions their work is trying to answer.

Research/Scholarly Activity: Dr. Smirnov is nationally and internationally recognized as an expert in Earth's magnetism phenomena and applications for a broad range of problems of geophysics, geology and planetary science. He has published 46 highly cited peer-reviewed publications, including six book chapters. He has secured over $2.2 Million as PI in external funding from the National Science Foundation, the Petroleum Research Fund, and the US Geological Survey. He is a recipient of a prestigious NSF CAREER award. The Earth Magnetism Laboratory led by Dr. Smirnov hosts a unique combination of state-of-the-art equipment which allows him and his students to pursue a vigorous research program addressing frontier problems of Earth and planetary science and provides excellent opportunities for graduate and undergraduate education and outreach. The global and multidisciplinary nature of Dr. Smirnov's research gave rise to numerous collaborations with researchers from around the globe. He has been regularly invited to give lectures internationally. He received an Editor's Award for Excellence in Refereeing (American Geophysical Union, 2010). His NSF CAREER project had a unique component that integrated pre-college science teachers in summer research with his project's post-doctoral associate and doctoral students.

Service: Dr. Smirnov's professional service includes Associate Editor, Journal of Geophysical Research (American Geophysical Union), since 2005; Member, Review and Advisory Committee for the Institute for Rock Magnetism (University of Minnesota), since 2013; Member, Science Evaluation Panel of the International Ocean Discovery Program (IODP), 2009-2012, 2015; Member, National Science Foundation Geophysics Program Panel, 2011. He has been active as an organizer and chair of numerous sessions and symposia at international conferences of the American Geophysical Union, the International Union of Geodesy and Geophysics, and the Institute for Rock Magnetism. He is a reviewer for multiple journals and funding agencies. At MTU, Dr. Smirnov has served on numerous university, college, and department committees including Graduate Faculty Council, administrative and faculty search committees, Early Career Management Committee, and others. He served as a Faculty Fellow with the Vice-President for Research Office in 2015-2016. His outreach efforts include advising middle and high school teachers. He serves as a faculty advisor for the MTU Chapter of Lambda Chi Alpha since 2015.

Recent and Significant Publications/Exhibitions/Performances/Etc.


RECOMMENDATION FOR PROMOTION
Joshua M. Pearce
Michigan Technological University

Recommendation:

Joshua M. Pearce, who is currently a tenured associated professor cross appointed in the Department of Materials Science & Engineering and the Department of Electrical & Computer Engineering in the College of Engineering, is recommended for promotion to full professor with tenure in the Department of Materials Science & Engineering and the Department of Electrical & Computer Engineering in the College of Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Ph.D.</td>
<td>2004</td>
<td>The Pennsylvania State University, State College, PA</td>
</tr>
<tr>
<td>B.S.</td>
<td>1999</td>
<td>The Pennsylvania State University, State College, PA</td>
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Professional Record:

<table>
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<tr>
<th>Year</th>
<th>Position</th>
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</table>
| 2011-present | Associate Professor, Department of Materials Science & Engineering  
Cross-Appointed in Department of Electrical & Computer Engineering, Michigan Technological University, MI, USA |
| 2008-2011 | Assistant Professor of Mechanical and Materials Engineering  
Cross-Appointed School of Environmental Studies  
Fellow Queen's Institute of Energy and Environmental Policy  
Queen's University, Kingston, ON, Canada |
| 2004-2008 | Assistant Professor of Physics  
Clarion University of Pennsylvania, Clarion, PA, USA |
| 2000-2004 | Instructor – College of Engineering  
Research Assistant – The Center for Thin Film Devices  
The Pennsylvania State University, University Park, PA, USA |

Summary of Evaluation:

- **Teaching**
  Dr. Pearce teaches two classes he developed: 1) our quad-listed nationally recognized open source 3-D printing class, where each student builds his/her own self-replicating rapid prototyper from scratch and then works on progressively more complicated design projects focusing on scientific hardware and sustainable development; 2) the dual-listed graduate course in Solar Photovoltaic Science and Engineering. The excellent teacher ratings for his MY4777/MYS777/EE4777/EE5777 Open-source 3-D Printing range from 4.47 to 4.5/5.0. This class is extremely popular and fills quickly. In addition it was has been written up by opensource.com and was responsible for *Network World* naming Michigan Tech one of 6 colleges turning out open source talent.
In MY5940/EE5940 Solar Photovoltaic Science and Engineering the excellent teacher ratings range from 4.14 to 4.17/5.0. In addition in 2015, a score of 4.90/5.0 was awarded on the "average of 7 dimensions." This compares very favorably to the university-wide average of 4.20 in both categories for small classes and ranked him in the top 10% of teachers at MTU.

Dr. Pearce also started a new Enterprise Program at MTU: The Open Source Hardware Enterprise (OSHE) develops open source hardware solutions specifically to address problems of our project partners, while sharing the solutions in the commons. Open source hardware consists of physical technologies designed and offered in the same manner as free and open source software. (Undergrad, MTU).

He has previously developed the Applied Sustainability graduate program at Queen's as well as both the Nanotechnology Program and Sustainability: Science and Policy Program for undergraduates while at Clarion University of Pennsylvania. He won the Golden Apple Award, which is awarded by the Engineering Society to professors for excellence in teaching engineering at Queen's.

- Research/Scholarly Activity

Dr. Pearce has published more than 160 well-cited peer-reviewed journal articles and over 40 peer-reviewed conference proceedings. In addition, he has published 3 books and 18 book chapters. According to Google Scholar his work has been cited over 5,000 times. He is now cited more than 1,000 times per year, putting him at the top of publicly available citation rates for all Michigan Tech faculty. These citations have earned him an h-index of 35 and 110 papers of his papers were cited at least 10 times. Dr. Pearce is a well-known international advocate of open access and publishes preprints (which have license agreements that permit it) on mtu.academia.edu. These publications have been downloaded over 350,000 times and over 11,000 scholars follow his work. This ranks Dr. Pearce in the top 0.1% of all academics there.

Dr. Pearce is an interdisciplinary scholar that collaborates widely within the Michigan Tech academic community including teamwork that has already resulted in publications on solar photovoltaic technology with Dr. Durdu Guney (ECE), Dr. Paul Bergstrom (ECE) and Dr. Anand Kulkarni (ECE), metal 3-D printing with Dr. Paul Sanders (MSE), wood waste recycling with Dr. Mark Rudnicki (Forestry), hybrid solar systems with Dr. Lucia Gauchia (ECE/ME), renewable energy economics with Dr. Richelle Winkler (SS), business models of distributed manufacturing with Dr. Andre Laplume (Business), antibacterial nanomaterials with Dr. Megan Frost (BME), microfluidics with Dr. Caryn Heldt (Chem Eng), 3-D printing economics with Doug Oppliger (Engineering Fundamentals), additive manufacturing education with Dr. John Irwin (School of Technology/MET/CLS), STEM education with Dr. Chelsea Schelly (SS), advanced electronics design and Dr. Tim Havens (ECE/CS) and isolated community employment with Julie Way (Career Services).

To fund this research Dr. Pearce has been a PI/co-PI on more than $2.2 million in grants, gifts and donations from the government (NSF, ARPA-E, America Makes, MIIIE), industry (Miller, Aleph Objects, Lulzbot, re:3D, 3D4edu, NECi, Mosaic Crystals, Kema, CNC RP, Continental, Pax Instruments, Thin Silicon, Hydrogenics, DA Glass, Cheap 3D filaments, Ocean Optics, Type A Machines, Zeni Kinetic, MatterHackers, Kysan, Ultimachine, Thermoanyltics, Makerbot, Silbond, and
Information Sheet for Board of Trustees

APS) and NPOs (Ford Foundation, Tech for Trade, Square One, PHFoundation, DeVlieg Foundation) while at Michigan Tech and several million more at his previous institutions. He routinely creates new industrial relationships for Michigan Tech.

- **Service**
  
  Dr. Pearce is the founding Editor and Chief of Elsevier's *HardwareX*, an open access journal established to promote free and open source designing, building and customizing of scientific infrastructure (hardware). He is also on the Editorial board of *Sustainable Energy Technologies and Assessments* (2015-2018), a Guest Editor – *Materials* – Special Issue Solar Photovoltaic Materials 2016, and the Manuscript Editor, *The International Journal for Service Learning in Engineering*, Fall 2005- present. He is a moderator for Appropedia (2007-present), an organization devoted to accelerating societal transformation and sustainability through mass collaboration. He also sits on the advisory boards of many organizations including Field Ready (2016-present), Open Building Institute (2016-present), Open Source Ecology and Libre3D LLC (2015- present). He actively reviews for most journals, some grants and book proposals in his sub-disciplines.

  Dr. Pearce frequently provides interviews for media related to his research findings or general expertise. He has generated hundreds of news articles and University-named quotations in the technical, national and international press for Michigan Tech since joining the faculty.

- **Recent and Significant Publications**
  
  Dr. Pearce's 2012 seminal paper "Building Research Equipment with Free, Open-Source Hardware" published in *Science* along with his Elsevier published (top science publisher) book in 2014 titled the *Open-Source Lab* and following torrent of articles showed scientists how to build high-end custom scientific tools using digital fabrication tools for a fraction of the cost of proprietary equipment. This work has literally created a new field that is growing rapidly and expanding to all disciplines.

  Dr. Pearce's correction of several long-standing errors in calculating solar photovoltaic systems economics resulted in a 2011 publication in *Renewable and Sustainable Energy Reviews* (the highest ranking journal is his field). In addition to proving that solar systems are economic boons for homeowners in most the U.S. it is now the de-facto method to calculate levelized cost of electricity for solar electrical systems. The paper has been cited over 500 times.

  Dr. Pearce's group is also well known for research in open source self-replicating 3-D printers. They have developed the first recyclebot, the first low-cost metal 3-D printer capable of steel and aluminum, were the first to show that both the environmental and economic LCA of distributed manufacturing and recycling is better than the centralized counterparts.

**List of papers referenced above:**

RECOMMENDATION FOR PROMOTION TO PROFESSOR
Dr. Jason R. Blough
Michigan Technological University

Recommendation:
Jason R. Blough, who is currently an associate professor with
tenure in the Department of Mechanical Engineering -
Engineering Mechanics, is recommended for promotion to
professor with tenure in the Department of Mechanical
Engineering - Engineering Mechanics in the College of
Engineering.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>1998</td>
<td>The University of Cincinnati</td>
</tr>
<tr>
<td>M.S.</td>
<td>1991</td>
<td>Michigan Technological University</td>
</tr>
<tr>
<td>B.S.</td>
<td>1990</td>
<td>Michigan Technological University</td>
</tr>
</tbody>
</table>

Professional Record:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-Present</td>
<td>Associate Professor (with tenure), Mechanical Engineering - Engineering Mechanics Department, Michigan Technological University</td>
</tr>
<tr>
<td>2003-2008</td>
<td>Assistant Professor (without tenure), Mechanical Engineering - Engineering Mechanics Department, Michigan Technological University</td>
</tr>
<tr>
<td>2010-Present</td>
<td>Owner/Vice President, Presision Engineering Services, LLC, Chassell, MI</td>
</tr>
<tr>
<td>1998-2003</td>
<td>Sr. Research Engineer/NVH Program Manager, Keweenaw Research Center, Michigan Technological University</td>
</tr>
<tr>
<td>1998-2000</td>
<td>Research Assistant Professor, Center for Advanced Manufacturing and Material Processing, Michigan Technological University</td>
</tr>
<tr>
<td>1993-1998</td>
<td>Graduate Research Assistant, Department of Mechanical, Industrial, and Nuclear Engineering, University of Cincinnati, Cincinnati, OH</td>
</tr>
<tr>
<td>1991-1993</td>
<td>Associate/Project Engineer, Noise and Vibrations Center, General Motors Corporation, Milford, MI</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

• Teaching
Dr. Blough has developed and taught 9 different undergraduate and graduate courses in
the ME-EM department. Dr. Blough co-developed three of the new ME Practice courses
and regularly teaches at least one of these courses each year. Dr. Blough has been
recognized for his teaching by being nominated for the 2014 MTU Distinguished Teaching
Award. Dr. Blough has also received the SAE Ralph R. Teetor Educational Award in
2007 and has been honored 3 times with SAE Outstanding Faculty Advisor Award for his
work advising the SAE Student Chapter and Clean Snowmobile teams.
• **Research/Scholarly Activity**
  Dr. Blough has authored 39 peer reviewed journal publications, 23 peer reviewed conference publications, and 44 non-peer reviewed conference publications. Dr. Blough has and continues to give invited tutorial type presentations at the SEM-IMAC conference. Dr. Blough has been PI on $3.7$ million and a co-PI on an additional $1.8$ million of externally funded research. Research funding has been secured from a very large range of companies, including the automotive industry, the snowmobile industry, and defense industry.

Dr. Blough's research is internationally recognized in rotating equipment signal processing, vibrations, torque converter noise, and snowmobile noise measurement. Dr. Blough has also recently expanded his research efforts into vibration shock measurement and signal processing. Dr. Blough received the SAE Arch T Colwell Merit Award for his signal processing work relative to rotating machinery and the 2006 Scientist of the Year Award from the Blueribbon Coalition for his work relative to snowmobile passby noise. Dr. Blough has also taught over 40 short courses to industry on noise and vibrations related topics. Dr. Blough has advised or co-advised 8 Ph.D. students and 26 MS students.

• **Service**
  A brief summary of Dr. Blough's professional service includes Associate Editor, Experimental Techniques (since 2008), journal reviewer for 8 different journals. Dr. Blough has been and continues to be a session chair and organizer for SEM-IMAC conference sessions (since 2004), session chair for ISMA conferences, KUL in Leuven Belgium (5 times), paper reviewer for SAE World Congress and Noise and Vibration Conferences (since 2004). Dr. Blough sits on the SAE Snowmobile Committee and has been instrumental in developing the current noise related standards. Dr. Blough has been on the ME-EM Executive Committee and the DDS Area Director for 8 years. Dr. Blough served on the ME-EM Curriculum Revision Committee since its inception in 2010 and has actively contributed to helping to develop 3 of the new ME Practice courses. Dr. Blough has also been the SAE Student Chapter advisor (since 2004), the SAE Clean Snowmobile Enterprise Advisor (since 2004), and on the Enterprise Advisory Board (since 2005). Dr. Blough is also the President of the Delta Sigma Phi Alumni Control Board (since 2015).

• **Recent and Significant Publications/Exhibitions/Performances, Etc.**
RECOMMENDATION FOR APPOINTMENT TO PROFESSOR
DR. ROD A. CHIMNER
MICHIGAN TECHNOLOGICAL UNIVERSITY

Recommendation:

Rod Chimner, who is a currently an Associate Professor with tenure, School of Forest Resources and Environmental Science, is recommended for promotion to professor in the School of Forest Resources and Environmental Science.

Academic Degrees:

<table>
<thead>
<tr>
<th>Degree</th>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>2000</td>
<td>Colorado State University, Fort Collins, Colorado</td>
</tr>
<tr>
<td>M.S.</td>
<td>1994</td>
<td>Michigan State University, East Lansing, Michigan</td>
</tr>
<tr>
<td>B.S.</td>
<td>1990</td>
<td>Northern Michigan University, Marquette, Michigan</td>
</tr>
</tbody>
</table>

Professional Record:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 - present</td>
<td>Affiliate Faculty, Department of Forest and Rangeland Stewardship, Colorado State University.</td>
</tr>
<tr>
<td>2012 - present</td>
<td>Associate Professor, School of Forest Resources and Environmental Sciences, Michigan Technological University (tenured 2012)</td>
</tr>
<tr>
<td>2008 - 2012</td>
<td>Assistant Professor, School of Forest Resources and Environmental Sciences, Michigan Technological University.</td>
</tr>
<tr>
<td>2005 - 2008</td>
<td>Visiting Assistant Professor, School of Forest Resources and Environmental Sciences, Michigan Technological University.</td>
</tr>
<tr>
<td>1993</td>
<td>Research Technician, Michigan Department of Natural Resources.</td>
</tr>
</tbody>
</table>

Summary of Evaluation:

- Teaching

The student teaching evaluations of courses taught by Dr. Chimner over the last ten years have been exemplary. He averaged a 4.5 out of 5.0 on both summary questions “Given the opportunity, I would take another course from this instructor” and “Taking everything into account, I consider this instructor to be an excellent teacher”. The main positives that his students comment on are the hands-on labs that reinforce concepts that they learned in class, the lab research project, and his use of extensive examples from around the world.
• Research/Scholarly Activity
Dr. Chimner has published forty-eight well cited (>1825 Google Scholar citations, h-value=21: Google Scholar) journal publications and fifty-six conference presentations. He has published in thirty-one journals including: Global Change Biology, Ecology, Journal of Ecology, Ecohydrology and Ecosystems. He has published four book chapters, including being one of the lead-authors of the Intergovernmental Panel on Climate Change (IPCC) Chapter 5 “Inland Wetland Mineral Soils” for the IPCC 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. He has secured over $2.3 Million as PI and another $10.7 Million as co-PI or senior personnel in external research funding. His funding is from a variety of agencies including; NSF, Department of Energy, National Geographic, EPA, Great Lakes Restoration Initiative, US Forest Service, National Park Service and State Governments.
Dr. Chimner’s research is very well aligned with the School of Forest Resources and Environmental Science and Michigan Tech’s strategic plan in the sustainability area. In particular, he is a nationally and internationally recognized expert in wetland restoration and wetland carbon cycling. His research spans from local projects in Michigan and the Great Lakes region, nationally in Colorado and other western states, to internationally throughout South America and Indonesia. He is currently involved in several large international projects dealing with sustainability of wetlands and bioenergy across North and South America.

• Service
A brief summary of Dr. Chimner’s professional service includes reviewing manuscripts, and past-president of the Rocky Mountain Chapter of the International Society of Wetland Scientist. He has been a session organizer and chair for the Society of Wetland Scientist and led field tours for annual meetings. He is also active in university, school, and outreach to include leading efforts to develop and coordinate new ecology undergraduate and graduate programs, teaching high school teachers, faculty advisor to a student club, and serving on faculty search committees and other committees.

• Recent and Significant Publications/Exhibitions/Performances/Etc.

November 04, 2016
V-G. FY18 GENERAL FUND OPERATING BUDGET

The general fund budget was developed based on assumptions regarding tuition and state appropriations. However, when the State budget is approved by the Legislature, if there are changes from these assumptions, the Administration is requesting that the Board allow them the flexibility to revise the budget to reflect a change in appropriations and/or tuition cap while continuing to maintain a balanced budget.

RECOMMENDATION: That the Board of Trustees approves the FY18 General Fund Operating Budget as presented, and authorizes the Administration to revise the general fund operating budget to reflect any changes in state appropriations and/or tuition cap while maintaining a balanced budget and informing the Board Audit and Finance Committee of any such changes that may be necessary.
### Operating Revenues

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition and Fees</td>
<td>$138,701,062</td>
</tr>
<tr>
<td>Federal Grants and Contracts</td>
<td>$150,000</td>
</tr>
<tr>
<td>State &amp; Local Government Grants &amp; Contracts</td>
<td></td>
</tr>
<tr>
<td>Nongovernmental Grants &amp; Contracts</td>
<td></td>
</tr>
<tr>
<td>Indirect Cost Recoveries</td>
<td>$12,426,000</td>
</tr>
<tr>
<td>Educational Activities/Misc. Revenues</td>
<td>$122,890</td>
</tr>
<tr>
<td>Student Resident Fees</td>
<td></td>
</tr>
<tr>
<td>Sales and Services of Dept Activities</td>
<td></td>
</tr>
<tr>
<td><strong>Total Operating Revenues</strong></td>
<td><strong>$151,399,952</strong></td>
</tr>
</tbody>
</table>

### Operating Expenses

<table>
<thead>
<tr>
<th>Expense Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff S&amp;W</td>
<td>$(39,241,310)</td>
</tr>
<tr>
<td>Faculty S&amp;W</td>
<td>$(49,048,192)</td>
</tr>
<tr>
<td>Grad Student S&amp;W</td>
<td>$(4,641,932)</td>
</tr>
<tr>
<td>Undergrad Student S&amp;W</td>
<td>$(900,965)</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>$(35,420,520)</td>
</tr>
<tr>
<td>Supplies &amp; Services</td>
<td>$(16,109,055)</td>
</tr>
<tr>
<td>Scholarships</td>
<td>$(41,836,833)</td>
</tr>
<tr>
<td>Utilities</td>
<td>$(4,286,627)</td>
</tr>
<tr>
<td>Contingency/Carryforward Reserve</td>
<td>$(4,800,000)</td>
</tr>
<tr>
<td><strong>Total Operating Expenses</strong></td>
<td><strong>$(196,285,434)</strong></td>
</tr>
</tbody>
</table>

### Transfers

<table>
<thead>
<tr>
<th>Transfer Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory/Non-Mandatory</td>
<td>$(9,097,132)</td>
</tr>
</tbody>
</table>

### Nonoperating Revenues (Expenses)

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Appropriations</td>
<td>$49,095,114</td>
</tr>
<tr>
<td>Gift Income</td>
<td>$4,527,500</td>
</tr>
<tr>
<td>Investment Income</td>
<td>$360,000</td>
</tr>
<tr>
<td>Interest Expense</td>
<td></td>
</tr>
<tr>
<td><strong>Total Nonoperating Revenues (Expenses)</strong></td>
<td><strong>$53,982,614</strong></td>
</tr>
</tbody>
</table>

### Net Income (Loss)

<table>
<thead>
<tr>
<th>Income/Expense</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Income (Loss)</strong></td>
<td>$(0)</td>
</tr>
</tbody>
</table>
### Michigan Technological University
#### FY18 Tuition Rates

<table>
<thead>
<tr>
<th>Lower Division</th>
<th>Resident Undergraduate</th>
<th>Non-Resident Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition Rate</td>
<td>Per Credit Hour</td>
<td>Plateau Tuition Rate Per Credit Hour</td>
</tr>
<tr>
<td>&lt;12 and &gt;18</td>
<td>$558.00</td>
<td>$1,186.00</td>
</tr>
<tr>
<td>12 - 18 Credits</td>
<td>$7,387.00</td>
<td>$16,009.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Upper Division</th>
<th>Resident Undergraduate</th>
<th>Non-Resident Undergraduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition Rate</td>
<td>Per Credit Hour</td>
<td>Plateau Tuition Rate Per Credit Hour</td>
</tr>
<tr>
<td>&lt;12 and &gt;18</td>
<td>$742.00</td>
<td>$1,413.00</td>
</tr>
<tr>
<td>12 - 18 Credits</td>
<td>$8,973.50</td>
<td>$18,172.00</td>
</tr>
</tbody>
</table>

- **Engineering, Computer Science, Computer Network & Systems Admin., Surveying Engineering Majors**: $742.00, $1,413.00
- **Forest Resources, Environmental Science, Biological Sciences, Chemistry, Kinesiology & Integrative Physiology, Cognitive & Learning Sciences, Physics, Construction Management, Electrical Engineering Technology, Mechnacal Engineering Technology Majors**: $644.00, $1,306.00
- **Business, Economics, Humanities, Mathematical Sciences, Social Sciences, Visual & Performing Arts Majors**: $621.00, $1,283.00

### NOTE: Per Credit Hour Rate Will Apply Undergraduate Students Enrolled Summer Semester

<table>
<thead>
<tr>
<th>Resident &amp; Non-Resident Graduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition Rate</td>
</tr>
<tr>
<td>Standard Per Credit Hour Non-Engineering/Computer Science</td>
</tr>
<tr>
<td>Standard Per Credit Hour Rate Engineering/Computer Science</td>
</tr>
<tr>
<td>Applied Science Education and Peace Corps, OSM/VISTA, and National Graduate Fellowship Students Non-Engineering/Computer Science</td>
</tr>
<tr>
<td>Applied Science Education and Peace Corps, OSM/VISTA, and National Graduate Fellowship Students Engineering/Computer Science</td>
</tr>
<tr>
<td>Graduate Students who are in Research Mode Non-Engineering/Computer Science</td>
</tr>
<tr>
<td>Graduate Students who are in Research Mode Engineering/Computer Science</td>
</tr>
</tbody>
</table>
V-H. ELECTION OF CHAIR AND VICE CHAIR

The Bylaws of the Board of Trustees record that at the last meeting of the fiscal year, the Board shall elect a chair to take office at the first meeting in the following fiscal year. It further states that the Board shall also elect a vice chair to preside in the absence of the chair.

RECOMMENDATION: That the Board of Trustees elects Terry Woychowski as chair for the fiscal year 2017-2018; and that further, the Board elects Brenda Ryan as vice chair for the same period.
V-I. PROPOSAL FOR A PH.D. IN INTEGRATIVE PHYSIOLOGY

The faculty members of the Department of Kinesiology and Integrative Physiology (KIP) at Michigan Technological University seek to establish a Doctor of Philosophy (PhD) program in Integrative Physiology. The PhD program in Integrative Physiology is designed for students who wish to pursue careers in academia, research or industry in the areas of integrative and exercise physiology, human biomechanics, and motor learning.

Integrative physiology can be defined as the study of organisms as functioning systems of molecules, cells, tissues, and organs. Application of these concepts and experimental approaches is used to understand human health, disease, and performance. Inside Higher Ed recently reported that kinesiology (study of human movement which encompasses aspects of integrative physiology), is “one of the fastest-growing majors in the country.” Accordingly, there is a strong base of undergraduate and graduate students to draw from for this proposed graduate program, and a need for high-quality graduate programs.” (http://www.insidehighered.com/news/2010/08/11/kinesiology)

The specific learning goals for this proposed program are as follows:

**Learning Goal 1:** Students will demonstrate a mastery of the advanced coursework related to integrative physiology. This learning goal will be demonstrated by passing the required coursework and the written and oral comprehensive examinations, as described in Section 6.2.

**Learning Goal 2:** Students will demonstrate critical and independent thinking in their technical specialty within integrative physiology research. This goal will be demonstrated through annual research presentations (local, regional, and/or national), annual progress reports submitted to the graduate advisor, committee, and graduate program director (including list of abstracts, presentations, and publications), and through written and oral presentations of the dissertation.

**Learning Goal 3:** Students will demonstrate the ability to communicate clearly in both oral and written form. This goal will be demonstrated using the same measures as Learning Goal 2.

The proposal has been approved by the University Senate, the Provost and Vice President for Academic Affairs and the President. The University is seeking Board of Trustees approval to advance the proposal to the State Academic Affairs Officers.

**RECOMMENDATION:** That the Board of Trustees approves the Ph.D. in Integrative Physiology.
The University Senate of Michigan Technological University
Proposal 13-17
(Voting Units: Academic)
“Doctor of Philosophy Degree Program in Integrative Physiology”

1. GENERAL DESCRIPTION
The faculty members of the Department of Kinesiology and Integrative Physiology (KIP) at Michigan Technological University seek to establish a Doctor of Philosophy (PhD) program in Integrative Physiology. The PhD program in Integrative Physiology is designed for students who wish to pursue careers in academia, research or industry in the areas of integrative and exercise physiology, human biomechanics, and motor learning. For questions or clarification, please contact Dr. Jason R. Carter (department chair) at jcarter@mtu.edu or 906-487-2715.

Integrative physiology can be defined as the study of organisms as functioning systems of molecules, cells, tissues, and organs. Application of these concepts and experimental approaches is used to understand human health, disease, and performance. Inside Higher Ed recently reported that kinesiology (study of human movement which encompasses aspects of integrative physiology), is “one of the fastest-growing majors in the country.” Accordingly, there is a strong base of undergraduate and graduate students to draw from for this proposed graduate program, and a need for high-quality graduate programs.


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Learning Goal 2: Students will demonstrate critical and independent thinking in their technical specialty within integrative physiology research. This goal will be demonstrated through annual research presentations (local, regional, and/or national), annual progress reports submitted to the graduate advisor, committee, and graduate program director (including list of abstracts, presentations, and publications), and through written and oral presentations of the dissertation.

Learning Goal 3: Students will demonstrate the ability to communicate clearly in both oral and written form. This goal will be demonstrated using the same measures as Learning Goal 2.

2. RATIONALE
The KIP department offers two Bachelor of Science (BS) degrees within the fields of kinesiology and integrative physiology, and a Master of Science (MS) degree in kinesiology, but does not currently offer a Doctor of Philosophy (PhD) degree. Over the past 10 years, KIP faculty have served as primary advisors for 11 PhD graduate students via adjunct status primarily through the graduate programs in Biological Sciences (5 graduated PhD students over past 8 years; 4 active PhD students), Biomedical Engineering (1 graduated PhD student), and Human Factors (1 graduated PhD student). These students have gone on to secure post-doctoral positions at prestigious universities (New York Medical College, Harvard University, Emory University) as well as tenure-track and lecturer positions. Based on the growth of our department and previous experiences mentoring PhD graduate students we are now ready to establish our own independent PhD program. Specifically, our motivations for establishing a PhD in Integrative Physiology include the following:
• With 6 tenure-track faculty, 2 staff members with Ph.D. degrees, and several key affiliated and adjunct faculty with specialties related to integrative physiology, the department has a critical mass to offer a nationally competitive PhD degree in Integrative Physiology.

• 80% of full-time KIP faculty are actively funded by either the National Institutes of Health (NIH) or the National Science Foundation (NSF). In addition, faculty have received funding through agencies such as the American Heart Association (AHA) and American College of Sports Medicine. Over the past year, 100% of KIP faculty have peer-review publications and external grant submissions. There is a robust research environment to support PhD students.

• Having a graduate program in the department will increase national and international visibility, which is consistent with the Michigan Tech Strategic Plan and will assist with enhanced recruitment of premiere students and faculty.

• Federal agencies such as the NIH, NSF, AHA, and American Diabetes Association all have review criteria that address “infrastructure” and “environment”. A graduate program within the department will strengthen our infrastructure and environment, particularly as it pertains to requests for graduate funding.

• Michigan Technological University has established an innovative Doctorate of Physical Therapy (DPT) partnership with Central Michigan University (CMU). This has resulted in the presence of 24 CMU DPT students on Michigan Tech’s campus each year. A long-term goal of this DPT partnership is the development of a DPT/PhD option for some of the top students. Such students would receive a DPT from Central Michigan, and a PhD from a Michigan Tech graduate program. We envision several existing PhD programs as potential partners for the DPT degree (i.e., Biomedical Engineering, Mechanical Engineering, Human Factors), and believe a PhD in Integrative Physiology will also be attractive for DPT students.

3. RELATED PROGRAMS

3.1. Related Programs at Michigan Tech
The programs most closely related to the proposed Integrative Physiology PhD program are the Biological Sciences, Applied Cognitive Science and Human Factors, and Biomedical Engineering PhD programs. These programs have several criteria that have been used to assess their success: 1) upon graduation, PhD students have demonstrated the ability to carry out an advanced and original research project, including its written and oral communication; 2) their projects have synthesized knowledge from different scientific disciplines; and 3) PhD students gain experience as research proposal writers. The departments require presentation and defense of a research proposal, and students are expected to participate in the preparation and writing of proposals for internal and external funding. There are sometimes specific coursework requirements for the PhD; and upon approval of the advisory committees, students can choose elective courses tailored to their background and research interests. Emphasis is placed on research and publication of research. The average student completes the PhD in 3-5 years. We have designed our Integrative Physiology Ph.D. with these successful programs as a template.

3.2. Related Programs at Other Institutions in Michigan
There are 3 Physiology PhD and 3 Kinesiology/Movement Science PhD degree programs in Michigan that relate to the proposed degree (see Table 1). The three existing Physiology PhD programs at University of Michigan, Michigan State, and Wayne State are heavily focused on cellular and molecular physiology. The three existing Kinesiology PhD programs at those same institutions are more focused on applied physiology. We envision our program being a balance between those two of important aspects of physiology (i.e., molecular vs. applied), thus offering
a unique curriculum and research experience for students. Our program will include both basic and applied courses/research, with a heavy focus on physiological interactions across systems. We evaluated these programs in order to assure that our graduates will be competitive with those from other institutions. We found that many programs have similar course requirements, and generally require some combination of oral and/or written qualifying examination. We modeled specific aspects of the proposed PhD program after the University of Michigan program, which is one of the top 3 Kinesiology Programs in the nation. Additionally, we benchmarked nationally, and modeled the proposed PhD program after the well respected and highly visible Integrative Physiology PhD program at the University of Colorado-Boulder and new Integrative Physiology PhD program at the University of Utah.

Table 1. Related Programs in Michigan

<table>
<thead>
<tr>
<th>Institution</th>
<th>Ph.D. Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Michigan</td>
<td>Molecular and Integrative Physiology</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>Movement Science</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>Physiology</td>
</tr>
<tr>
<td>Michigan State University</td>
<td>Kinesiology</td>
</tr>
<tr>
<td>Wayne State University</td>
<td>Physiology</td>
</tr>
<tr>
<td>Wayne State University</td>
<td>Kinesiology &amp; Sport Studies</td>
</tr>
</tbody>
</table>

4. PROJECTED ENROLLMENT

Our goal is to have 1-2 Ph.D. students for every tenured/tenure-track faculty member. We currently have six tenure-track faculty. As such, we anticipate a steady state number of approximately 6-12 Ph.D. students.

5. SCHEDULING PLANS (Extension, Evening, Regular)

We intend to offer the proposed curriculum using a regular scheduling plan consistent with University policy.

6. CURRICULUM DESIGN

Graduate students entering the Integrative Physiology Ph.D. program must have a Master’s degree in kinesiology, physiology, biological sciences, or other relevant disciplines. Faculty from the graduate program must approve the admission of graduate student applicants. Admission will be based on holistic review of the student’s application package as well as the availability of space in the program. Candidates with a Master's degree that does not include adequate background in physiology may be required to take some pre-requisite courses prior to acceptance and/or enrollment in the advanced coursework required for the PhD degree (determined by graduate director in consultation with graduate faculty).

6.1. Core Degree Requirements

The program of study and research will be planned and supervised by an advisory committee. The advisory committee must approve each candidate’s course work and research topic. Students will be required to take a minimum of 30 credits beyond their master’s degree, with the following requirements:

- Required Core Courses (10-11 credits)
  - Advanced Exercise Physiology (EH 5310; 3 credits)
• Molecular Physiology (EH 5600; 3 credits)
• Graduate Seminar (EH 6100; 1 credit)
• At least one of the following statistical courses:
  o Biostatistics for Health Science Research (BE 5550; 4 credits)
  o Regression Analysis (MA 4710; 3 credits)
  o Design and Analysis of Experiments (MA 4720; 3 credits)
  o Statistical Methods (MA 5701; 3 credits)
  o Advanced Statistical Analysis and Design I (PSY 5210; 4 credits)
  o Advanced Statistical Analysis and Design II (PSY 5220; 4 credits)

Elective Courses (as determined by advisory committee)
• A list of approved elective courses within and outside the department is provided in Section 6.3, and this list will be updated annually by the department. Multiple statistical courses are strongly recommended for this degree. Courses not on this list, but deemed relevant and appropriate by the student, can be used ad hoc if written approval is obtained from the primary advisor and KIP department chair.

Research Credits (15+ credits)
• A minimum of 15 research credits are required.

6.2. Other Degree Requirements

6.2.1. Advisor and the advisory committee
Based on their research interests, graduate students must choose a primary advisor (or co-advisors), no later than the end of the first academic year. The primary advisor must hold a regular or affiliated appointment in the Department of Kinesiology and Integrative Physiology and will chair the committee. The primary advisor will help the student select members of the advisory committee. The advisory committee (in addition to the primary advisor) will consist of 2 graduate faculty members within the department and at least one graduate faculty from outside the department.

6.2.2. Qualifying exam
The qualifying exam will consist of a written and oral examination, and will evaluate fundamental and applied topics in integrative physiology. The primary advisor will be responsible for soliciting the advisory committee members for content and assessment. Graduate students will be encouraged to take the qualifying exam after about two years of doctoral study (following completion of required coursework); see Table in Section 6.2.7.

6.2.3. Dissertation proposal
The dissertation proposal should contain a review of the literature, a problem statement/rationale, study hypotheses, research design, proposed methods/research strategy, and pilot data when possible. The primary advisor, with input from the committee members, can decide on the proposal format.

6.2.4. Written dissertation
The dissertation will be written and prepared under the supervision of the committee chair and the advisory committee according to the requirements of the Graduate School. It is expected that at least one of the projects within the final written dissertation will have
been designed and executed by the student, and will include an IRB/IACUC submission and approval.

6.2.5. Final oral examination
The final requirement will be a public oral presentation and an oral examination according to the requirements of the Graduate School.

6.2.6. Annual evaluation
The faculty supervisor will perform an annual evaluation of the student’s performance and progress towards degree completion. A written report highlighting the student’s progress, target benchmarks for the next year, and areas for improvement will be shared with the student and graduate program director.

6.2.7. Sample timeline to degree
Time to degree completion is approximately 3-4 years.

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<thead>
<tr>
<th></th>
<th>Year 1</th>
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<th>Year 2</th>
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<th>Year 3</th>
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<th>Year 4</th>
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<tr>
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<td>Fall</td>
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<td>Fall</td>
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<td>Sum</td>
<td>Fall</td>
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<tr>
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<tr>
<td>Dissertation Research</td>
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<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Dissertation Proposal</td>
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<tr>
<td>Dissertation Defense</td>
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<tr>
<td>Annual Evaluation</td>
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</tbody>
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6.3. Course Offerings

6.3.1. Existing graduate courses
The following is a list of existing courses (in various departments) that demonstrates the breadth of courses currently available to students. We have sought input and obtained approval to include the non-departmental courses via the respective department chairs (i.e. BE, BL, MA, and PSY).

BE 5510 - Cardiovascular Engineering
Fundamental cardiovascular pathology and the biomedical engineering approaches being developed and used toward problems resulting in significant cardiovascular deficiency such as myocardial infarction, chronic kidney disease, atherosclerosis, and heart valve disease. Credits: 3.0

BE 5550 - Biostatistics for Health Science Research
An overview course of biostatistical methods used in the health sciences. Topics include a review of undergraduate statistical concepts, NIH, CDC, and FDA guidelines for clinical trial research, proper use of biostatistical methods including anova models, logistic regression, risk analysis, survivorship analysis and any other statistical methods that are common in the enrolled students' discipline. Credits: variable to 4.0

BE 5940 - Introduction to Tissue Engineering
Explore the application of engineering principles toward the construction/reconstruction...
of human tissue. Fundamental biological principles involved in tissue engineering are reviewed from an engineering perspective with examples of engineered tissues such as blood vessels, skin, liver, cartilage and bone. Credits: 3.0

**BE 6900 - Biomedical Engineering Topics**
Biomedical engineering courses will be offered as professional electives dependent upon the interest of the faculty. Credits: variable to 6.0

**BL 4010 - Biochemistry I**
Structure, biochemical properties, and function of important biomolecules such as proteins and nucleic acids. Introduces enzyme biochemistry (structure, function, catalysis, kinetics, and inhibition). Credits: 3.0

**BL 4020 - Biochemistry II**
Dynamic aspects of living systems. Broad exposure to cellular metabolic pathways, intermediary metabolism and its regulation and bioenergetics. Credits: 3.0

**BL 4380 - Cardiopulmonary Physiology**
Using a problem-based learning approach, course examines the physiology of the human body. In-class case-study analyses provide in-depth learning about the cardiovascular and pulmonary systems and their relationship with other organ systems. Promotes development of problem-solving skills. Credits: 3.0

**BL 4840 - Molecular Biology Techniques**
Laboratory techniques in molecular biology, including methods of recombinant DNA technology for identification, cloning, and characterization of genes. Credits: 3.0

**BL 5030 - Molecular Biology**
Molecular biology of gene structure, expression and regulation. Molecular techniques and their application to biotechnology and genomes are covered. Credits: 3.0

**BL 5042 - Scanning Electron Microscopy of Biological Specimens**
Hands-on training in operation of the scanning electron microscope (SEM). Students prepare biological specimens of their choice for observation. Emphasis will be placed on application of advanced techniques. Successful completion of course is prerequisite to becoming a certified SEM operator in the ACMAL. Half semester. Credits: 3.0

**BL 5350 - Special Topics in Physiology**
A discussion of recent developments in physiology. Recent offerings have included respiratory physiology, renal physiology, clinical cardiology, and neurophysiology. Credits: variable to 10.0; Repeatable to a Max of 10

**EH 4200 - Sports Nutrition Seminar**
Human nutrition as it specifically applies to athletes. Specific needs for proteins, carbohydrates, fats, electrolytes and micronutrients. Use of ergogenic aids is covered. Students will research, write and present orally their findings on nutrition topics. Credits: 2.0

**EH 4210 - Exercise Physiology**
Focuses on the functional changes brought by acute and chronic exercise sessions. Topics include muscle structure and function, bioenergetics, cardiovascular and
respiratory adaptations, exercise training for sport, sport nutrition, ergogenic aids, and other health and fitness topics. Credits: 3.0

**EH 4220 - EKG Interpretation**
Course is designed for students who are going to pursue future career related to cardiac rehabilitation, physical therapy and students in the Pre-Med program. Students will learn cardiac electrophysiology, the pathophysiology, the diagnosis, and treatment of cardiac arrhythmias, and related cardiovascular diseases. Class will build bridge between basic sciences and human health. Credits: 2.0

**EH 4211 - Exercise Physiology Laboratory**
A companion course to EH4210. Hands-on experience in making physiological measurements as related to exercise. Cardiovascular and respiratory changes during exercise will be monitored. A virtual lab is used to simulate changes in physiological measurements that cannot be performed on live subjects. A student designed laboratory project is required. Credit: 1.0

**EH 4400 - Motor Learning and Control**
Designed for upper level undergraduates or graduates, this course will provide the current theories and concepts involved in the processes of motor skill acquisition and performance from a behavioral perspective. Credits: 3.0

**EH 4420 - Motor Development**
Designed for upper level undergraduates or graduates, this course will focus on the changes in motor behavior across a life span, and examine the study and practice of fundamental patterns within the context of development theory. Credits: 3.0

**EH 4500 - Biomechanics of Human Movement**
An in-depth view of the biomechanical properties of the musculoskeletal system. The course provides detailed analyses of the kinetics of human movement, material properties of the component tissues, and dynamic processes of adaptation to stress and strain of the system. Credits: 3.0

**EH4511 - Biomechanics of Human Movement Lab**
A companion course to EH4500. Hands-on experience, including data collection, analysis, and interpretation using various equipment in biomechanics. Credit: 1.0

**EH 5310 - Advanced Exercise Physiology**
This course focuses on exercise physiology in both humans and rodents. Topics include detailed muscle physiology, fatigue mechanisms, the autonomic nervous system, advanced cardiovascular adaptations with exercise, exercise metabolism, and environmental exercise physiology. The importance of translational research will be highlighted. Credits: 3.0

**EH 5320 - Advanced Biomechanics**
This course includes the quantitative analysis of human motion through bioinstrumentation during dynamic performance. A detailed analysis of different movements and movement techniques, from both a clinical and exercise science perspective, as well as investigations into the mechanics of tissues and their function, are integral features of this course. Students will also learn how to interpret the data recorded by biomechanical equipment, and how to apply this to the body of knowledge in sport science. Credits: 3.0
EH 5330 - Advanced Motor Behavior
Peer-reviewed literature will be utilized to acquaint students with scholarly issues and topics in motor learning and control that are relevant to their fields. The theoretical concepts related to motor control, motor learning, and motor development will be covered. Students will be expected to design a scientific research study related to their specific interest goals. Credits: 3.0

EH 5350 - Special Topics in Kinesiology
Selected additional topics in kinesiology for advanced students based on interests of faculty and students. Interested students should contact the Exercise Science, Health and Physical Education department. Credits: variable to 9.0; Repeatable to a Max of 9

EH 5500 - Stress Physiology
This course focuses on stress physiology in humans. Topics include neural and hormonal responses to mental stress, interactions between physical and mental stress, bidirectional relations between stress and disease, and health disparities associated with stress. Credits: 2.0

EH 5510 - Advanced Strength and Conditioning
Advanced theory and practice in development and administration of comprehensive strength and conditioning programs for both the athlete and individual of any level. Includes knowledge, safety concerns and skill techniques necessary for teaching and administering any strength and conditioning facility. This will be done through a combination of lecture, seminar, scientific articles and practical experience. Credits: 3.0

EH 5520 - Sleep and Circadian Physiology
This course focuses on the role of sleep and circadian rhythm on physiological control systems. Topics include basic mechanisms of the sleep-wake cycle, role of sleep and circadian clock on cardiovascular and respiratory control, overview and treatment strategies for common sleep disorders, and techniques in sleep medicine research. Course content will be delivered using a combination of lecture, seminar, scientific articles, and group work. Credits: 3.0

EH 5540 - Neuroendocrine Physiology
This course will focus on understanding how the neural and the endocrine system are regulated under both normal physiological conditions and pathophysiological states. The major objective of this course is to prepare graduate students to develop critical thinking and problem solving skills related to the function of the nervous system and endocrine system, and their complex interaction with each other. This will be done through a combination of lecture, seminar, scientific articles, lab techniques, and group work. Credits: 3.0

EH 5900 - Laboratory Techniques for Integrative Physiology
This course will expose graduate students to various methodologies in integrative physiology. Student will rotate between various laboratories and observe techniques such as microneurography, electrophysiology, molecular physiology, muscular fatigue, etc.; both human and animal methodologies will be examined. Credits: 2.0

EH 5920 - Graduate Seminar
Graduate seminars are designed to facilitate critical discussions of student research projects and peer-reviewed research in related fields. The presenter will provide an overview or seminar of the research of interest, which will establish the foundation for the discussion thereafter. Credit: 1.0

MA 4710 - Regression Analysis
Covers simple, multiple, and polynomial regression; estimation, testing, and prediction; weighted least squares, matrix approach, dummy variables, multicollinearity, model diagnostics and variable selection. A statistical computing package is an integral part of the course. Credits: 3.0

MA 4720 - Design and Analysis of Experiments
Covers construction and analysis of completely randomized, randomized block, incomplete block, Latin squares, factorial, fractional factorial, nested and split-plot designs. Also examines fixed, random and mixed effects models and multiple comparisons and contrasts. The SAS statistical package is an integral part of the course. Credits: 3.0

MA 5701 - Statistical Methods
Introduction to design, conduct, and analysis of statistical studies, with an introduction to statistical computing and preparation of statistical reports. Topics include design, descriptive, and graphical methods, probability models, parameter estimation and hypothesis testing. Credits: 3.0

PSY 5010 - Cognitive Psychology
A systematic survey of classical and contemporary research topics in human information processing and learning. Topics include models of cognition, perception/pattern recognition, attention, the nature of mental representation and processing; the architecture of memory, imagery, concepts, and prototypes; reasoning, decision making, problem solving, and cognitive development. Credits: 3.0

PSY 5210 - Advanced Statistical Analysis and Design I
An overview of research ethics, experimental design, proposal writing, and univariate statistics such as t-tests and ANOVA. Credits: 4.0

PSY 5220 - Advanced Statistical Analysis and Design II
A continuation of PSY 5210 covering multivariate and nonparametric statistics such as MANOVA, ANCOVA, Multiple Regression, faction analysis, and Chi Square. Credits: 4.0

PSY 5850 - Human Factors Psychology
Advanced concepts critical to the design of human-technological systems, such as capitalizing upon human capabilities and compensating for human limitations. Topics may include perceptual and motor abilities, human error and cognitive engineering. Credits: 3.0

PSY 6991 - Special Topics in Human Factors
Study of special topics in human factors as designed by section title. Credits: variable to 3.0; Repeatable to a Max of 9

6.3.2. New graduate courses
The Department of Kinesiology and Integrative Physiology will offer the following new graduate courses for this program. We have the expertise and sufficient number of research-active faculty to deliver this curriculum. Course proposals were approved through the Fall 2016 Curriculum Binder Process, which included review at the department-, college-, and university-level.

**New core courses:**
- EH 5600 - Molecular Physiology (3 credits)
- EH 6100 – Graduate Seminar (1 credit)
- EH 6900 - Doctoral Research in Integrative Physiology (variable)

**New elective courses:**
- BL 5044 - Human Pathophysiology (3 credits)
- EH 4990 - Exercise Pharmacology (2 credits)

### 7. NEW COURSE DESCRIPTIONS

**BL 5044 - Human Pathophysiology**
Human Pathophysiology will cover abnormal function (physiology) and investigate the signs and symptoms of major diseases in humans. The course will be an extension of Anatomy & Physiology (BL2010 and BL2020) by working through the systems of the human body. The course will include a clinical focus and will regularly use a case-study approach. Credits: 3.0

**EH 5600 - Molecular Physiology**
The purpose of this course is to introduce how different biochemical and molecular pathways of the cell work together to produce various physiological functions. Emphasis will be placed on the molecular and cellular mechanisms underlying physiological processes. Structure and function relationship will be addressed throughout the course. Recently published research articles in the area of molecular and cellular physiology will be discussed. Credits: 3.0

**EH 6100 – Graduate Seminar**
Graduate seminars are designed to facilitate critical discussions of student research projects and peer-reviewed research in related fields. The presenter will provide an overview or seminar of the research of interest, which will establish the foundation for the discussion thereafter. Credit: 1.0

**EH 6900 - Doctoral Research in Integrative Physiology**
An original investigation in theoretical or experimental physiology, or both, and submission of a dissertation in partial fulfillment of the requirements for the PhD degree. Credits: variable up to 9.0 per semester

**EH 4990 – Exercise Pharmacology**
This course focuses on understanding the fundamental concept of pharmacology and pharmacological treatment of diseases of various systems including cardiovascular, respiratory, endocrine, neuronal, hormonal and renal systems. Class will build bridge between basic sciences and human health. Credits: 2.0

### 8. LIBRARY AND OTHER LEARNING RESOURCES
The existing library and learning resources are adequate for the proposed graduate degree; no new resources are requested.
9. COMPUTING ACCESS FEE
No applicable fee

10. CORE AND AFFILIATED FACULTY (RESUMES)
The KIP department has six tenure/tenure-track faculty, as well as several key affiliated or
adjunct faculty, that will assist with the proposed degree. The curricula vitae of these faculty
members are available at the following website:

http://www.mtu.edu/kip/graduate/doctorate

10.1. Core KIP Faculty

Jason R. Carter, Ph.D.; Professor and Department Chair
Research Interests: Neural control of circulation, sleep physiology, sympathetic reactivity
to mental stress, human performance

Qing-Hui Chen, Ph.D.; Associate Professor
Research Interests: Neurophysiology, cardiovascular physiology, cardiovascular
diseases, metabolic disorders

Steven Elmer, Ph.D.; Assistant Professor and Graduate Program Director
Research Interests: Muscle physiology, biomechanics, rehabilitation, pedagogy

Zhiying (Jenny) Shan, Ph.D.; Assistant Professor
Research Interests: Neuroinflammation, neurogenic hypertension, salt sensitive
hypertension

Tejin Yoon, Ph.D.; Assistant Professor
Research Interests: Biomechanics, muscle fatigue, neuromuscular control of human
movement

Kevin Trewartha, Ph.D.; Assistant Professor
Research Interests: Aging, motor learning; sensorimotor neuroscience

Christopher Schwartz, Ph.D.; Lecturer and Graduate Internship Coordinator
Research Interests: Autonomic integrative physiology, hypertension, orthostatic
intolerance, human performance

Stephanie Hamilton, Ph.D.; Instructor and Undergraduate Internship Coordinator
Research Interests: Biomechanics, aging, muscle stiffness

Kelly Kamm, Ph.D.; Research Scientist
Research Interests: Epidemiology, community health

10.2. Affiliated and Adjunct Faculty

John J. Durocher, Ph.D.; Assistant Professor, Department of Biological Sciences
Research Interests: Arterial stiffness, blood pressure, exercise recommendations,
metabolic syndrome

L. Syd Johnson, Ph.D.; Assistant Professor, Department of Humanities
Research Interests: Bioethics, neuroethics, brain injury, concussion

Mark Randell, PT, DPT, FAAOMPT; Director of UP Health System Portage Rehab
Research Interests: Sports medicine and rehabilitation, human performance

Carl Smoot, D.O.; Director of the Portage Health Sleep Disorders Center
Research Interests: Sleep deprivation and neural control, sleep apnea, sleep and sports performance

Cameron Williams, PT, DPT, MS; DPT Site Coordinator, Central Michigan University
Research Interests: Sports medicine and rehabilitation, human performance

11. DESCRIPTION OF AVAILABLE/NEEDED EQUIPMENT

The KIP department currently has all of the necessary equipment for the proposed program. The department includes six designated research and/or teaching laboratories related to exercise and integrative physiology, biomechanics, and motor behavior. Some relevant pieces of equipment available for this program include:

**Integrative Physiology Laboratory**
- Microneurography nerve traffic analysis system
- Electrocardiogram units and amplifiers
- Pneumobelt for respiratory excursions
- Venous occlusion plethysmography for limb blood flow measurements (calf and forearm)
- Automated sphygmomanometer – four units
- Wrist actigraphy for sleep monitoring – four units
- Finger plethysmography (i.e., Finometer) for beat-to-beat blood pressure recordings
- 24 hour ambulatory blood pressure monitoring system -- four units
- Limb actigraphy system -- eight units
- Motorized tilt table
- Lower body negative pressure chamber
- Phlebotomy chair and all equipment/accessories needed for venipuncture

**Exercise Physiology and Human Performance Laboratory**
- Portable Doppler ultrasound system (GE Logiq e)
- Two Metabolic measurement systems (ParvoMedics), including one with spirometry and cardiac output attachments
- Wireless surface EMG system
- Various cycle ergometers for lower- (6) and upper- (4) body submaximal and maximal exercise testing
- Fat calipers, underwater body weighing, and other body composition equipment
- DEXA Scanner

**Human Biomechanics Laboratory**
- Six Vicon motion-capture cameras
- In-ground force plate in biomechanics laboratory with motion-capture cameras
- Blood lactate analyzers -- two units
- Multi-use Biopac systems for EMG, EEG, ECG, etc.
- Biodex machine for isokinetic testing
- Electrical stimulator and transcranial magnetic stimulator
- Optitrack motion capture system with 8 cameras
- Delsys wire and two wireless EMG system with motor unit decomposition options

Motor Learning and Cognitive Aging Laboratory
- KINARM integrated 2-D virtual reality robotic manipulandum for studying the control of upper limb movement

Molecular Physiology Laboratory
- Radio telemetry transducer system for rat blood pressure and activity recording
- Metabolic cage system for rat metabolism study
- Biotek synergy plate reader for DNA, RNA and protein concentration measurement, and fluorescence intensity assessment
- Biosafety cabinet
- CO₂ incubator for cell culture incubation
- Inverted Leica fluorescence microscope
- PCR machine, electrophoresis system, western blot transfer system
- Backman centrifuge 5804R
- Bacterial incubator

Electrophysiology Laboratory
- Olympus microscope with DIC optics and epifluorescence capabilities
- Amplifier and accompanying computer with data acquisition/analysis software
- Analog-to-digital converters
- Perfusion system
- Bath chamber temperature controller
- Vibrating microtome
- Microelectrode puller
- Digital CCD camera with image analysis software
- Respirators and CO₂ monitors
- Pressure injector
- Stimulator (Master-8, A.M.P.I.) with voltage isolator
- Olympus brightfield microscope
- Tail cuff blood pressure measurement system

Additionally, the KIP department also has shared oversight of departmental exercise training equipment within the Student Development Complex. Specifically, students will have access to the 7,256 ft² student exercise training complex for aerobic and resistance training (i.e., strength and conditioning curriculum). Equipment available in this training complex include:
- **Aerobic equipment**: 12 stationary bicycles, 14 treadmills, 6 elliptical machines, 3 stairmaster machines, 3 rowing ergometers
- **Resistance equipment (free weight)**: 2 full sets of 100 lb (5 lb increment) dumbbells, barbells (10-110 lbs), 5 free weight bench press units (1 incline and 1 decline), 3 squat racks, 1 military press, 3 dual cable crossover units
- **Resistance equipment (free motion and hammer strength machines)** for: bicep, tricep, deltoid, pectoralis, latissimus dorsi, rhomboids, hamstring, quadriiceps, gastrocnemius, soleus, and abdominal muscles

**There is sufficient equipment and space currently available for the proposed graduate degree, and no new resources are requested for equipment.** The department expects to continue making strategic investments of available internal (i.e., department general fund,
laboratory fees, summer teaching return, etc.) and external (i.e., external research grants) resources to build upon the existing infrastructure.

12. ESTIMATED PROGRAM COSTS

We project a gradual enrollment increase to a 3rd year steady state of 8 PhD students, and estimate costs and revenue for this new program in Table 2. The following assumptions are included in this estimate:

- The department has had two funded GA lines granted through the original Exercise Science B.S. degree approved in 2006, and have served a vital role in assisting with laboratory teaching and research within the department, as well as beyond the department (assisting with Anatomy & Physiology laboratories in Biological Sciences). Since 2006, we have added a B.S. in Sports and Fitness Management (2008) and a M.S. in Kinesiology (2014), but have not requested any new GA lines. Therefore, these two original GA lines are “funded” through revenue generated from our existing B.S. and M.S. degrees, and are thus not included as expenses within the program cost analysis.
- The proposed Ph.D. program includes a funding request for two new GA lines supported by the administration.
- The program cost analysis assumes 5% increase per year for both graduate tuition and minimum stipend amounts as posted by the Graduate School.
- The program cost analysis assumes 1:1 ratio of external/self-supported students at regular tuition rate (9 credits/semester) vs. research-only tuition rate (3 credits/semester) in 2017-18 and 2019-20, and 2 regular vs. 1 research-only externally/self-supported students in 2018-19.
- By year 3, we strive to have a 1:1 ratio of internal vs. externally/self-supported PhD students in our program.

<table>
<thead>
<tr>
<th>Table 2. Program Cost Analysis</th>
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<tr>
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<td>Total # of projected Ph.D. students</td>
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<tr>
<td>Existing GA lines</td>
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<tr>
<td>New GA lines</td>
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<tr>
<td>External/Self-Supported</td>
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<tr>
<td>Tuition per credit</td>
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<tr>
<td>External/self-support credits</td>
</tr>
<tr>
<td>Tuition revenue from external/self-support</td>
</tr>
<tr>
<td>Cost of 2 new GA stipends</td>
</tr>
<tr>
<td>Income developed from program</td>
</tr>
</tbody>
</table>
We recognize additional resources required for student recruitment and other administrative duties, but these will be handled by existing departmental budgets.

Appendix A includes additional budgetary information per University Senate policy 51-04.

13. SPACE
There are no new requests for additional space related to this program.

14. POLICIES, REGULATIONS, AND RULES
All policies, regulations, and rules have been previously outlined, and are superseded by University policy (including Graduate School policies).

15. ACCREDITATION REQUIREMENTS
An assessment plan for the evaluation of the proposed PhD program will be developed in parallel with the assessment plan for the MS degree, as required by the Michigan Tech Graduate School. Developing the assessment plans is scheduled to be complete by December 2017.

16. INTERNAL STATUS OF THE PROPOSAL
This proposal has been preliminarily reviewed and modified in consultation with the KIP department faculty, KIP graduate director, and KIP chair. We have also received feedback from the Dean of the College of Sciences and Arts, College of Sciences and Arts College Council, Deans Council, Dean of the Graduate School, and Graduate Faculty Council. We are now seeking review and feedback from Provost and University Senate.

17. PLANNED IMPLEMENTATION DATE
We aim to have this degree available in Fall 2017.

Introduced to Senate:
Adopted by Senate:
Approved by Administration:
Approved by Board of Control:
VI. REPORTS

A. University Senate Report – Dr. Martin Thompson, President
B. Undergraduate Student Government Report –
   Mr. Samuel Casey, President
C. Graduate Student Government Report – Mr. William Lytle, President
University Senate Report

Presented to the Board of Trustees
April 28, 2017

Marty Thompson, President
University Senate

Pushpa Murthy, Dean, Graduate School. Graduate Programs Assessment. Accelerated masters program.

Ann Kitalong-Will, Chair, Steering Committee, Civility Statement. Classroom and professional conduct.

Ellen Horsch, VP Administration. Parental Leave Policy.

Proposal 10-17: Resolution in Support of our International Colleagues and Students
Reports

➢ **Paul Bergstrom, Chair, Committee on Academic Tenure, Promotion and Reappointment**

Recommendations to improve CATPR process.
Proposal 09-16: Proposed Revisions to Board of Trustees Policy 6.4

➢ **W. Charles Kerfoot, Ad-Hoc Textbook Committee**

Working with CTL and the Library
Workshop discussing textbook alternatives. Using the vast array of technologies.
Senate-funded research into tangible solutions

➢ **Cayce Will, IT Committee**

Reports

➢ Ellen Marks, Director, Library
Update on journal costs. Dialogue with publishers.

➢ Shane Mueller, Administrative Policy Committee
Evaluation of President Mroz and a Senate self-evaluation.

➢ Jay Meldrum, Executive Director, KRC. Sustainability and Recycling.


➢ Jacob Guter, Fringe Benefits Committee
Senate approved Proposals

Academic Programs (7)

• Concentration in Electric Power Engineering as part of the degree Bachelor of Science in Electrical Engineering
• Minor in Naval Systems Engineering
• Laptop Requirement for Students in Engineering Fundamentals First-Year Courses
• Doctor of Philosophy Degree Program in Integrative Physiology
• Undergraduate Minor Program Proposal Bioethics Minor
• Graduate Certificate in Automotive Systems and Controls
• Revisions to the Accelerated Master's Program
Senate approved Proposals

Assessment

• Proposal 29-16: Proposal to Formally Establish Assessment Liaisons in all Units Mandated to Participate in the Assessment Process

Online/Distance Education

• Proposal 18-17: Online Course Examination Policies and Procedures.
  • SARA compliance
Senate approved Proposals

Administrative Policy Revisions (4)

• Evaluation Procedures for Department Chairs and School Deans“
  • Based on committee feedback.
  • Part of a broader program to assess and evaluate the effectiveness of procedures/policies (Policy 506.1.1, XIV)

• Review and Reappointment of Deans of Colleges
• Search Procedures for Dean of the Graduate School
• Search Procedure for University Administrators
Senate approved Proposals

Revisions to the Senate Constitution and Revisions to the Bylaws

• Proposal 19-17: Revision to Senate Constitution
  • Approx. 45% response rate
  • 70% approval
  • 25% voted to abstain

• Proposal 22-17: Revision to Bylaws
Revisions to the Senate Constitution

• Define when the ‘term of office’ commences.
• Define who can waive term limits of senators.
• Minor edits, clarifications, updated terminology, etc.
Board of Trustees Update

Mitchell Sanford, President
4/28/2017
New Executive Board

Vice President
Hattie Kinnisten

Treasurer
Joshua Borkowski

Secretary
Melanie Thomas
Goals for 2017-2018

Re-brand USG as more than a piggy bank

Increase outreach to students

Increase Transparency
Starting Out

Fill all body positions

2 open positions after election

Select committee chairs

New USG vision
Re-Brand USG

USG is more than a bank

Help advertise student events

Encourage student initiative submissions
Increasing Student Outreach

RFID polling station

Continue and revamp meet your organization initiative

Campus pop-up office hours
Increase Transparency

Update social media with key decisions

Better explain monetary decisions to clubs

Have initiative status updates on social media
Questions?
Graduate Student Government
of Michigan Tech

Presented by
William Lytle and Hossein Tavakoli

April 28th, 2017

Board of Trustees
Michigan Technological University
Review of Year

❖ Events Hosted
❖ Sponsored Activities
❖ GSG initiatives
❖ Works in progress
❖ 2017-2018 Team
❖ 2017-2018 Vision
Events Hosted

Graduate Research Colloquium
February 15-16, 2017 8am-4pm

All activities take place in the MUB Ballroom. 
Free and open to the public.

More information can be found at:
http://gsg.students.mtu.edu/activities/grc/

LUNCH N LEARN
EFFECTIVE ORAL AND POSTER PRESENTATIONS

Next Tuesday
February 7th
Noon – 1 PM
MUB Ballroom A

Menu
Sandwich Buffet
Fruit Salad
Chips
Cookies
Iced Tea

*Assorted Meat and Vegetarian Options Available

GRADUATE STUDENT GOVERNMENT
Events Hosted
Sponsored Activities

Worked with Graduate School to offer 174 travel grants to students attending or presenting at conferences valued at $40,000

Outstanding Merit Awards

Cultural Events
Review of Year

Areas we improved:
1. Emergency fund
2. Cultural event committee
3. Co-tenant rental agreement
4. GSG internal evaluations
5. Food waste
6. Sustainability
7. Housing
8. Transportation
9. Portrait of 2045

Bonuses:
- Executive Order response
- IPDC Resolution
- USG, US, & BOT
- Printer in Daniel Heights
Review of Year

To Do:
- Diversity
- Sustainability
- Housing
- Transportation
- Health insurance
- Build student capacity
- Printer in 8th floor of Dow
A kind thanks to our team of student volunteers, faculty, staff, community members and BOT.

Please Welcome:

President: Hossein Tavakoli
Vice-President: Joshua Marshall
Secretary: Jenny Dunn
Treasurer: Niranjan Miganakallu
Social chair: Katy Roose
Academic chair: Lavanya R. Kumar
Public Relations chair: Leonid Surovitsky
Vision & Goals

Vision- Serving our diverse group of students and MTU community to find the support, governance systems, and encouragement to thrive personally, academically, and professionally.
## Goals and Action Objectives

### Environmental and Sustainability

<table>
<thead>
<tr>
<th>Goals</th>
<th>Action Objectives For 2017-2018</th>
</tr>
</thead>
</table>
| • Sustainability University Strategic Plan  
• Public Engagement  
• Zero Waste  
• 100% Renewable Energy | • Developing Sustainability Assessment Tool  
• Evaluate Contracts to Purchase Energy through Alternative Energy Supplier (AES)  
• Support Recycling Program Projects  
• Explore Sustainable Purchasing Policies  
• Composting – Investigating Several Alternatives |
| Areas of Interest | Sustainability Scorecard  
• Alternative Energy Options  
• Recycling  
• Food waste |
# Goals and Action Objectives

## Social

<table>
<thead>
<tr>
<th>Goals</th>
<th>Quality of life for our diverse faculty, staff, students and community</th>
</tr>
</thead>
</table>
| Areas of Interest | • Diversity and Inclusion  
• Jobs/internships for Grad Students  
• Cross-cultural communication  
• Encouraging a work-life balance |
| Objectives For 2017-2018 | • Support International students issues  
• Annual/semesterly Alumni Events  
• Mentorship programs between undergrad-grad and grad-alumni |
Goals and Action Objectives

## Campus Resources

<table>
<thead>
<tr>
<th>Goals</th>
<th>A high quality of life for our diverse faculty, staff, students and community</th>
</tr>
</thead>
</table>
| Areas of Interest             | • Transportation  
|                               | • Housing  
|                               | • Healthcare  
|                               | • Emergency loans |
| Objectives For 2017-2018      | • Transportation Planning  
|                               | • Housing Alternatives  
|                               | • Nonprofit Aux. Services  
|                               | • Graduate Student Emergency Fund Program |
## Economic

### Goals
Balanced budgets that allow for strategic growth and consistent service to the community, state, country and globe.

### Areas of Interest
- Increased student population based on 2045 vision
- Unsupported student ratios
- Tuition Rates
- Health Insurance Rates
- Financial relief programs for students

### Objectives For 2017-2018
- Investment plans for Surplus Budget
- Re-evaluate budgetary expenditures
- Find matching donations for improvement projects
- Fundraising for added programs and services
VII. INFORMATIONAL ITEMS

A. Analysis of Investments
B. University Issued Bond Balances
C. Research and Sponsored Programs Report
D. Advancement and Alumni Engagement Report
E. Recent Media Coverage
F. Employee Safety Statistics
VII-A. ANALYSIS OF INVESTMENTS

Attached are analyses of investments as of June 30, 2016 to March 31, 2017.
MICHIGAN TECH UNIVERSITY
INVESTMENT PORTFOLIO
JUNE 30, 2016 THROUGH MARCH 31, 2017

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$234,115</td>
<td>$306,474</td>
<td>$72,359</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

**Equity Funds:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Delaware Value Fund</td>
<td>1,480,858</td>
<td>2,201,461</td>
<td>720,603</td>
<td>6.2%</td>
</tr>
<tr>
<td>Vanguard Extended Market Index Fund</td>
<td>2,278,142</td>
<td>2,666,450</td>
<td>388,308</td>
<td>18.4%</td>
</tr>
<tr>
<td>Vanguard 500 Index Fund</td>
<td>8,575,705</td>
<td>9,656,192</td>
<td>1,080,487</td>
<td>14.3%</td>
</tr>
<tr>
<td><strong>Total Equity Funds</strong></td>
<td>12,334,705</td>
<td>14,524,103</td>
<td>2,189,398</td>
<td></td>
</tr>
</tbody>
</table>

**Fixed Income Funds:**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lord Abbett Bond Debenture Fund</td>
<td>7,527,635</td>
<td>7,910,896</td>
<td>383,261</td>
<td>8.7%</td>
</tr>
<tr>
<td>Lord Abbett Short Duration Income Fund</td>
<td>7,523,781</td>
<td>7,437,301</td>
<td>(86,480)</td>
<td>1.8%</td>
</tr>
<tr>
<td><strong>Total Fixed Income Funds</strong></td>
<td>15,051,416</td>
<td>15,348,197</td>
<td>296,781</td>
<td></td>
</tr>
</tbody>
</table>

**Total**

| $27,620,236 | $30,178,774 | $2,558,538 | 9.0% |

**Current Asset Allocation**

- **Money Market, 1.0%**
- **Fixed Income, 50.9%**
- **Equities, 48.1%**
VII-B. UNIVERSITY ISSUED BOND BALANCES

Attached is an analysis of net revenues, debt retirement, and trustee reserve funds for University Bonded Operations for the period ended March 31, 2017.
## MICHIGAN TECH UNIVERSITY
### OUTSTANDING BALANCES ON BOND ISSUANCES
### MARCH 31, 2017

<table>
<thead>
<tr>
<th>Bonds Outstanding</th>
<th>Long-Term Outstanding Amount</th>
<th>Current Outstanding Amount</th>
<th>Total Outstanding</th>
<th>Original Issue Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Series 2008 Bond Issue</strong></td>
<td>$ 5,090,000</td>
<td>$</td>
<td>$ 5,090,000</td>
<td>$ 15,880,000</td>
</tr>
<tr>
<td>(maturity 2038)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchase of UPPCO Building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial Funding of KRC Building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MUB Ballroom Renovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Series 2008 Bond Issue</strong></td>
<td>15,180,000</td>
<td>420,000</td>
<td>15,600,000</td>
<td>18,235,000</td>
</tr>
<tr>
<td><strong>Series 2009A Bond Issue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(maturity 2039)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Student Apartment Building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial Funding of KRC Building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Series 2009 Bond Issue</strong></td>
<td>8,120,000</td>
<td>220,000</td>
<td>8,340,000</td>
<td>10,975,000</td>
</tr>
<tr>
<td><strong>Series 2010A Bond Issue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(maturity 2040)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Lakes Research Center</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.E. Seaman Mineral Museum</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KRC Building Purchase (Blizzard Building)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Safety Improvements on Campus</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Total Series 2010 Bond Issue</strong></td>
<td>27,660,000</td>
<td>1,255,000</td>
<td>28,915,000</td>
<td>33,070,000</td>
</tr>
<tr>
<td><strong>Series 2012A Bond Issue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(maturity 2034)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Refunding of 2003 &amp; 2004 Fixed Rate Bond Issues</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDC Ice Plant and Partial Roof of SDC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Series 2012 Bond Issue</strong></td>
<td>12,025,000</td>
<td>765,000</td>
<td>12,790,000</td>
<td>14,265,000</td>
</tr>
<tr>
<td><strong>Series 2013A Bond Issue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(maturity 2036)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refunding 2006 Bond Issue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refunding partial 2008 Bond Issue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Series 2013 Bond Issue</strong></td>
<td>23,435,000</td>
<td>435,000</td>
<td>23,870,000</td>
<td>24,295,000</td>
</tr>
<tr>
<td><strong>Series 2015A Bond Issue</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(maturity 2046)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daniell Heights Renovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Campus Dining Renovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel Storage Tank Facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical Storage Facility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemistry Labs Renovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT and Safety Systems Upgrades</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McNair Hall Bathrooms Renovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Series 2015 Bond Issue</strong></td>
<td>91,510,000</td>
<td>3,095,000</td>
<td>94,605,000</td>
<td>116,720,000</td>
</tr>
</tbody>
</table>

**Total - All Bond Issues**

$ 91,510,000 $ 3,095,000 $ 94,605,000 $ 116,720,000
VII-C. RESEARCH AND SPONSORED PROGRAMS REPORT

A report of contracts and grants is attached hereto.

This is for the Board's information.
### Sponsored Awards
#### Fiscal Year 2017
##### 3rd Quarter
##### Ended March 31, 2017
*****TOTAL: $44,137,186

<table>
<thead>
<tr>
<th>Sponsor</th>
<th>FY '17 as of 3/31</th>
<th>FY '16 as of 3/31</th>
<th>FY '17 as of 3/31</th>
<th>FY '16 as of 3/31</th>
<th>Variance $</th>
<th>Variance %</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASA</td>
<td>47</td>
<td>61</td>
<td>19</td>
<td>13</td>
<td>1,519,130</td>
<td>1,134,350</td>
</tr>
<tr>
<td>National Science Foundation</td>
<td>153</td>
<td>162</td>
<td>38</td>
<td>47</td>
<td>7,005,727</td>
<td>5,707,496</td>
</tr>
<tr>
<td>US Department of Agriculture</td>
<td>57</td>
<td>35</td>
<td>29</td>
<td>16</td>
<td>2,780,051</td>
<td>1,295,037</td>
</tr>
<tr>
<td>US Department of Education</td>
<td>77</td>
<td>33</td>
<td>75</td>
<td>47</td>
<td>9,831,297</td>
<td>6,546,594</td>
</tr>
<tr>
<td>US Department of Education</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>329,907</td>
<td>92,155</td>
</tr>
<tr>
<td>US Department of Energy</td>
<td>32</td>
<td>30</td>
<td>9</td>
<td>10</td>
<td>1,685,759</td>
<td>2,141,734</td>
</tr>
<tr>
<td>US Department of Transportation</td>
<td>12</td>
<td>13</td>
<td>17</td>
<td>15</td>
<td>2,856,231</td>
<td>1,007,636</td>
</tr>
<tr>
<td>Other Federal Agencies*</td>
<td>34</td>
<td>41</td>
<td>26</td>
<td>17</td>
<td>1,735,309</td>
<td>794,893</td>
</tr>
<tr>
<td>Federal Agency Total</td>
<td>436</td>
<td>429</td>
<td>229</td>
<td>180</td>
<td>32,534,777</td>
<td>20,115,844</td>
</tr>
<tr>
<td>State of Michigan</td>
<td>21</td>
<td>36</td>
<td>11</td>
<td>20</td>
<td>754,878</td>
<td>2,917,420</td>
</tr>
<tr>
<td>Industrial</td>
<td>167</td>
<td>149</td>
<td>154</td>
<td>149</td>
<td>6,176,321</td>
<td>6,145,001</td>
</tr>
<tr>
<td>Foreign</td>
<td>13</td>
<td>18</td>
<td>13</td>
<td>14</td>
<td>1,087,578</td>
<td>722,054</td>
</tr>
<tr>
<td>All Other Sponsors</td>
<td>69</td>
<td>58</td>
<td>26</td>
<td>22</td>
<td>1,193,959</td>
<td>1,452,638</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>706</strong></td>
<td><strong>690</strong></td>
<td><strong>433</strong></td>
<td><strong>385</strong></td>
<td><strong>41,757,513</strong></td>
<td><strong>31,352,957</strong></td>
</tr>
<tr>
<td>Gifts**</td>
<td>N/A</td>
<td>N/A</td>
<td>231</td>
<td>271</td>
<td>2,366,672</td>
<td>6,753,353</td>
</tr>
<tr>
<td>Crowd Funding</td>
<td>N/A</td>
<td>N/A</td>
<td>10</td>
<td>20</td>
<td>13,001</td>
<td>20,450</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>706</strong></td>
<td><strong>690</strong></td>
<td><strong>674</strong></td>
<td><strong>676</strong></td>
<td><strong>44,137,186</strong></td>
<td><strong>38,126,760</strong></td>
</tr>
</tbody>
</table>


**Gifts represent non-contractual funding from corporations, foundations, associations and societies in support of academic programs, scholarships/fellowships, student design & enterprise, research, youth programs and special programs.
Formal Session of the Board of Trustees - VII. Informational Items

Vice President for Research
Fiscal Year 2017
3rd Quarter
Ended March 31, 2017

TOTAL: $44,137,186

Percentages of Tenured & Tenure Track Faculty
(as either PI or Co-PI)

Submit Proposals since 07/01/2016
63.2%

On Active Projects as of 03/31/2017
57.3%

SPO & IIE Metrics1

<table>
<thead>
<tr>
<th></th>
<th>Administration</th>
<th>College of Engineering</th>
<th>College of Sciences &amp; Arts</th>
<th>Great Lakes Research Center</th>
<th>Keweenaw Research Center</th>
<th>Michigan Tech Research Institute</th>
<th>Pavlis Honors College</th>
<th>School of Business &amp; Economics</th>
<th>School of Forest Resources &amp; Env Science</th>
<th>School of Technology</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proposals Submitted</td>
<td>11</td>
<td>316</td>
<td>125</td>
<td>6</td>
<td>64</td>
<td>71</td>
<td>1</td>
<td>4</td>
<td>102</td>
<td>6</td>
<td>706</td>
</tr>
<tr>
<td>Awards Received</td>
<td>120</td>
<td>252</td>
<td>49</td>
<td>8</td>
<td>76</td>
<td>53</td>
<td>35</td>
<td>5</td>
<td>71</td>
<td>5</td>
<td>674</td>
</tr>
<tr>
<td>Federal</td>
<td>80,994</td>
<td>10,070,798</td>
<td>4,639,566</td>
<td>-</td>
<td>4,928,180</td>
<td>1,325,716</td>
<td>-</td>
<td>97,521</td>
<td>-</td>
<td>-</td>
<td>24,363,554</td>
</tr>
<tr>
<td>Federal Pass-Through</td>
<td>115,520</td>
<td>4,218,203</td>
<td>587,024</td>
<td>180,147</td>
<td>29,714</td>
<td>2,872,220</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>8,171,223</td>
</tr>
<tr>
<td>Foreign</td>
<td>-</td>
<td>861,733</td>
<td>135,845</td>
<td>-</td>
<td>-</td>
<td>100,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,097,578</td>
</tr>
<tr>
<td>Gifts</td>
<td>890,387</td>
<td>714,917</td>
<td>419,352</td>
<td>3,750</td>
<td>53,183</td>
<td>-</td>
<td>226,083</td>
<td>10,000</td>
<td>13,500</td>
<td>35,500</td>
<td>2,366,672</td>
</tr>
<tr>
<td>Crowd Funding</td>
<td>555</td>
<td>2,785</td>
<td>4,014</td>
<td>1,850</td>
<td>-</td>
<td>-</td>
<td>3,797</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13,001</td>
</tr>
<tr>
<td>Industry</td>
<td>162,478</td>
<td>2,508,050</td>
<td>-</td>
<td>-</td>
<td>2,614,109</td>
<td>118,221</td>
<td>-</td>
<td>19,300</td>
<td>754,163</td>
<td>-</td>
<td>6,176,321</td>
</tr>
<tr>
<td>Other</td>
<td>12,000</td>
<td>237,124</td>
<td>549,671</td>
<td>2,000</td>
<td>-</td>
<td>231,776</td>
<td>15,000</td>
<td>-</td>
<td>146,388</td>
<td>-</td>
<td>1,193,959</td>
</tr>
<tr>
<td>State of MI</td>
<td>110,190</td>
<td>644,688</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>754,878</td>
</tr>
<tr>
<td>Total $ by Division</td>
<td>1,572,124</td>
<td>19,258,298</td>
<td>9,335,472</td>
<td>187,747</td>
<td>7,625,186</td>
<td>4,647,933</td>
<td>342,279</td>
<td>33,097</td>
<td>4,249,822</td>
<td>85,228</td>
<td>44,137,186</td>
</tr>
<tr>
<td>Percent Change</td>
<td>-63.9%</td>
<td>38.7%</td>
<td>-23.4%</td>
<td>N/A</td>
<td>72.9%</td>
<td>-2.1%</td>
<td>21.6%</td>
<td>-66.8%</td>
<td>62.5%</td>
<td>352.5%</td>
<td>15.8%</td>
</tr>
<tr>
<td>Disclosures Received2</td>
<td>-</td>
<td>77.27%</td>
<td>18.18%</td>
<td>-</td>
<td>-</td>
<td>4.55%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>22</td>
</tr>
<tr>
<td>Nondisclosure Agreements</td>
<td>1</td>
<td>40</td>
<td>12</td>
<td>-</td>
<td>11</td>
<td>9</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>75</td>
</tr>
<tr>
<td>Patents Filed or Issued2</td>
<td>-</td>
<td>61.54%</td>
<td>30.77%</td>
<td>-</td>
<td>7.69%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>13</td>
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<tr>
<td>License Agreements</td>
<td>-</td>
<td>9</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>55.17%</td>
<td>27.59%</td>
<td>-</td>
<td>13.79%</td>
<td>-</td>
<td>-</td>
<td>3.45%</td>
<td>-</td>
<td>-</td>
<td>311,184</td>
</tr>
</tbody>
</table>

1 Combined Metrics from both the Sponsored Programs Office (SPO) and Innovation & Industry Engagement (IIE)
2 Percentages reflect the proportional contribution from each Division (calculated by dividing the sum of the fractional contributions of all inventors for each unit by the total number of inventors)
### Sponsored Awards
- Industry COMBINED
- Fiscal Year 2017
- 3rd Quarter
- Ended March 31, 2017

**TOTAL:** $11,936,417

#### Proposals Submitted

<table>
<thead>
<tr>
<th>Industry Segment</th>
<th>FY '17 as of 3/31</th>
<th>FY '16 as of 3/31</th>
<th>FY '17 as of 3/31</th>
<th>FY '16 as of 3/31</th>
<th>FY '17 as of 3/31</th>
<th>FY '16 as of 3/31</th>
<th>Variance</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automotive</td>
<td>67</td>
<td>63</td>
<td>127</td>
<td>132</td>
<td>5,159,545</td>
<td>4,169,882</td>
<td>989,663</td>
<td>23.7%</td>
</tr>
<tr>
<td>Business &amp; Economics</td>
<td>2</td>
<td>4</td>
<td>16</td>
<td>21</td>
<td>456,639</td>
<td>174,730</td>
<td>281,909</td>
<td>161.3%</td>
</tr>
<tr>
<td>Chemical</td>
<td>14</td>
<td>14</td>
<td>24</td>
<td>27</td>
<td>619,246</td>
<td>477,477</td>
<td>141,769</td>
<td>29.7%</td>
</tr>
<tr>
<td>Civil</td>
<td>9</td>
<td>8</td>
<td>17</td>
<td>21</td>
<td>177,651</td>
<td>816,475</td>
<td>-638,824</td>
<td>-78.2%</td>
</tr>
<tr>
<td>Consumer Products</td>
<td>20</td>
<td>20</td>
<td>33</td>
<td>45</td>
<td>528,261</td>
<td>740,048</td>
<td>-211,787</td>
<td>-28.6%</td>
</tr>
<tr>
<td>Defense &amp; Space</td>
<td>31</td>
<td>22</td>
<td>32</td>
<td>33</td>
<td>1,586,503</td>
<td>1,270,857</td>
<td>315,646</td>
<td>24.8%</td>
</tr>
<tr>
<td>Energy</td>
<td>14</td>
<td>5</td>
<td>38</td>
<td>33</td>
<td>713,083</td>
<td>732,400</td>
<td>-19,317</td>
<td>-2.6%</td>
</tr>
<tr>
<td>Environmental</td>
<td>8</td>
<td>6</td>
<td>12</td>
<td>13</td>
<td>123,329</td>
<td>80,559</td>
<td>42,770</td>
<td>53.1%</td>
</tr>
<tr>
<td>Health</td>
<td>13</td>
<td>17</td>
<td>18</td>
<td>20</td>
<td>502,658</td>
<td>238,608</td>
<td>264,050</td>
<td>110.7%</td>
</tr>
<tr>
<td>Industrial Engineering</td>
<td>9</td>
<td>8</td>
<td>16</td>
<td>24</td>
<td>171,332</td>
<td>180,020</td>
<td>-8,688</td>
<td>-4.8%</td>
</tr>
<tr>
<td>IT Services</td>
<td>7</td>
<td>8</td>
<td>13</td>
<td>13</td>
<td>696,069</td>
<td>404,667</td>
<td>291,402</td>
<td>72.0%</td>
</tr>
<tr>
<td>Mining &amp; Metals</td>
<td>14</td>
<td>12</td>
<td>27</td>
<td>31</td>
<td>389,852</td>
<td>339,383</td>
<td>50,469</td>
<td>14.9%</td>
</tr>
<tr>
<td>Other</td>
<td>11</td>
<td>5</td>
<td>23</td>
<td>15</td>
<td>350,116</td>
<td>471,909</td>
<td>-121,793</td>
<td>-25.8%</td>
</tr>
<tr>
<td>Technology</td>
<td>10</td>
<td>9</td>
<td>10</td>
<td>12</td>
<td>462,133</td>
<td>281,036</td>
<td>181,097</td>
<td>64.4%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>229</strong></td>
<td><strong>201</strong></td>
<td><strong>406</strong></td>
<td><strong>430</strong></td>
<td><strong>11,936,417</strong></td>
<td><strong>10,378,051</strong></td>
<td><strong>1,558,366</strong></td>
<td>15.0%</td>
</tr>
</tbody>
</table>

*Gifts represent non-contractual funding from corporations, foundations, associations and societies in support of academic programs, scholarships/fellowships, student design & enterprise, research, youth programs and special programs.

**Gift numbers include Industry gifts ONLY, not others including Association or Society gifts.
Michigan Technological University
Total Research Expenditures by College/School/Division
Fiscal Year 2017 & 2016
As of March 31, 2017 and March 31, 2016

<table>
<thead>
<tr>
<th>College/School/Division</th>
<th>FY2017</th>
<th>FY2016</th>
<th>Variance</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration*</td>
<td>2,819,246</td>
<td>3,330,453</td>
<td>(511,207)</td>
<td>-15.3%</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>17,796,598</td>
<td>20,784,905</td>
<td>(2,988,307)</td>
<td>-14.4%</td>
</tr>
<tr>
<td>College of Science &amp; Arts</td>
<td>12,507,981</td>
<td>11,717,273</td>
<td>790,708</td>
<td>6.7%</td>
</tr>
<tr>
<td>Great Lakes Research Center</td>
<td>108,305</td>
<td>N/A</td>
<td>108,305</td>
<td>N/A</td>
</tr>
<tr>
<td>Pavlis Honors College</td>
<td>215,057</td>
<td>175,769</td>
<td>39,288</td>
<td>22.4%</td>
</tr>
<tr>
<td>Keweenaw Research Center (KRC)</td>
<td>5,251,037</td>
<td>5,031,408</td>
<td>219,629</td>
<td>4.4%</td>
</tr>
<tr>
<td>Michigan Tech Research Institute (MTRI)</td>
<td>6,089,643</td>
<td>6,326,435</td>
<td>(236,792)</td>
<td>-3.7%</td>
</tr>
<tr>
<td>School of Business &amp; Economics</td>
<td>1,136,021</td>
<td>1,276,976</td>
<td>(140,955)</td>
<td>-11.0%</td>
</tr>
<tr>
<td>School of Forest Resources &amp; Environmental Science</td>
<td>4,293,538</td>
<td>3,823,224</td>
<td>470,314</td>
<td>12.3%</td>
</tr>
<tr>
<td>School of Technology</td>
<td>419,228</td>
<td>561,402</td>
<td>(142,174)</td>
<td>-25.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>50,636,654</strong></td>
<td><strong>53,027,845</strong></td>
<td><strong>(2,391,191)</strong></td>
<td><strong>-4.5%</strong></td>
</tr>
</tbody>
</table>

*Includes the Vice Presidents, Provost, and others who report to a VP, Provost or the President. Except for the research institutes that report to the VPR.
VII-D. ADVANCEMENT AND ALUMNI ENGAGEMENT REPORT

Attached is a report from Dr. Les Cook, Vice President for Student Affairs and Advancement, on the university’s advancement and alumni relations activities.

This is for the Board's information.
Advancement and Annual Giving

- A total of $46.8 million was raised for Michigan Tech from July 1, 2016 through March 31, 2017—134% of the fundraising goal of $35.0 million for FY 2017.

- Major/Planned Giving raised $32.8 million in the first nine months of FY 2017—187% of its $17.5 million FY goal.
  - Includes $25 million documented by a planned gift donor who wants to remain anonymous
  - Remaining pending gift asks for this category total $41.4 million as of March 31, 2017

- The planned giving registry totals $175.1 million as of March 31, 2017.
  - $109.1 million (62%) is endowed
  - $154.6 million (88%) is revocable
  - $1.6 million was realized in this FY to date
  - $67.8 million is the actuarial expectancy for the next 15 years

- The Advancement team made a total of 716 personal visits in the first nine months of FY 2017—75% of the 960 visits goal for the entire twelve months.

- Annual giving total is at $2.10 million toward our goal of $2.75 million (77% of goal).

- Annual fund total $1.185 million toward our goal of $1.5 million (79% of goal).

- Welcomed Sarah Williams our new Marketing Specialist and Marney Kloote our new Donor Relations Officer and congratulated Linda Korpela on her retirement after 17 years with Michigan Tech.

- Advancement, in conjunction with Benefit Services, is offering another series of financial planning sessions for employees, retirees, and interested community supporters: Estate Planning Basics by Michael Kolasa on April 10 and Social Security Basics by Joanne Markham on April 11.

- Adam Johnson (Senior Advancement Officer) chaperoned 20 students who traveled to Silicon Valley to visit entrepreneurs, inventors, managers and companies including Google, Ford, Netflix, handshake and incubators like Plug&Play. The week was sponsored by Ford and brought together over 60 alumni, students, faculty and staff.

Alumni Engagement

- My Michigan Tech Portal is a new online tool launched on January 19 allowing alumni to search the Alumni directory, update their information, and share their news with classmates in the portal. Since its launch, 1,110 alumni have provided 1,975 pieces of updated information for their Banner record.
• Huskies@Work is a corporate alumni chapter pilot project. Alumni engagement staff are working with steering committees at Kohler and Ford on the creation of a corporate chapter to connect Huskies within each organization and develop additional support for Tech. Future pilot programs under consideration for: 3M, Caterpillar, Consumers Energy/CMS, Continental, Cummins, Dow, DTE Energy, Fiat Chrysler Automobiles (FCA), General Motors, IBM, Kimberly-Clark and Whirlpool.

• Developing an alumni communication preferences online survey. The goal of the survey is to read the pulse of our alumni regarding the effectiveness of our current communications and ask for feedback on where we could improve. Tentative deployment April 14th, reminder April 28 closing on May 1.

• Reunion August 3-5
  o Honoring Groups - Women of Michigan Tech, Michigan Tech Student Foundation & Men's Basketball, Pep Band, SFRES special events
VII-E. RECENT MEDIA COVERAGE

Included herein are recent news items that have appeared throughout the country.

This is for the Board’s information.
News Media Report
University Marketing & Communications
February 15 – April 7, 2017

News by Category
Athletics 1,284
Alumni 514
Research 978
Student Life 134
Business/People 159
Events 1,620
Hometown News 121
Curricula/Programs 488
Other 241

Total Traditional Media 5,539

Social Media
Michigan Tech’s social media followers have increased dramatically over the past year. Here are the numbers from February 10 through April 7, 2017

Facebook 4,466,188 post impressions | 30,185 post clicks
Twitter 229,187 post impressions | 924 post clicks
Instagram 16,992 photo/video likes | 97 comments
LinkedIn 1,153 pageviews | 535 new followers
YouTube 21,220 video views | 35,500 minutes watched | 1,545 total subscribers
Snapchat 1200 friends; sponsored geofilters: 3.4K uses/10.5K impressions
Pinterest 184 followers

A Few Examples
US News & World Report, Crain’s Detroit Business, the Detroit News and Associated Press wire service are among the news outlets that reported on Michigan Tech President Glenn Mroz’s plan to return to the faculty in 2018.

Science 360, a science news website published by the National Science Foundation, featured the fluorescent probe research of Professor of Chemistry Haiying Liu as one of its headline stories.

The London Daily Mail published an article about the eruption of a large Russian volcano. The article quoted Michigan Tech volcano expert Simon Carn, associate professor in the Department of Geological and Mining Engineering and Sciences.

Upper Michigan Source published a news story about the recent death of Michigan Tech alumnus and philanthropist Dick Henes.

Inside Higher Ed, a national higher education website, posted Michigan Tech’s Spring Commencement speaker’s name.

Copper Country Today, a live radio interview program broadcast on WOLV-FM, WHKB-FM and WCCY-AM/FM, aired a World Water Day interview with Latika Gupta, an assistant professor in the School of Business; Daisuke Minakata, an assistant professor of civil and environmental engineering, and Joan Chadde, coordinator of educational programs for civil and environmental engineering.

Nature World News published an article about the National Aeronautics and Space Administration’s (NASA) two new Space Technology Research Institutes, one of which is at Michigan Tech.

Voice of America interviewed Tim Scarlett, associate professor of archaeology and anthropology and head of Tech’s industrial archaeology program, on a program called “Indiana Jones: Myth, Reality and 21st Century Archaeology.”

CBS Detroit used Joshua Pearce’s 3-D printers as examples in a program called “The Future of Manufacturing: What’s Next.” Pearce is an associate professor of materials science and engineering.

Midwest Living magazine published a feature on places to see on the Upper Peninsula, including Michigan Tech’s A. E. Seaman Mineral Museum.

Michigan Radio reported on Tech’s Winter Carnival and published two Carnival photos on its website.
Popular Mechanics, the International Business Times and many other news outlets published stories about the discovery and characterization of three new uranium minerals by a Michigan Tech team.

The Chicago Tribune quoted alumna Trista Shieffer in a story about women automotive engineers. Shieffer is engineering group manager for noise and vibration in advanced vehicle development at General Motors.

CHARTS and GRAPHS
News by Media Chart

2/11/2017 to 4/10/2017
News Clips vs. Ad Value by Date

2/11/2017 to 4/10/2017
Sample Clippings

Michigan Tech president to step down next year

HOUGHTON — Michigan Technological University President Glenn Mroz has announced his intention to step down from that position and return to the faculty.

Mroz sent an open letter to the university community Wednesday saying he intends to step down on or after June 30, 2018.

He said he and the university leadership have been working on a succession plan for a while. He informed the university's board of trustees of his decision Tuesday.

"Communications like these often bring feelings of uncertainty, and with uncertainty sometimes comes a predilection to delay decision-making," Mroz said in the letter. "I have no intention of allowing Michigan Tech to lose its forward momentum. The university owes you nothing less."

Mroz is the third-longest serving current president among the public universities in Michigan. He became Michigan Tech's ninth president in 2004 after serving as dean of the School of Forest Resources and Environmental Science for four years.
Stunning footage shows a giant Russian volcano violently erupting for the first time in 250 YEARS

- The 7,103ft tall (2.2km high) Kambalny volcano is in the Kamchatka peninsula in the far east of Russia.
- The colossal volcano recently became active and spewed out a 60-mile-long ash plume visible from space.
- Snow-topped volcano last erupted and poured out lava during the reign of Catherine the Great in the 1700s.

By WILL STEWART FOR MAILONLINE
PUBLISHED: 05:53 EDT, 20 March 2017 | UPDATED: 05:15 EDT, 20 March 2017

This dramatic footage shows a Russian volcano awakening for the first time in 250 years.
Trump Proposal To Cut Great Lakes Funding Could Allow Pollution To Flourish

Cardinaie, who partners with the NOAA lab, said he fears the facility could be shut down if significant budget cuts are imposed.

NOAA did not return a request for comment. The EPA said in an email that it wasn't commenting at this point in the process.

Other scientists echoed Cardinaie's concerns.

"The loss of Great Lakes Restoration Initiative funding would be devastating to the health of the Great Lakes," said Guy Meadows, director of the Great Lakes Research Center at Michigan Technological University, which has received seven Great Lakes Restoration Initiative grants totaling $2.2 million.

Democrats and Republicans who represent the Great Lakes region also deplored the proposed cut.
Study details newly discovered mineral merelaniite

Further study of merelaniite and its intricate internal structure may eventually yield scientific applications.

By Brooks Hays | Oct. 31, 2016 at 12:24 PM

The newly discovered mineral merelaniite features an intricate structure of shiny, spindle-like whiskers. It is named for the mining region in Tanzania where it was found. Photo by Michigan Tech/John Jaskezak
US Senator Debbie Stabenow visits Michigan Tech

By Scott Mitchell (Mlive.com) Apr 01, 2017 | Updated: Apr 03, 2017

HOUGHTON, Mich. (WJUP) - US Senator Debbie Stabenow is in Upper Michigan this weekend.

After being in Marquette last night, Stabenow spent her afternoon in Houghton on Michigan Tech's campus. She first went over to the Great Lakes Center and then held a roundtable discussion with local energy experts to talk about the future of the energy sector in Michigan Tech.

Stabenow, who sits on the Senate Committee on Energy and Natural Resources, is a leader on energy issues in the Senate. During the roundtable, she discussed the importance of investing in clean energy and protecting the Great Lakes.

Stabenow also met with students and faculty at Michigan Tech to discuss her vision for the future of energy research and development. She emphasized the importance of collaboration between academia and industry to drive innovation and create new job opportunities in the energy sector.

After the roundtable, Stabenow attended a reception with local leaders and stakeholders to discuss the latest developments in energy policy and the role of Michigan Tech in advancing the state's energy economy.

Stabenow's visit to Upper Michigan comes at a time when the region is facing challenges in the energy sector. The state's power grid is aging, and many rural communities are struggling to access reliable and affordable energy.

Stabenow's visits to Marquette and Houghton are part of her ongoing efforts to support Michigan's energy sector and ensure that the state remains a leader in clean and sustainable energy.
Editorial: U.S. should play by fewer rules

The Detroit News  11:04 p.m. ET March 9, 2017

In just six weeks, the Trump administration has repealed 30 federal regulations. It's also put a freeze on all new and pending regulations. And it's required agencies to remove two old regulations for each new one proposed.

That should just be a warm-up lap in the reform of a federal regulatory code that's dizzying in size.

"The code is 178,800 pages, and over 100 million words, and there are over 1 million restrictions, words like 'shall,' 'must' and may rot," says James Broughel, public policy fellow at the Mercatus Center. "Where do we even begin?"

A good place to start, beyond Obamacare and the tax code, is the Dodd-Frank Act regulating the financial industry. As we wrote recently, Dodd-Frank Act needs deep revamping to restore the viability of small, community banks, to make mortgage lending in urban areas easier and to restore the risk to large, too-big-to-fail banks for making poor decisions.

Energy is another fertile area. Energy and fuel-efficiency regulations are too often regressive and disproportionately burden the poor. "These really aren’t achieving as much as they should be given their cost," Broughel says.

Research from Michigan Tech University in October found there’s no technical or safety rationale for regulations on solar energy, which would benefit businesses and consumers. It identified the potential U.S. market for plug-and-play solar energy.
VII-F. EMPLOYEE SAFETY STATISTICS

Included herein is a report from the Health and Safety Task Force and Human Resources.

This is for the Board's information.
# Employee Safety Statistics Year-to-Date

## January - March

<table>
<thead>
<tr>
<th>Category</th>
<th>Years</th>
<th>AFSCME</th>
<th>Faculty</th>
<th>Non-Exempt</th>
<th>POA</th>
<th>Professional</th>
<th>Temporary</th>
<th>UAW</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury Only w/Medical - No Loss Time</td>
<td>2016</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
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<tr>
<td></td>
<td>2017</td>
<td>0</td>
<td>0</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Lost Time Cases</td>
<td>2016</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>2</td>
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</tr>
<tr>
<td>Restricted Work Cases</td>
<td>2016</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>1</td>
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<td>0</td>
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<td></td>
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<tr>
<td>Occupational Safety and Health Administration (OSHA) Recordable Injuries (Total of above)</td>
<td>2016</td>
<td>2</td>
<td>1</td>
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<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
<td>5</td>
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<td>2017</td>
<td>3</td>
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<tr>
<td>Injury Loss Time</td>
<td>2016</td>
<td>34</td>
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<tr>
<td></td>
<td>2017</td>
<td>28</td>
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<tr>
<td>Restricted Work Days</td>
<td>2016</td>
<td>0</td>
<td>7</td>
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</tr>
<tr>
<td></td>
<td>2017</td>
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<tr>
<td>Total Work Hours</td>
<td>2016</td>
<td>66,656</td>
<td>214,144</td>
<td>31,452</td>
<td>3,596</td>
<td>236,061</td>
<td>17,316</td>
<td>53,375</td>
<td>622,600</td>
</tr>
<tr>
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<td>2017</td>
<td>81,323</td>
<td>252,343</td>
<td>40,727</td>
<td>4,602</td>
<td>287,592</td>
<td>16,870</td>
<td>61,158</td>
<td>744,615</td>
</tr>
<tr>
<td>Percentage of Work Hours</td>
<td>2016</td>
<td>10.7%</td>
<td>34.4%</td>
<td>5.1%</td>
<td>0.6%</td>
<td>37.9%</td>
<td>2.8%</td>
<td>8.6%</td>
<td>100.0%</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>10.9%</td>
<td>33.9%</td>
<td>5.5%</td>
<td>0.6%</td>
<td>38.6%</td>
<td>2.3%</td>
<td>8.2%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

OSHA has established specific calculations that enable the University to report the Recordable Injuries, Lost Time Case Rates and Frequency Rates. The Standard Base Rate (SBR) calculation is based on a rate of 200,000 labor hours which equates to 100 employees who work 40 hours per week for 50 weeks per year. Using the SBR allows the University to calculate their rate(s) per 100 employees.
VIII. OTHER BUSINESS
IX. PUBLIC COMMENTS
X. INFORMAL CLOSED SESSION FOR REVIEW OF PENDING LITIGATION
AND A PERIODIC PERSONNEL EVALUATION OF PRESIDENT MROZ
XI. ADJOURNMENT