## Student Success and Learning

**Objective:** Increase Ph.D. candidacy success and degree completion  
**Metric:** Increase completion rate by 25-30% over five years

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<th>Strategy/Goal</th>
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| Maintain current graduate student enrollment | •Concentrate effort on regional recruiting  
  •Reinstate on-site recruiting trips to regional institutions  
  •Establish relationships with PUI faculty - PUI symposium | •Maintain number of graduate students at 60 or more | •Increased TA pool by 50%  
  •Increased extramural funding |
| Recruit quality students over quantity students | •Raise admissions standards  
  •Targeted recruiting for individual faculty | •Greater percentage of new students with GPA >= 3.5 and/or higher GRE scores | •Recruiting stipend bonuses  
  •Travel funds for recruiting |
| Mentorship and support for the Chem/Biochem graduate students | •Assign faculty mentors to Graduate Student Association  
  •Facilitate professional development workshops for graduate students  
  •Faculty workshops on graduate student mentoring | •Increased participation of students in the GSA  
  •Increased retention rate | •Professional development support (funds for external workshop leaders; graduate school collaboration) |

**Objective:** Increase master level degrees  
**Metric:** New professional masters student degrees conferred in the next 5 years

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| Develop a self-supported professional non-thesis masters degree | •Develop curriculum requirements  
  •Evaluate impact on graduate courses  
  •Submit program proposal | •New graduate degrees conferred | •Modest resource needs anticipated - instructional resources |
| Align new professional masters to enable all Ph.D. students to obtain the degree along their career path | •Develop curriculum requirements to align with current Ph.D. track | •Ph.D. students obtain professional masters degree | •Faculty/Staff time |
### Objective: Increase service course student success
**Metric:** Decrease three-year average DFW rates by 10% from current rate over the next three years

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| Expand on the G2C program              | • Implement Instructor Learning Community for general and organic chemistry  
• Mentor instructors on pedagogy       | • Learning communities meet regularly                        | • Faculty/Staff time                    |
| Increase support for service course instruction | • Obtain permanent support for general and organic chemistry instruction (POP)  
• Provide TA support for all large service courses  
• Provide LA support for all large service courses | • New permanent instructional staff  
• Increased TA student interactions (recitations, etc) | • Professor of Practice position  
• 50% increase in TA pool  
• LA stipends                           |
| Standardize course expectations across multiple sections | • Learning communities design curriculum/standards and generate consensus syllabi  
• Provide consistent assessments across sections | • Consistent metrics across sections                   | • Faculty/Staff time  
• Facilities and TA personnel to administer assessments |
| Implement student resource center      | • Obtain space and funding for undergraduate student resource center in the next five years | • New resource center open                     | • Space and initial funding for computers/resources - may depend on new Dunbar Hall |
| Improve instruction                    | • Learning communities meet regularly  
• Encourage pedagogical collaboration  
• Continue to administer Student Achievement Learning Gains (SALG) assessment | • Increase achievement as demonstrated by the SALG   | • Faculty/Staff time                    |

### Objective: Increase undergraduate major retention and success
**Metric:** Decrease attrition rates of first year students by 25%

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| Determine reason for student attrition | • Statistical analysis of incoming student metrics vs success/attrition  
• Survey students who leave the program in the first year | • Identify contributing limiting factors                | • Staff time to implement surveys     |
| Focussed undergraduate major recruiting | • Implement new department committee to focus on undergraduate recruiting  
• Increase outreach to ND/MN high schools | • Increase proportion of incoming students with higher qualifications in five years | • Travel funds to visit schools       |
| Improve advising                       | • Develop advising plan for new students  
• Make faculty advising effort valued  
• Enact and enforce prerequisites for majors courses | • Implement advising plan within two years              | • Professional advisor staff position  
• Support for faculty advising in summer |
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| Involve majors in department activities | • Deploy a new Undergraduate Research Mentorship program  
• Host two social gatherings per year  
• Challenge chem/biochem club to do more activities and take on leadership roles | • 20% increase in chem/biochem club participation  
• 10% increase in undergraduate research participation over three years | • Funds for social gatherings  
• Research funds for URM |
| Develop comprehensive assessment plan | • Implement new department committee on assessment  
• Develop standardized assessment tools (testing?) | • Assessment plan in place by Fall 2017 | • Faculty/Staff time |

### Research and Scholarship

**Objective:** Increase scholarly activity  
**Metric:** Increase average per faculty peer reviewed publication rate by 20% over the next three years

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| Foster writing skills of graduate students | • Work with GSA to implement paper writing workshops  
• Utilize campus writing center resources  
• Evaluate student writing periodically in committee reports | • Student participation in workshops and training | • Faculty/Staff time |

### Objective: Increase extramural grant submission and success  
**Metric:** Increase proposal submissions by 50% over the next five years

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| Increase submission of multi-PI grant proposals | • Implement new departmental committee to focus on searching for opportunities and assist in developing research teams  
• Workshop on multi-PI proposal writing | • Submit at least one multi-PI / departmental proposal or white paper per year | • Resources to hold workshops |
| Implement curricular efficiencies to free up faculty time for proposal development | • Identify areas where GTAs can take more responsibility in instruction  
• Identify areas where additional instructional support staff can alleviate faculty burden | • Increased rate of proposal submission by 50% over five years | • 20% increase in GTA pool  
• Instructional support staff funding |
| Increase awareness among young faculty of proposal review process | • Encourage and nominate faculty for NSF/NIH/other review panels  
• Establish more formal mentoring plans for junior faculty  
• Facilitate new faculty visits to meet program officers | • Faculty participation on national review panels | • Faculty/Staff time  
• Travel funds for visits to national agencies |
| Facilitate grantsmanship | • Form mini peer review panels to pre-review proposals prior to submission | • Peer review panels active | • Faculty/Staff time |
### Objective: Foster inter-department, inter-college, and inter-university collaborations

**Metric:** Submit collaborative proposals and/or papers

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| Participate in collaborative symposia | • Participate in 2016 Kagoshima joint symposium  
• Participate in COBRE symposium  
• Participate in organization of 2017 ACS Regional Meeting | • Active participation in symposia | • Travel funds needed to send faculty and students to symposia |
| Foster inter-college and inter-department science exchange | • Organize science presentations with other colleges at least once a semester | • Meet and share science at least once a semester | • Faculty/Staff time |

### Objective: Increase national and international recognition

**Metric:** Faculty and students invited for special presentations and awards

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<td>Invite nationally influential speakers to NDSU</td>
<td>• Maintain active seminar program</td>
<td>• Host visiting speakers</td>
<td>• Travel and hosting funding needed to support seminar program</td>
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<tr>
<td>Increase publication rate</td>
<td>• See above</td>
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<tr>
<td>Nominate faculty and students for awards</td>
<td>• Identify and prepare for national/international award nomination deadlines</td>
<td>• Increased nominations</td>
<td>• Faculty/Staff time</td>
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<td>Encourage participation in international scientific meetings</td>
<td>• Develop travel program to assist faculty/student travel</td>
<td>• Increased international presentations</td>
<td>• Travel funds needed</td>
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### Objective: Safe and modern research space

**Metric:** Optimal design of safe and modern research space

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<td>Participate in planning and design of Dunbar II</td>
<td>• Work with Facilities Management, architects and departments</td>
<td>• Creation of a plan</td>
<td>• $50M and legislative approval</td>
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### Outreach and Engagement

**Objective:** Improve engagement with citizens beyond NDSU  
**Metric:** Increase number of direct interactions with citizens

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| Engage K-12 students                              | • Foster visits to K-12 classrooms  
• Develop web-based video segments on research targeted to age-appropriate classes for K-12 teachers to utilize in their classrooms | • Two schools visits annually  
• Educational web resources created within five years | • Resources to develop videos |
| Continue to provide research opportunities to high school students | • Continue to support and expand PICNICS  
• Continue to host Governor’s School students  
• Continue to participate in NATURE program | • Direct interaction with HS and undergraduate students in the department | • Research resources for students and faculty hosts |
| Encourage volunteers for Science Olympiad and Science Fair | • Continue to encourage faculty and students to participate in Science Olympiad and Science Fair | • Faculty and students participating | • Faculty/Staff time |
| Develop modern internet presence                  | • Update web page  
• Implement interactive areas of the web site to connect with citizens and alumni | • New web site deployed | • Funds to pay for web development |
| Encourage continued presentations at Science Café  | • Nominate faculty to present at Science Café | • Faculty present at Science Café | • Faculty/Staff time |
| Reestablish NSF REU funding                       | • Organize and submit NSF REU application | • Proposal submitted in September | • Faculty/Staff time |