

**2009-10 ACADEMIC PROGRAM REVIEW REPORT**  
**Part I: Narrative**

**Unit for Review: Physics and Astronomy**

**College/School: College of Engineering, Forestry and Natural Sciences**

**University: Northern Arizona University**

**A. Scope of the Program Review.**

- BS Physics
- BS Astronomy
- BS Physics & Astronomy
- BS Physics & Mathematics
- BS Engineering Physics
- BS Physical Science
- BSED Physics
- BSED General Science
- MS Applied Physics
- MA Science Teaching
- Minors: Physical Science Secondary Education, Physics, Physics Secondary Education, Astronomy

**B. Quality Improvements Since Previous APR**

- Year of previous review: 2001-2002
- Expansion of undergraduate research programs, including renewed funding for NSF-REU program in astronomical sciences
- Improved program assessment strategies implemented
- MA coursework requirement lowered to allow more focus on thesis research

**C. Outcomes of the Most Recent APR.**

Strengths:

- Student-centered department ethos
- Breadth of undergraduate research opportunities, including three externally funded programs
- Breadth of course offerings in astronomy
- High degree productivity compared to similar programs nationwide: BS degree productivity in physics and astronomy
- Merged Physics & Astronomy program is distinctive
- Programs benefit from proximity to Flagstaff area astronomic science facilities
- Strong research capacity and activity, especially in astronomy and condensed matter physics
- Faculty are successful in securing grants to support faculty and student research

Concerns/Recommendations:

- Staffing to manage physics laboratory is inadequate; recommend hiring a physics laboratory manager

- Loss of tenured faculty with growing enrollments risks undermining program quality
- Additional equipment needed for lower division and junior level laboratories
- Department should consider eliminating underutilized degree programs
- Undergraduate curriculum should be analyzed carefully in relation to key skills important for students as they progress
- Capstone course should be elaborated to incorporate design projects for students who will pursue employment in industry and teaching
- Strengthen professional focus for MS Applied Physics program
- Department should develop more robust strategic planning process

**D. Quality Improvements Planned**

- Tenure-track faculty hire is underway in experimental physics
- Laboratory manager in place for physics labs
- Department is analyzing degree program offerings with the goal of consolidation
- Department is considering how to strengthen the professional focus of the MS Applied Physics program

**E. Low Productive Degree Programs (If applicable)**

- BS Astronomy- will be retained; essential to a university degree portfolio and strongly linked to regional astronomical science programs
- BS Physics - will be retained; essential to a university degree portfolio
- BS Physics & Astronomy merged- will likely be retained, per recommendation of consultants; this is a distinctive program
- BSED Physics: Secondary Education- will be retained to address shortage of secondary physics/science teachers
- BSED General Science- will be retained as one of only two science teacher programs for middle school level
- BS Physics & Mathematics- will be eliminated
- BS Engineering Physics- will be eliminated
- BS Physical Science- will be eliminated

**F. Program Fee Information**

N/A

University:								
2009-2010 Academic Program Review								
Part II: Data Summary								
Department: Physics and Astronomy								
College: Engineering, Forestry and Natural Sciences								
Full-Time Equivalent (Fall Adjusted)	Fall 2003 2003-04	Fall 2004 2004-05	Fall 2005 2005-06	Fall 2006 2006-07	Fall 2007 2007-08	Fall 2008 2008-09	Fall 2009 2009-10	College Total 2009-10
Undergraduate	210.1	225.7	240.7	268.1	285.3	313.6	366.0	4,193.0
Graduate	6.6	10.2	8.0	16.7	12.4	8.5	8.7	337.1
<b>Total *</b>	<b>216.7</b>	<b>235.9</b>	<b>248.7</b>	<b>284.8</b>	<b>297.7</b>	<b>322.1</b>	<b>374.7</b>	<b>4,530.1</b>
Student Majors Headcount (Fall)	Fall 2003 2003-04	Fall 2004 2004-05	Fall 2005 2005-06	Fall 2006 2006-07	Fall 2007 2007-08	Fall 2008 2008-09	Fall 2009 2009-10	Fall 2009 2009-10
Undergraduate	110	118	124	151	194	185	226	4,147
Graduate	14	19	9	14	12	10	10	364
<i>Masters</i>	14	19	9	14	12	10	10	285
<i>Doctoral</i>								79
<b>Total Degree Seeking</b>	<b>124</b>	<b>137</b>	<b>133</b>	<b>165</b>	<b>206</b>	<b>195</b>	<b>236</b>	<b>4,511</b>
Degrees Granted	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2009-10
Baccalaureate	16	15	16	12	21	12	30	509
Graduate	0	5	7	5	4	7	3	106
<i>Masters</i>		5	7	5	4	7	3	97
<i>Doctoral</i>								9
<b>Total</b>	<b>16</b>	<b>20</b>	<b>23</b>	<b>17</b>	<b>25</b>	<b>19</b>	<b>33</b>	<b>615</b>
State Funds Personnel (Fall Census)	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2009-10
<b>Faculty FTE</b>	<b>12.6</b>	<b>12.5</b>	<b>12.1</b>	<b>11.1</b>	<b>12.5</b>	<b>12.6</b>	<b>12.2</b>	<b>147.2</b>
Tenured/Tenure-track FTE	11.6	11.5	11.1	10.1	11.5	11.6	11.2	147.2
Lecturers and Instructors FTE	1.0	1.0	1.0	1.0	1.0	1.0	1.0	24.6
Faculty Assoc./Faculty Research Assoc. FTE								
<b>Staff FTE</b>	<b>3.0</b>	<b>2.5</b>	<b>2.5</b>	<b>2.5</b>	<b>2.7</b>	<b>3.7</b>	<b>4.5</b>	<b>82.8</b>
<b>Graduate Assistant FTE</b>	<b>3.8</b>	<b>3.5</b>	<b>3.3</b>	<b>6.1</b>	<b>6.5</b>	<b>5.0</b>	<b>5.0</b>	<b>96.9</b>