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| For Academic Affairs and Research Use Only |
| CIP Code:  |  |
| Degree Code: |  |

**Bulletin / Banner Change Transmittal Form**

**[X] Undergraduate Curriculum Council**

**[ ] Graduate Council**

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

Email completed proposals to curriculum@astate.edu for inclusion in curriculum committee agenda.

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| John Hershberger | 2/20/2018 |

**Department Curriculum Committee Chair** |

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**COPE Chair (if applicable)** |
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| William Burns | 2/20/2018 |

**Department Chair:**  |

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**Head of Unit (If applicable)**   |
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| David F. Gilmore | 3/1/2018 |

**College Curriculum Committee Chair** |

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**Undergraduate Curriculum Council Chair** |
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| Anne A. Grippo | 3/1/2018 |

**College Dean** |

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**Graduate Curriculum Committee Chair** |
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**General Education Committee Chair (If applicable)**   |

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**Vice Chancellor for Academic Affairs** |

**1.Contact Person** (Name, Email Address, Phone Number)

William Burns, wburns@astate.edu 972-2535

**2.Proposed Change**

Replace BS Physics degree requirement PHYS 3272 PHYS 3282 with 2 credit hours of PHYS 459V

**3.Effective Date**

Fall 2018

**4.Justification –** *Please provide details as to why this change is necessary.*

Since Spring 2015 physics faculty have elected to allow students to complete two credit hours of PHYS 459V (Research in Physics) as a substitution for the degree requirements PHYS 3272 (Physical Instrumentation I) and PHYS 3282 (Physical Instrumentation II). PHYS 3272 and 3282 focus on use of instrumentation and data analysis commonly encountered in modern physics research. Students enrolled in these courses typically were exposed to instrumentation and data analysis by actively participating in on-going research projects in individual faculty research labs. Students are exposed to essentially identical experiences when enrolled in PHYS 459V. Thus, it is proposed two credits of PHYS 459V will replace PHYS 3272 and 3282 as BS physics degree requirements, and therefore PHYS 3272 and 3282 will no longer be needed. A Bulletin/Banner Change Transmittal Form has been submitted to replace degree requirements PHYS 3272 and 3282 with two credits of PHYS 459V as a degree requirement. This will reduce BS Physics major requirements by two credit hours, which be added to the degree electives.

**Bulletin Changes**

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| **Instructions**  |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.** **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.** - Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)- New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font). - Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)*You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the ‘format painter’ icon 🡪 , and selecting the text you would like to apply the change to.**Please visit* [*https://youtu.be/yjdL2n4lZm4*](https://youtu.be/yjdL2n4lZm4) *for more detailed instructions.* |

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**Major in Physics**

**Bachelor of Science**

A complete 8-semester degree plan is available [at http://registrar.astate.edu/.](http://registrar.astate.edu/)

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| **University Requirements:** |  |
| See University General Requirements for Baccalaureate degrees (p. 41) |  |
| **First Year Making Connections Course:** | **Sem. Hrs.** |
| PHSC 1003, Making Connections - Chemistry and Physics | **3** |
| **General Education Requirements:** | **Sem. Hrs.** |
| See General Education Curriculum for Baccalaureate degrees (p. 84)**Students with this major must take the following:***MATH 2204, Calculus I**PHYS 2034 University Physics I**COMS 1203, Oral Communication (Required Departmental Gen. Ed. Option)* | **36** |
| **Major Requirements:** | **Sem. Hrs.** |
| CHEM 1013 **AND** 1011, General Chemistry I and Laboratory | 4 |
| CHEM 1023 **AND** 1021, General Chemistry II and Laboratory | 4 |
| CS 2114, Structured Programming | 4 |
| MATH 2214, Calculus II | 4 |
| MATH 3254, Calculus III | 4 |
| MATH 4403, Differential Equations | 3 |
| PHYS 2044, University Physics II | 4 |
| PHYS 3103, Thermal Physics | 3 |
| PHYS 3153, Mechanics | 3 |
| PHYS 3203, Electromagnetic Theory | 3 |
| PHYS 3303, Modern Physics | 3 |
| PHYS 3253, Optics | 3 |
| ~~PHYS 3272 Physical Instrumentation I~~ | ~~2~~ |
| ~~PHYS 3282, Physical Instrumentation II~~ | ~~2~~ |
| **PHYS 459V, Research in Physics** | **2** |
| PHYS 4353, Mathematical Physics | 3 |
| PHYS 4553, Principles of Quantum Mechanics | 3 |
| PHYS 4693, Research in Physics - Capstone | 3 |
| **Sub-total** | **~~55~~ 53** |
| **Electives:***~~Ten~~* ***Twelve***  *hours of the electives below must be upper-level.* | **Sem. Hrs.** |
| Electives | **~~26~~ 28** |
| **Total Required Hours:** | **120** |