UNIVERSITY OF ALASKA FAIRBANKS
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15 May 2014

**TO:** The Prospective Master's-level Graduate Student in Physics

**SUBJECT:** Master's of Science (MS) in Physics Roadmap

This roadmap is designed to guide you, the graduate physics student seeking a master's degree, to successful completion of the degree requirements for a Master's of Science in Physics at UAF. The requirements laid out in this roadmap are for the "typical" student seeking an MS in Physics, so it is important that you meet with your advisory committee chair in the Physics Department to ensure that your personal roadmap is tailored to your needs (e.g.: electives, transfer credits, etc.). Additionally, the department offers various concentrations within the degree, so some specialization within the roadmap is expected and should be coordinated with your advisory committee. The expected time to degree completion, as depicted in this roadmap, is two years; however, individual programs may vary depending upon your background preparation, your research interests. In particular, some field-intensive projects may take longer due to data collection time constraints, instrumentation construction and deployment, and/or data analysis requirements. The Graduate School requires that the MS student complete either a thesis or project, and that this be successfully defended to the faculty of the Physics Department. The defense also satisfies the requirement that a Comprehensive Examination be passed by the student.

The faculty of the Physics Department approved this roadmap at its regular 15 May 2014 meeting.

Curt A. L. Szuberla
Chair, Physics Department

MS PHYSICS with concentrations in

| | PHYSICS | COMPUTATIONAL PHYSICS | SPACE PHYSICS |
|---|---|---|---|
| Fall 1 | Mathematical Physics I (Phys611, 3cr)<br><br>Quantum Mechanics I (Phys651, 3cr)<br><br>Electricity and Magnetism I (Phys631, 3cr)<br><br>Physics Teaching Seminar (Phys605, 1cr) | Mathematical Physics I (Phys611, 3cr)<br><br>Core Skills in Computation (Phys, 3cr)<br><br>Quantum mechanics I (Phys631, 3cr)<br><br>Physics Teaching Seminar (Phys605, 1cr) | Mathematical Physics I (Phys611, 3cr)<br><br>Intro Plasma Physics (Phys626, 3cr)<br><br>Space Physics (Phys673, 3cr)<br><br>Physics Teaching Seminar (Phys605, 1cr) |
| Spring 1 | Mathematical Physics II (Phys612, 3cr)<br><br>Quantum Mechanics II (Phys652, 3cr)<br><br>Electricity and Magnetism II (Phys632, 3cr)<br><br>Physics Teaching Seminar (Phys605, 1cr) | Mathematical Physics II (Phys612, 3cr)<br><br>Approved Math 600 or CS600 (3cr)<br><br>Numerical simulations in Fluids and Plasma (Phys629, 3cr)<br><br>Physics Teaching Seminar (Phys605, 1cr) | Mathematical Physics II (Phys612, 3cr)<br><br>Advanced Plasma Physics (Phys627, 3cr)<br><br>Numerical simulations in Fluids and Plasma (Phys629, 3cr)<br><br>Physics Teaching Seminar (Phys605, 1cr) |
| Fall 2 | Core Skills in Computation (Phys, 3cr)<br><br>Classical Mechanics (Phys621, 3cr)<br><br>Thesis (Phys 699, 3cr) | Classical Mechanics (Phys621, 3cr)<br><br>Thesis (Phys 699, 6cr) | Thesis (Phys699, 9cr) |
| Spring 2 | Thesis (Phys 699, 9cr) | Digital Time series analysis (Phys 628, 3cr)<br><br>Thesis (Phys 699, 6cr) | Magnetospheric Physics (Phys 672, 3cr)<br><br>Auroral and Aeronomy (Phys 640, 3cr)<br><br>Thesis (Phys699, 3cr) |
| required credits | minimum: 30 cr (24cr, course work) | minimum: 30 cr (24cr, course work) | minimum: 30 cr (24cr, course work) |