

Template A

	Investigates advances in crystallography and its applications to modern science. Emphasizes powder diffraction, including Rietveld analysis. Develops proficiency in data collection, phase analysis and structure refinement and shows how crystallographic science can address scientific problems.
<p>Student Learning Outcomes</p> <p><i>(These should be measurable, appropriate to the course level, and phrased in terms of student achievement, not instructional or content outcomes)</i></p> <p><i>If dual listed, indicate additional learning objectives for the higher level course.</i></p>	<p>The Student will be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate basic proficiency in crystallography 2. Demonstrate proficiency in X-ray data collection 3. Elucidate, refine and evaluate crystal structure from X-ray diffractograms 4. Interpret crystal structures and use the information to solve scientific problems 5. Give and defend a scientific poster presentation on any related topic. <p>The graduate student will be able to:</p> <ol style="list-style-type: none"> 1. Fulfill the objectives above, but demonstrate a deeper level of analysis and understanding of chemical and physical processes/structure in their work 2. Read and critique related scientific literature 3. Give and defend a 20 minute oral presentation on any current topic related to Modern Diffraction, applying course material.
<p>Brief Course Outline:</p> <p><i>Give an outline of sufficient detail to communicate the course content to faculty across campus. It is not necessary to include specific readings, calendar, or assignments.</i></p>	<ol style="list-style-type: none"> (a) Introduction, Radiation Safety, Point Symmetry (b) Lattices, Space Groups, Interpreting International Tables for Crystallography (c) Formalization of Symmetry (d) Radiation Production, Fundamentals of Diffraction, (e) Scattering Factors, Structure Factors and Systematic Absences. (f) Structure Elucidation (g) Single Crystal Crystallography, Introduction to SHELX Program Package (h) Powder Diffractometry, Introduction to GSAS Program Package (i) Powder Diffraction Indexing and Phase Analysis, (j) Introduction to Jade Software, Crystallographic Data Bases, Rietveld Analysis, (k) Structure Solution from Powders, Introduction to EXPO2009 Software (l) Crystal Structure Interpretation and Results (m) Solving scientific problems with crystallographic results
Rationale for Proposal	
Why is this course being proposed?	This course will enter the rotation list for electives in the Professional Science Masters-Chemistry.
How does it fit into the departmental curriculum? (Check all that apply)	<input type="checkbox"/> Major Requirement <input type="checkbox"/> Minor Requirement <input type="checkbox"/> Core Requirement <i>(Interdisciplinary core – e.g. Business/Education)</i> <input checked="" type="checkbox"/> Required Elective <input type="checkbox"/> Liberal Studies <input type="checkbox"/> Open Elective <input type="checkbox"/> Other - Click here to enter text.
Is a similar class offered in other departments?	<input type="checkbox"/> Yes Please provide comment: Click here to enter text. <input checked="" type="checkbox"/> No
Does it serve the college/university	<input checked="" type="checkbox"/> Yes

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above and beyond the role it serves in the department?	<p>Please provide comment: Course could be used in Professional Science Masters - PHYS</p> <input type="checkbox"/> No
Who is the target audience for the course?	<input checked="" type="checkbox"/> Course Designed for Majors (<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required) <input type="checkbox"/> Course Designed for Minor <input checked="" type="checkbox"/> Departmental Elective <input type="checkbox"/> Restricted to Majors/Minors <input type="checkbox"/> Open to Any Student <input type="checkbox"/> Liberal Studies <input type="checkbox"/> Other - Click here to enter text.
Implications for other departments	<p>A. What are the implications for other departments (<i>For example: overlap of content with other disciplines, requirements for other programs</i>)? Course could be used as an elective in Professional Science Masters-PHYS</p> <p>B. How have you addressed this with other department(s) involved? What was the outcome of that attempt? (Attach documents as appropriate) Department has been notified.</p>
Are the resources adequate (i.e. faculty, space, equipment, laboratory supplies, library materials, travel funds, etc.)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Please provide comment: Click here to enter text.
For Dean's Review	
<ul style="list-style-type: none"> • Are resources available/sufficient for this course? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA • Is the proposal congruent with college mission? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA • Has the proposer attempted to resolve potential conflicts with other academic units? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA 	
Comments: Click here to enter text.	