



Course Approval Form

For instructions see:
<http://registrar.gmu.edu/facultystaff/catalog-revisions/course/>

Action Requested:

Create new course Inactivate existing course Reinstate inactive course

Modify existing course (check all that apply)

Title Credits Repeat Status Grade Type

Prereq/coreq Schedule Type Restrictions

Other: _____

Course Level:

Undergraduate

Graduate

College/School: **Department:**

Submitted by: **Ext:** **Email:**

Subject Code: **Number:** **Effective Term:** Fall Spring Summer **Year:**

(Do not list multiple codes or numbers. Each course proposal must have a separate form.)

Title: Current **Fulfills Mason Core Req?** (undergrad only)

Banner (30 characters max w/ spaces) Currently fulfills requirement

New Submission in progress

Credits: (check one) Fixed Variable or **Repeat Status:** (check one) Not Repeatable (NR) Repeatable within degree (RD) Repeatable within term (RT) Maximum credits allowed:

Grade Mode: (check one) Regular (A, B, C, etc.) Satisfactory/No Credit Special (A, B C, etc. +IP)

Schedule Type: (check one) Lecture (LEC) Lab (LAB) Recitation (RCT) Internship (INT)

Independent Study (IND) Seminar (SEM) Studio (STU)

(LEC can include LAB or RCT)

Prerequisite(s): **Corequisite(s):**

Instructional Mode:

100% face-to-face

Hybrid: ≤ 50% electronically delivered

100% electronically delivered

Restrictions Enforced by System: Major, College, Degree, Program, etc. Include Code.

Are there equivalent course(s)?

Yes No

If yes, please list _____

Catalog Copy for NEW Courses Only (Consult University Catalog for models)

Description (No more than 60 words, use verb phrases and present tense)	Notes (List additional information for the course)
Additional topics in Quantum Mechanics: angular momentum, perturbation theory, scattering, and the Dirac Equation	
Indicate number of contact hours: Hours of Lecture or Seminar per week: <input type="text"/> Hours of Lab or Studio: <input type="text"/> When Offered: (check all that apply) <input checked="" type="checkbox"/> Fall <input type="checkbox"/> Summer <input checked="" type="checkbox"/> Spring	

Approval Signatures

Department Approval _____ Date _____ College/School Approval _____ Date _____

If this course includes subject matter currently dealt with by any other units, the originating department must circulate this proposal for review by those units and obtain the necessary signatures prior to submission. Failure to do so will delay action on this proposal.

Unit Name	Unit Approval Name	Unit Approver's Signature	Date

For Graduate Courses Only

Graduate Council Member _____ Provost Office _____ Graduate Council Approval Date _____

For Registrar Office's Use Only: Banner _____ Catalog _____

Course Proposal Submitted to the College of Science Curriculum Committee (COSCC)

The form above is processed by the Office of the University Registrar. This second page is for the COSCC's reference. Please complete the applicable portions of this page to clearly communicate what the form above is requesting.

FOR ALL COURSES (required)

Course Number and Title: PHYS 403 – Quantum Mechanics II

Date of Departmental Approval:

FOR NEW COURSES (required if creating a new course)

- Reason for the New Course: One course in quantum mechanics is insufficient for students hoping to do well on the Physics GRE and attend graduate school
- Relationship to Existing Programs: QM II will be an elective in the physics B.S., strongly recommended to those intending to apply to graduate school
- Relationship to Existing Courses: QM II will follow up on PHYS 402 – Introduction to Quantum Mechanics and Atomic Physics, the prerequisite
- Semester of Initial Offering: Fall 2017
- Proposed Instructors: Nikolic, Satyapal, Sauer, Tian, Zhao
- Insert Tentative Syllabus Below

Physics 403 – Quantum Mechanics II

Syllabus

Instructor: Phil Rubin

Office: PH 253

Phone: 703.993.3815

E-mail: prubin@gmu.edu

Office Hours: Monday and Wednesday 10:30-12:00

Prerequisite: PHYS 402 (strictly enforced)

Please note:

- All e-mail communication from the instructor concerning this course will be to GMU accounts only.
- If you are a student with a disability and require academic accommodations, please see me and contact the Office of Disability Resources at 703.993.2474. All academic accommodations must be arranged through that office.

Course Goals:

1. To complete coverage of basic quantum mechanics at the undergraduate level
2. To prepare students better for the Physics GRE
3. To prepare students for advanced courses in modern physics

Textbook:

- Introduction to Quantum Mechanics, 2nd edition, David J. Griffiths

Requirements:

- Homework: Weekly assignments due the first meeting of the week unless otherwise specified; 50% penalty for homework turned in one (1) day late; no assignment accepted more than one (1) day late; exceptions: an excuse communicated to, and accepted by the instructor, in advance or justified by an official document.
- Exams: Two (2) mid-term examinations and one (1) final examinations

Grading:

- Homework: 50%
- Midterms: 30%
- Final: 20%

Topics:

1. Spin and Angular Momentum
2. Addition of Angular Momenta
3. The Variational Principle
4. The WKB Approximation
5. Time-independent Perturbation Theory
6. Time-dependent Perturbation Theory
7. Scattering
8. The Dirac Equation

Honor Code Violations:

Science is impossible when dishonesty, in any manifestation, exists. It's the worst possible conduct a scientist can display. Dishonesty of any sort (cheating, plagiarism, lying, stealing) will be addressed in accordance with the GMU Honor Code.

Don't cheat. Don't even look like you're cheating.

The GMU Honor Code: <http://www.gmu.edu/catalog/9798/honorcod.html#code>

GMU Diversity Statement:

<http://ctfe.gmu.edu/professional-development/mason-diversity-statement/>