Course Approval Form

For approval of new courses and deletions or modifications to an existing course.

registrar.gmu.edu/facultystaff/curriculum

Action Requested:

- [ ] Create new course
- [ ] Inactivate existing course
- [X] Modify existing course (check all that apply)
  - [ ] Title
  - [ ] Credits
  - [ ] Repeat Status
  - [ ] Grade Type
  - [ ] Prereq/coreq
  - [ ] Schedule Type
  - [ ] Restrictions
  - [X] Other: Course Description

Course Level:

- [ ] Undergraduate
- [X] Graduate

College/School: COS **Department:** SPACS

Submitted by: Paul So **Ext:** 34377 **Email:** paso@gmu.edu

Subject Code: PHYS **Number:** 784

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

Effective Term:

- [ ] Fall
- [X] Spring
- [ ] Summer

Year 2014

Title:

Current: Quantum Mechanics II

Banner (30 characters max including spaces):

New:

Credits: (check one)

- [X] Fixed: 3
- [ ] Variable: to

Repeat Status: (check one)

- [X] Not Repeatable (NR)
- [ ] Repeatable within degree (RD)
- [ ] Repeatable within term (RT)

Maximum credits allowed:

Grade Mode: (check one)

- [X] Regular (A, B, C, etc.)
- [ ] Satisfactory/No Credit
- [ ] Special (A, B C, etc. +IP)

Schedule Type: (check one) LEC can include LAB or RCT

- [X] Lecture (LEC)
- [ ] Lab (LAB)
- [ ] Recitation (RCT)
- [ ] Internship (INT)
- [ ] Independent Study (IND)
- [ ] Seminar (SEM)
- [ ] Studio (STU)

Prerequisite(s):

PHYS 684, or permission of instructor.

Corequisite(s):

Instructional Mode:

- [X] 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)
Advanced topics in quantum mechanics. Covers density and tensor operators, approximation methods, scattering theory, and identical particles.	

Indicate number of contact hours: Hours of Lecture or Seminar per week: 3 Hours of Lab or Studio:

When Offered: (check all that apply) [X] Fall [ ] Summer [X] 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_____

Rationale for Proposal

Modification to the course description:

The graduate level quantum courses (PHYS 684/784) have evolved over time as the PhD program in physics has evolved, so that the original descriptions no longer accurately reflect what is currently taught in the courses. For instance, six of the seven topics in the original Physics 784 catalog description are now currently covered in Physics 684. It is of particular urgency that these descriptions be updated since one of our PhD qualifiers is based on the content of Physics 684. The language that has been chosen for the revisions reflects one of the standard graduate level quantum mechanics textbooks, "Modern Quantum Mechanics" by J.J. Sakurai and J. Napolitano.

Original Physics 784 course description:
Advanced topics in quantum mechanics. Covers rotations, angular momentum, 3D solutions to Schrodinger's equations, symmetries, conservation laws, approximate methods, and spin mechanics.

Proposed revision:
Advanced topics in quantum mechanics. Covers density and tensor operators, approximation methods, scattering theory, and identical particles.