

PHY 4604 Introduction to Quantum Mechanics 1 [Fall 2021] (3 credits)
Face-to-Face (F2F) in NPB 1002: Class (Section) Number: 18515 (3912)

Special Option AVAILABLE from 23 August to 10 September, inclusive:
Online via Zoom SYNCHRONOUS (with F2F schedule) REMOTE participation
(Zoom link for each lecture period is UNIQUE and available in the Canvas course page)
***Note: this arrangement may be extended beyond 10 September,
if allowed by the administration and if students use it.**

Tentative Syllabus (version of 18 August 2021, typo correction 211213)
<http://www.phys.ufl.edu/~meisel/PHY4604-Fall-2021.html>

Subject and Focus of the Course (I): This course is designed to provide the basic concepts of quantum mechanics with applications to examples in physics, chemistry, and other fields including quantum information. Briefly stated, the goal is to increase quantum literacy, so students develop a deeper appreciation of the technical jargon (like *entanglement*) and a sense of “what it is” and “what it is NOT”.

Inclusion, Diversity, and Equity: My intention is to provide each student with a safe, diverse, and inclusive atmosphere that affords a personalized opportunity to engage the material being presented. **The present conditions mean each student is likely to be experiencing different boundary conditions and constraints while participating in this course. I will attempt to present the course material and graded assignments in a manner sympathetic to the unique conditions that each individual may be experiencing**, while also being respectful of diversity of gender, sexuality, ethnicity, race, culture, socioeconomic status, age, and accommodations. To achieve this environment, I ask for suggestions and feedback from all students, as each perspective is important to me, and I will do my best to make adjustments that are needed.

Instructor: Mark W. Meisel (*he/him*), Department of Physics, University of Florida

Office: NPB 2358, Tel: 392-8867; **Lab:** NPB B133, Tel: 392-9147; **Email:** meisel@ufl.edu

Office Hours: posted online, <http://www.phys.ufl.edu/~meisel/schedule.htm>, and by appointment.

Note for COVID era: Office Hours will be held online via Zoom meetings configured by the Instructor.

Email Correspondence with Instructor: The Instructor will attempt to respond, within nominally 24 hours of regular business days, to email within the UF e-Learning system (ELS Canvas system) or from UF email accounts if the message contains the name of the student AND the subject line starts with PHY4604. Email will not be sent to email addresses outside the UF-domain (ufl.edu).

Prerequisites: PHY3101 or PHY3063 (essentially a version of Intro to Modern Physics) or equivalent **and** MAP2302 (Elementary Differential Equations) or equivalent. Linear Algebra? Mainly encountered starting in Chapter 3, and as noted in the footnote on page 91, read the Appendix before taking this plunge!

General Education: This course is part of the “Physical Science” General Education Requirement.

Textbook (required): *Introduction to Quantum Mechanics* (3rd ed.), [David J. Griffiths](#) and [Darrell F. Schroeter](#), Cambridge University Press (2018) [webpage](#). Errata available from D. J. Griffiths's webpage. If you are only able to secure a copy of the 2nd ed. authored only by DJ Griffiths, please let me know.

Meeting Times and Method: Mondays, Wednesdays, and Fridays: 3rd period (09:35 am – 10:25 am) (09:35 hrs to 10:25 hrs) for in-person lectures **AND synchronous Zoom lectures up to and including Friday, 10 September.*** Zoom meeting links are UNIQUE for each lecture and are configured by the Instructor within the UF Canvas system. Unless extenuating circumstances arise, the lectures will be delivered “Live” (synchronous) and recorded. **The recordings will only be used if a student has an excused absence.** Material (slides/notes) generated during the lectures up to and including **10 September*** will typically be uploaded to the Canvas course page by 18:00 hrs on the day of delivery. **“In-Class (IC)” work is due by the end of the class period or by the start of the next class period as described during class. Assignments submitted late will not be graded.**

Posting: Materials and information concerning the course, including important dates and an “*in vivo*” schedule, will be posted on the Course Webpage within the UF ELS Canvas system.

Attendance: **Students are expected to attend lectures** since material outside the textbook will be presented. Unless otherwise stated, all materials covered in the text and in class are relevant for any graded exercise. The established [UF Attendance Policies](#) will be followed.

Privacy Notice: The class sessions may be audiovisually recorded and archived for students to use for review and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the “chat” feature, which allows students to type questions and comments live. The chat will not be recorded or shared. In parallel, in-class students should be aware their images and voices may be recorded. If you want to avoid this situation, then discuss your privacy preferences with the Instructor, who will provide several options for you.

Starting this semester, a new UF policy for “In-Class Recording”.

“Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.”

Subject and Focus of the Course (II): This course is designed to provide the basic concepts of quantum mechanics with applications to examples in physics, chemistry, and other fields including quantum information. Briefly stated, the goal is to increase quantum literacy, so students develop a deeper appreciation of the technical jargon (like *entanglement*) and a sense of “what it is” and “what it is NOT”.

For example, consider the following aside:

Prior to this course, you are expected to have been exposed to the Schrödinger equation. Can you write it down now? If you close your eyes, can you see it? Can you taste or smell it (not a COVID test!)? Can you picture what it means in *real* materials and systems? Does the “uncertainty principle” trouble you?

Are you comfortable explaining quantum mechanics to someone on the bus? Or the Governor in an elevator?

Graded Material and Grading Policy:

Homework/Quizzes/In-Class (IC) Exercises: Homework problems, Quizzes, and In-Class (IC) Exercises will be assigned on a regular basis. Students are expected to work on the problems and submit their work individually unless otherwise stated. Work must be complete, concise, and clear for full credit. Each assignment will have a specified due date and time. **Assignments submitted late will not be graded.**

Final Exam: The Final Exam is not tentative and is **Final Exam (Group 16D): Thursday, 16 December 2021, 03:00 pm – 05:00 pm (15:00 hrs to 17:00 hrs)**. All Fall 2021 Final Exam and course activities must end by 5:00 pm (17:00 hrs) on Friday, 17 December 2021.

Additional details about the UF grading policies can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>.

Summary		Final Course Grade Scale
Homework	25%	A 85% - 100%
Quizzes	25%	A- 80% - 84.9%
In-Class (IC) Exercises	25%	B+ 75% - 79.9%
Final Exam (Part A + Part B)	25%	B 70% - 74.9%
		B- 65% - 69.9%
Total	100%	C+ 60% - 64.9%
		C 55% - 59.9%
		C- 50% - 54.9%
		D+ 45% - 49.9%
		D 40% - 44.9%
		D- 35% - 39.9%
		E 0% - 34.9%

Make-Up of Graded Material: Consistent with university policies described elsewhere ([here](#)), students will be allowed to make-up graded material. In most circumstances, the reason for the make-up will need to be documented by a note typically from a medical doctor, an attorney, or a UF official. Notes from family members are not acceptable. When possible, the student should inform the Instructor in advance of absences or delays in completing graded assignments.

Academic Honesty: Each student is expected to generate graded work by an individual and original effort and (e.g. usually a zero grade is given on the assignment). Please review the University Policies on Academic Honesty, and links are <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/> and <http://www.dso.ufl.edu/sccr/>. Note that the process is one that involves the faculty member and the students:

“Academic honesty and integrity are fundamental values of the University. Students commit to holding themselves and their peers to the high standard of honor required by the Student Honor Code. Any Student who becomes aware of a violation of the Student Honor Code is encouraged to report the violation to the appropriate University Official.”

Accommodations and Advising: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://disability.ufl.edu/>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the Instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Advising and Counseling: Due to the nature of the environment at the university, it is not uncommon for students to experience stressful situations, and “study harder” sometimes does not seem to work. If you find yourself in this situation, you are encouraged to seek confidential counseling, see: <http://www.counseling.ufl.edu/cwc/>.

Incomplete Policy: A grade of incomplete is typically given to students who endure a situation in which they are incapable of completing the coursework. The I-grade is not to be given to students who are simply dissatisfied with their performance in the course. If you find you are in a situation that might qualify you for an I-grade and you want to pursue this potential option, then you must contact the Instructor as soon as possible. A PDF of the policy is posted at: <http://www.phys.ufl.edu/downloads/gradepolicy.pdf>.

Final Exam and Special Notes about the Syllabus: Please note that the dates for all graded materials, except the Final Exam, are TENTATIVE. The schedule will be finalized during the course and will be announced in class and posted to the “*in vivo*” schedule and updated on the course UF ELS Canvas page.

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Comments on Knowing Your Grades: It is expected that graded material will be returned to each student in a timely fashion, usually at the start of the first-class period after which it was submitted. In most instances, the material and rubric will be reviewed during a lecture. After the review, if a student has any question about the grading of the work, please arrange for a timely meeting (typically within a week of grades being posted) with the Instructor to review the grading. Students should keep records of the materials submitted as graded exercises. The UF ELS Canvas site is used to electronically post the grades, <http://elearning.ufl.edu/>. If you have any questions about your points on any material or for the course, please contact the Instructor.

General Classroom Behavior: Please avoid having distracting audio or visual events occur during class.

Course Evaluations: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Subject and Focus of the Course (III): This course is designed to provide the basic concepts of quantum mechanics with applications to examples in physics, chemistry, and other fields including quantum information. Briefly stated, the goal is to increase quantum literacy, so students develop a deeper appreciation of the technical jargon (like *entanglement*) and a sense of “what it is” and “what it is NOT”.

For example, consider the following aside:

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Are you comfortable explaining quantum mechanics to someone on the bus? Or the Governor in an elevator?

Some approach to these questions might be: “Yo, Meisel, how to you answer these questions?” And if asked, I have a response which is *my* response! *Your* response may be different than mine. **No problem – I sleep at night.** I ask myself: What can we measure in our experiments? What does Nature tell us? What is the definition of “science”?