

# Syllabus Quantum Physics 1

## Study year 2015-2016

(version 17 July 2015)

Web info via <http://www.quantumdevices.nl/teaching/>

### Teacher of the lectures and course coordinator:

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### Teachers of the tutorials:

For contact information see  
<http://www.quantumdevices.nl/teaching/>  
For the tutorial subgroups and teachers in the roster see  
<http://www.rug.nl/fwn/roosters/2015/vakken/nakf1-11>

**Language:** The course will be fully in English.

**E-mail** about the course goes to students only via the **Progress** system (not via Nestor), so make sure you are signed up for the course in the Progress system.

### Study material for mid-term exam and final exam

Book: Introduction to Quantum Mechanics (2<sup>nd</sup> edition)  
David. J. Griffiths

Contents – see the *Detailed study guide* on the web (updated each week of the course). Note that we differentiate between Study material and Reading material (see the *Detailed study guide*). Roughly, the material for the exams is:

**Mid-term exam:** Chap. 1, most of Chap 2 and parts of Chap 3, together with the associated problem sets, contents of the lectures and extra handouts.

**Final exam:** Chap 1 to 5, and the associated problem sets, contents of the lectures and extra handouts.

### Extra study material

- Detailed study guide (updated each week of the course)
- Extra study material – handouts from the lectures
- Extra exercises (problem sets) – handouts from the tutorials
- Slides of many of the lectures (but part is done on the board)

Available at these points:

- Handed out at the lectures and tutorials.
- On the web <http://www.quantumdevices.nl/teaching/>
- The answers to the problem sets will appear on <http://nestor.rug.nl/> for this course)
- Table in the hall next to room 140, building 13 of FWN-NB4

### Open-book rules for mid-term exam and final exam

- During the exam, you are only allowed to have for reference the book by Griffiths and 1 A4 sheet (yes, front and back) with personal handwritten notes. You may also bring the text-book-like extra study material (handouts that are not problem sets or answers to problem sets) which are the *Note on Two-Levels Systems, and Exchange Degeneracy for Identical Particles* and the *Feynman Lectures chapter III-1*.
- It is not allowed to have copies or written versions of answers to the problem sets, or previous exams with you during the exams.
- You are allowed to use a basic scientific pocket calculator (rekenmachine), but not a mobile phone, iPad, computer, etc.
- **WARNING:** You will only pass the exam if you practice many problems.

### The way we work during the tutorials

- Make sure you come prepared: the homework to be made before a tutorial session is that you study the theory in the book and work out the problems that are listed as *homework* (part of the full problem set of a week).
- Part of the full problem set is more difficult. During the tutorials you should be working on these more difficult problems.
- The only plenary teaching during the tutorials are short summaries of this week's topics, a few minutes at the start and/or end of a class.
- **There is no plenary teaching on the problem solving.** It is our intention that you spend most of your time on working out the problems **yourself**. The instructor is only there to get you forward again if you would get stuck.
- We encourage that you work on the problems together with your fellow students.
- Answers and worked-out problems for many of the problems will appear on **nestor** at the end of the last tutorial session of a week.
- Do you have questions? It is **your responsibility** to approach the instructors during or after a tutorial session of a lecture!

### Mid-term exam

In the 4<sup>th</sup> week of the course (duration is 1 hour). Check the roster for details and changes.

### Bonus regulation for the mid-term exam:

- The grade on the mid-term exam is an integer number.
- Only if your mid-term grade is 6 or higher, your final grade for this course will be:  $(\text{grade final exam}) + (\text{grade mid-term exam})/10$ .
- The final grade on the course cannot be higher than 10.
- This bonus regulation is only valid in combination with the first final exam after the end of the lectures of this year.
- Participating in the mid-term exam and this bonus regulation is not obligatory.

### Indication of the required study load

This course is 5 ECTS = 140 hours

- 8 weeks with ~8 contact hours per week
- Homework per week: 2 x 1 hour study/reading theory  
2 x 2 hours working out problem sets
- Further preparing for the exams ~28 hours

### Homework

Homework for the tutorials on Wednesday and Friday will be announced each week on Tuesday:

Theory:	Study material (book and extra handouts) Reading material Contents of lectures and slides
Problem sets:	Part is homework Part is for during the tutorial session Extra problems (optional material)

Note: **Study material** is what you must now for the exam. **Reading material** is additional interesting material, but the contents are not in a direct way needed for your exam preparation. It is very useful to read while the course is given for developing your insight and broader understanding, and you should definitely do so if you are serious about developing yourself into a good physicist.

**Roster, planning of the course and exam dates** See the web.

Check <http://www.rug.nl/fwn/roosters/2015/na/> for changes!