

Physics 3751: Quantum Physics II Winter 2019

Slot 02. Monday, Wednesday, Friday 9:00 am – 9:50 am. Room C-3067.

PR: Physics 3750

Course description on department web page:

<http://www.mun.ca/physics/undergraduates/syllabus/p3751.php>

Instructor: Prof. Mykhaylo Evstigneev. Rm C3025. Phone 864 – 2474. Email mevstigneev@mun.ca.

Office Hours: The instructor is available at most times outside of class. Students are encouraged to contact the instructor to confirm availability for a meeting.

Course web page: See D2L.

Texts

Main textbook:

R. Purdy. Particle physics. Mercury Learning and Information, 2018.

Supplementary literature:

D. Griffiths. Introduction to elementary particles. Wiley, 2004.

M. Thomson. Modern particle physics. Cambridge Univ. Press, 2013.

G. Kane. Modern elementary particle physics. Addison-Wesley, 1994.

R. Eisberg and R. Resnick. Quantum physics of atoms, molecules, solids, nuclei, and particles. Wiley, 1985.

E. Henley and A. Garcia. Subatomic physics. World Scientific, 2007.

W. Greiner. Relativistic quantum mechanics: wave equations. Springer, 1990.

P. Strange. Relativistic quantum mechanics. Cambridge Univ. Press, 1998.

W. Williams. Nuclear and particle physics. Oxford Univ. Press, 1991.

Internet resources:

M. Merk, W. Hulsbergen, and I. van Vulpen. Particle physics I.

<http://www.nikhef.nl/~wouterh/teaching/PP1/LectureNotes.pdf>

B.S. Acharya. Elementary particle physics lecture notes.

<http://users.ictp.it/~bacharya/ASP2014/FullNotesKing's.pdf>

Lecture notes covering Lectures 1-27 will be posted on D2L

Course outline

- Lectures 1-5. Review of special relativity (Ch. 2)
- Lectures 6-9. Review of quantum mechanics (Ch. 3)
- Lectures 10-15. Klein-Gordon equation and gauge field (Ch. 7)
- Lectures 16-21. Dirac equation (Ch. 8)
- Lectures 22-27. Review of elementary particles and the standard model (Ch. 1 and 6)
- Lectures 28-34. Theory of decay and scattering (Ch. 9)

Evaluation

Assignments	20%
Mid-term test 1	20%
Mid-term test 2	20%
Final Exam	40%

No supplementary exam.

Assignments (approximately 6) will be due approximately every two weeks, starting early January. They are to be turned in during class on the due date.

Mid-term tests will be held in mid-February and mid-March. Midterm 1 will cover Lectures 1-14. Midterm 2 will cover Lectures 15-27. The duration of each test will be 50 minutes.

Final exam duration will be 3 hours.

Missed work: Students who cannot complete assignments or mid-term tests need to consult the University Calendar, Section **6.7.5 Exemptions from Parts of the Evaluation**, and speak to the instructor. If either midterm test is missed due to illness or bereavement, the corresponding mark will be transferred to the final exam.

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Important general information from the University

Student Code of Conduct: <http://www.mun.ca/student/conduct/>

Final Examinations: <http://www.mun.ca/regoff/calendar/sectionNo=REGS-0628>

Academic Misconduct: <http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748>

Accommodations for Students with Disabilities: <http://www.mun.ca/blundon/accommodations/>