PHYS 661: Particle Physics 1 Fall 2020 Syllabus

1. This course is designed as the first quarter of a three-quarter sequence on particle physics. A rough outline of topics includes:(1) Particles, fields, measurements(2) Scattering amplitudes and cross sections(3) QED(4)R, mesons, quarks(5)Z resonance(6) Precision electroweak measurements; asymmetries; chirality(7) Symmetries for mesons and baryons(8) Inelastic scattering, parton distribution functionsObjectivesThe objectives of the course is to gain sufficient grasp of the syllabus material to calculate basic processes in particle physics and to grasp how particle detectors are able to measure particle properties. This involves gaining an understanding of particle classifications, detectors, cross sections, decay rates, symmetries, and other topics relevant to a modern particle physicist. The course expectations are that you successfully work through all of the problems of the homework assignments and give an excellent mini-lecture/presentation.Text: Thompson: Particle PhysicsUseful References: Peskin: Concepts of Particle PhysicsParticle Data Group: pdg.lbl.govInstructor: Prof. Graham KribsOffice: (remote for fall 2020 due to COVID pandemic)Office Hours: 2-4pm Thursdays by ZoomLectures: 2:15-3:45 pm Tue, Wed by ZoomE-mail: kribs@uoregon.edu (This is the best way to reach me)Class Communication: Slack workspace

2. Assignments: Homework assignments will be assigned periodically and due roughly one week later. There will be one homework assignment due either the last week of classes and/or the exam week. Final presentation: More details will be given about midway through the quarter. The final presentations will be scheduled either the last week of classes or during the exam week. Grade: 80% Assignments 20% Mini-Lecture/Presentation Grading Policy: Pass (A- and above): All or virtually all problems of all home-work assignments done correctly and turned in on-time. mini-lecture/presentation is clear, well-organized, understandable, and student questions are adequately addressed. Pass (B- and above): A solid attempt on virtually all problems of all homework sets turned in on-time. Mini-lecture/presentation is clear, organized, understandable but with some issues, and student questions are partially addressed. Fail (C+ and below): Habitually late homework, ≥1 missed homework sets, several missed or incorrect problems on several problem sets. Mini-lecture/presentation is unclear, not well organized, not understandable by other students, and most student questions cannot be addressed. Class Cancellation: In the unlikely event that I have to cancel class at the last minute (bad weather or otherwise), I will attempt to email everyone. Late Assignments: General You must do all of the assignments, and turn them in on-time to get a passing grade in the course. 24 hour rule Assignments will be
accepted up to 24 hours late, but with a late penalty. Assignments will not be accepted nor
g graded more than 24 hours after the deadline. Late penalty The late penalty is an overall
reduction of grade by “1/3” times the number of late assignments minus 1. (B+ becomes B, after two late assignments; A− becomes B after three late assignments, etc.). However, it is your responsibility to find the grader and be sure he personally gets it within
this timeframe. One late penalty waiver Inevitably some students need an extra day to finish
one assignment due to some unforeseen reason. To be fair to everyone, all students get one
waiver. Use your waiver wisely. Comments on Assignment Grading Please write clearly,
legibly, and organize your solution. Don’t be afraid to waste paper to ensure your solution
can be clearly followed, step-by-step. It is highly preferred that you use one-side of the
paper, and start new problems and/or parts of problems on new pages.