SCHEDULE FOR FYSC14:
HIGH ENERGY PHYSICS AND ACCELERATORS
AUTUMN 2014
v1 September 15, 2014

This schedule and material can be found at:
http://www.hep.lu.se/staff/christiansen/teaching/
and is linked to from the official course homepage:
http://www.utbildning.fysik.lu.se/tibet/template/personal%2CIndex.vm?pageid=241426&siteid=1000

Compulsory elements:
Monday 3/11 10-12 (introduction)
Monday 24/11 8-11 (lab-prep)
Monday 15/12 13-17 (lab-data analysis)
Lab period 2 (separate 2.5 hp grade)
Two written assignments to be handed in (25% of final 5 hp grade)
Oral exam (75% of final 5 hp grade)
All partial elements of the course: written assignment 1+2, lab, oral exam, DESY trip have to be passed for the course to be passed.
A final grade (U, G, VG) combining all grades and a percentage will be provided.

Monday 3/11 10-12 + Tuesday 4/11 8-10 (Peter+Else): Overview, four vectors, and Feynman diagrams
Suggested reading: chapter 1, section 7.3, chapter 1 and 2 of Leif's notes, A.1, A.2.
Suggested exercises: 1.2, 1.3, 1.6

Wednesday 5/11 10-12 (Peter): Leptons and the weak interaction
Suggested reading: chapter 2.
Suggested exercises: 2.1, 2.2, 2.4

Thursday 6/11 8-10 (Peter): Quarks and hadrons
Exercise 1 is handed out/made available on the web.
Suggested reading: chapter 3.
Suggested exercises: 3.1, 3.2, 3.4

Friday 7/11 10-12 + Monday 10/11 10-12 (Else): Detectors in high energy physics
Suggested reading: chapter 4.
Suggested exercises: 4.5, 4.7, 4.9

Tuesday 11/11 8-10, Wednesday 12/11 10-12 and Thursday 13/11 8-9 (Peter): Accelerator course
Suggested reading: chapter 4 + B.1, B.2, B.3 + course material at the web page.
Suggested exercises: 4.1, 4.2, 4.3

Thursday 13/11 9-10 (Christine), Friday 14/11 10-11 (David) and Friday 14/11 11-12 (John): Special accelerator lectures
Thursday: Christine Darve about ESS.
Friday: David McGinnis about RF instrumentation and John Weisend about cryotechnic for accelerators.

Monday 17/11 10-12 (Peter): the quark model
Suggested reading: chapter 6 (chapter 5 is not part of the curriculum).
Suggested exercises: 6.1, 6.2, 6.4 (6.4 is covered in class)

Tuesday 18/11 8-10 (Peter): QCD, jets and gluons
Suggested reading: chapter 7
Suggested exercises: 7.4, 7.7
Tuesday 18/11: exercise 1 has to be handed in.

Wednesday 19/11 10-12, Thursday 20/11 8-10, and Friday 21/11 10-11 (Else): Weak interactions: quarks, leptons, and the Higgs
Suggested reading: chapter 8
Suggested exercises: 8.1, 8.2, 8.3 (8.2 and 8.3 goes together), 8.4, 8.5
Friday 21/11 11-12: exercise 1 is returned and exercises are explained.
Friday 21/11: exercise 2 is handed out.

Monday 24/11 8-11: Compulsory lab introduction.

Thursday 11/12: exercise 2 has to be handed in.

Monday 15/12 10-12 (Else): Electroweak Unification and gauge theory
Suggested reading: chapter 9
Monday 15/12 13-17: Compulsory lab analysis class.

Tuesday 16/12 8-10 (Else): CP violation
Suggested reading: chapter 9 & 10
Suggested exercises: 10.1, 10.2, 10.3

Wednesday 17/12 10-12 and Thursday 18/12 8-10 (Else): Beyond the standard model and cosmology
Suggested reading: chapter 11 (11.1-11.4)

Friday 19/12 11-12 (Peter+Else): Summary and question session
A quiz and a test exam is organized.
Friday 19/12 10-11: exercise 2 is returned and exercises are explained.

8/1+12/1+13/1 2015: Oral exams
This is a compulsory element of the course and counts for 75% of the final score for the Particle Physics part.

15/1-17/1 2015: DESY trip
This is a compulsory element of the course. Students that cannot make the trip will have to do a special written assignment on the research carried out at DESY