

Plan for FYS3600 & FYS4600 - Autumn 2020

Auditorium: Auditorium II

Time plan: Monday 10:15-12:00 Lectures (KJM Seminarrom Avogadro)

Tuesday 14:15-16:00 Lectures (FY Lille fysiske auditorium)

Thursday 12:15-14:00 Exercises (FY Tidrommet V172)

Week	Lect.	Topic	Keywords	Curriculum (approx.)
35 24.08-30.08	A	Introduction Math of plasmas + Ex	Course structure and content Single particle motion, loss cone, magnetic mirror.	Lecture 3.1-3.3
36 31.08-06.09	A	MHD +Ex	MHD formalism	3.4-3.8
37 07.09-13.09	A	Structure of the atmosphere and ionosphere +Ex	Composition, thermal structure, height profiles, scale height	2.1-2.12
38 14.09-20.09	P	The Sun & the Solar wind +Ex	Internal structure, atmospheric layers, dynamics. Properties, Parker model, Parker spiral, sectoring & current sheets, radial dependence	4.1-4.7 5.1-5.3.5
39 21.09-27.09	A	Solar wind-Magnetosphere coupling +Ex	Internal magnetic field, dipole description, Chapman-Ferraro current, tail current. Dungey cycle, convection,	7.1-7.2 9.1-9.6 10.1-10.2.4
40 28.09-04.10	P	Magnetosphere-Ionosphere coupling +Ex	Pedersen/Hall conductivities, collision frequencies/mobilities, region 1/2 currents	9.5-9.6
41 5.10-11.10	A	Storms and auroras + Ex	Generation of aurora, substorm phenomenology	11.1-11.4 9.7-9.8

42 12.10-18.10	A	Instrumentations +Ex	Langmuir probes/All-sky/Radars/magnetometers...	lecture
43 19.10-25.10		Projects		
44 26.10-01.11	A	Electromagnetic wave propagation in neutral and ionized gases +Ex	The fluid wave approximation, Appleton-Hartree dispersion relation	13.4
45 02.11-08.11	P	Space weather effects on satellite navigation +Ex	GNSS positioning, error sources in GNSS positioning, mitigation	13.1-13.3
46 09.11-15.11	P	Space weather part 2.	Space weather effects on infrastructure	lecture
47 16.11-22.11	P	Scintillations	Ionosphere instabilities and drivers, monitoring of scintillations	lecture
48 23.11-29.11	A/P	Repetitions		
49		EXAM?		

Reference material:

C.T. Russell, J.G. Luhmann, R.J. Strangeway (2016), *Space Physics*, Cambridge University Press
(ISBN: 978-1-107-09882-4)