COURSE ANALYSIS, postgraduate course

Third cycle courses, EECS School, KTH, from 2018

An asterix (*) denotes non-compulsory data.

Course data

Course name	**MAGNETOHYDRODYNAMICS, ADVANCED COURSE**
Course ID	FED3305
Credits	6 hp
Time period for course	**VT2019**
Teachers	Jan Scheffel (jan.scheffel@ee.kth.se)
Classroom hours	4 x 2
Nr of registered students	2
Examination rate, in %	100

Goals

Global course goals	When completing the course, the student should be able to describe: • the MHD spectrum and characterise the MHD waves in a cylinder and the basic modifications in a toroidal geometry • the basic structure of magnetic field lines in a three dimensional geometry and magnetic confinement • the basic MHD instabilities and how they limit magnetic confinement • how resistivity modifies the MHD theory and the implication on stability. • the non-linear evolution of common MHD instabilities in plasmas
How the course design helps to fulfill these goals	The course is given as a set of four *discussion meetings*. Each student is expected to have studied the corresponding sections of the course and to have prepared five questions to discuss jointly at the meetings. The course design stimulates the students to continual studies. Also, at the course meetings, subject understanding can be achieved through discussions of topics and concepts that the student finds difficult. At these meetings, the teacher furthermore helps the students towards a global understanding of the subject. *A comprehensive set of course problems should be solved at home* and defended at a brief *oral examination* at the end of the course. Also, a *15 minutes presentation* on a chosen course topic should be given in the simulated setting of a conference; additionally the students train in the role of being chair of a session.

Pedagogical development - I

Changes made since previous time course was given	The course was thoroughly revised the previous time it was given. Main changes are: * New structure with better contact with the course in basic Magnetohydrodynamics ED3230. * Better literature, with regards to both subject content and pedagogics. * The course requires continual work from the students. * **New examination**; the final written exam is replaced by • a written hand-in assignment, comprising answers to some 20 questions on the course concepts • brief oral exam on these questions • a 15 minutes presentation on a chosen course topic. The simulated setting is that of a conference; the students also train in the role of being chair of a session.

Course evaluation; comments from students

Based on the questionnaire used at the Division.
If the course has less than 10 students, the questionnaire can be replaced by informal discussions.

Evaluation response rate*	100 % The questions were: 1) Was the course relevant with respect to your expectations and the course goals? 2) What do you think of the course design / teaching / learning? 3) What is your opinion of the course literature? 4) What do you think of examination in the form of log book /home assignment + oral presentation? 5) Was the course in level with your pre-knowledge? 6) Any positive viewpoints? 7) Any negative viewpoints? 8) Would you like to change anything in the course?
Overall student view*	• ”The course was relevant for me and fulfilled my expectations.” • ”...the course was definitely relevant to my expectations and was even better than what I thought at the begin.” • ” Full of information, a lot of interesting things and it is really nice to have meeting with the teacher during the course.” • ”I think it was a good course that helped me understand better the theoretical aspects of instabilities associated with pedestal physics.”
Positive comments	The students responded merely positively throughout.
Negative comments	• ”The amount of delivered information is huge and some time there is not the possibility to understand it completely.”
Pre-knowledge, comments*	• ”Well, attending the MHD basic course helped me a lot,

	but the course was still quite challenging and with a lot of concepts that I do not use everyday in my research routine."
Course design, comments*	• "I think that the course overall was structured really good. The meetings required a clear comprehension of the material in order to be attended and that was actually quite challenging and really nice at the same time."
Literature, comments	• "I think the course literature was ok. I remember I had hard times understanding the article about toroidal Alfven eigenmode…" • "...really good."
Examination, comments	• "The form of examination was ok." • " I liked it a lot, especially the meeting in person."
Particularly interesting* comments	• "For me it would be helpful to have some sort of summary at the beginning of each lecture - e.g. few slides prepared by either a student or lecturer to emphasize the most important points of the chapters we were supposed to read at home." • "I would suggest to add some numerical calculations to the home assignments."

Course teacher's impressions from the evaluation

Comments	Very good and helpful comments from the students.

Course teacher's summary

Overall view	The course worked rather well in spite of the rather advanced literature. It is a challenge for the teacher to emphasize major points and avoid too much details.
Positive comments	Continual learning works fine. And the 15-minutes presentations on chosen topics were really good and useful for the students w r t their skills in making conference presentations.
Negative comments	The students really need to take care in preparing their questions for the meetings. Nowadays I ask for the questions in advance.
View on pre-knowledge*	OK.
View on course design*	Continual discussion meetings work really well in small groups (up to 10 participants).
View on course material	The literature should now be pretty fine.
View on examination	Worked fine. But when there is more than on year between examinations, course analysis suffers.

Pedagogical development - II

Outcome of course changes made since last time course was given	Better, condensed literature worked fine.

Changes to be made before next time course is given	• Ask for really carefully prepared questions in advance. • Prepare a ”warm-up” introductory presentation for the beginning of each course meeting. • Schedule the meetings with long intervals, preferably three weeks. • Consider introducing some problem solving in between meetings.

Other

Comments*	