

# COURSE ANALYSIS, postgraduate course

Third cycle courses, EECS School, KTH, from 2018

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An asterix (\*) denotes non-compulsory data.

## Course data

Course name	<b>MAGNETOHYDRODYNAMICS</b>
Course ID	FED3230
Credits	8 hp
Time period for course	<b>VT2020</b>
Teachers	Jan Scheffel (jan.scheffel@ee.kth.se)
Classroom hours	4 x 2
Nr of registered students	3
Examination rate, in %	100

## Goals

Global course goals	<p>When completing the course, the student should be able to</p> <ul style="list-style-type: none"><li>• Provide the details of the derivation of ideal and resistive MHD equations</li><li>• Describe and explain the domains of validity of one-fluid MHD</li><li>• Demonstrate the basic properties of ideal MHD</li><li>• Give detailed examples of MHD equilibria and their properties</li><li>• Discuss MHD waves</li><li>• Derive the Energy principle</li><li>• Apply the Energy principle to the Rayleigh-Taylor instability</li></ul>
How the course design helps to fulfill these goals	<p>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.</p> <p>The course design stimulates the students to continual studies. Also, at the course meetings, subject understanding can be obtained in due time.</p> <p>A comprehensive set of course problems should be solved at home and defended at a brief oral examination at the end of the course.</p>

## Pedagogical development - I

Changes made since previous time course was given	No major changes. The course literature is now fully available electronically through KTHB (Primo).
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## 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.

<b>Evaluation response rate*</b>	67 % 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?
<b>Overall student view*</b>	<ul style="list-style-type: none"><li>• "Överlag tyckte jag att kursen var bra."</li><li>• "Yes exceeded [expectations], explains very well what MHD is."</li></ul>
<b>Positive comments</b>	<ul style="list-style-type: none"><li>• "This course is perfect as in introduction to MHD."</li><li>• "...explains very well what MHD is."</li></ul>
<b>Negative comments</b>	<ul style="list-style-type: none"><li>• "Utöver de frågor man tar med sig till mötena skulle jag gärna ha sett lite mer lärarledda diskussioner. Jag tror att om vi gemensamt hade gått igenom innehållet (som vi redan läst naturligtvis) hade man kunnat få till intressanta diskussioner och lära sig saker som man kanske missar när man läser på egen hand."</li><li>• "Dessutom hade jag gärna sett lite mer problemlösning (snarare än bara härledningar och teorifrågor). Jag tror att det är nyttigt att se om man kan tillämpa sina kunskaper och att se ifall man verkligen har förstått."</li></ul>
<b>Pre-knowledge, comments*</b>	<ul style="list-style-type: none"><li>• "Ja." [in level with pre-knowledge]</li><li>• "Some math but was included in the notes."</li></ul>
<b>Course design, comments*</b>	<ul style="list-style-type: none"><li>• "...några förändringar hade kunnat göra att jag hade lärt mig och förstått mer."</li><li>• "Good."</li><li>• "Lagom omfång på kursen. Intressant material."</li></ul>
<b>Literature, comments</b>	<ul style="list-style-type: none"><li>• "Good because there are much harder literature"</li><li>• "Bra litteratur, jag tycker att de olika böckerna kompletterade varandra bra."</li><li>• "...gav en bra översikt, och att man i de andra böckerna kunde fokusera mer på detaljerna istället för helheten."</li></ul>
<b>Examination, comments</b>	<ul style="list-style-type: none"><li>• "Examinationen var bra. Bra att få tydlig feedback på inlämningarna så att man kunde rätta till det senare."</li><li>• "Fine. Preferred actually."</li></ul>
<b>Particularly interesting* comments</b>	<ul style="list-style-type: none"><li>• "Sista avsnittet om rymdplasma kändes inte jätterelevant, men jag antar att det är en del av "allmänbildningen"."</li></ul>

## Course teacher's impressions from the evaluation

**Comments** Only three students, but quite interactive during learning.

## Course teacher's summary

<b>Overall view</b>	Course worked well.
<b>Positive comments</b>	Appreciated introduction of MHD using continual learning.
<b>Negative comments</b>	More teacher led introductions and more problem solving seem desirable.
<b>View on pre-knowledge*</b> <b>View on course design*</b>	OK. Continual discussion meetings work really well in small groups (up to 10 participants).
<b>View on course material</b> <b>View on examination</b>	Fine. Works well.

## Pedagogical development - II

<b>Outcome of course changes made since last time course was given</b>	Course literature is now more appreciated.
<b>Changes to be made before next time course is given</b>	<ul style="list-style-type: none"><li>• Consider preparing brief introductions to each of the four meetings in the course.</li><li>• Possibly introduce some problems for individual activity in order to strengthen understanding.</li></ul>

## Other

**Comments\***