

AGROfutur: Reforming the study programmes of agricultural sciences at ETH Zürich also based on employers' needs



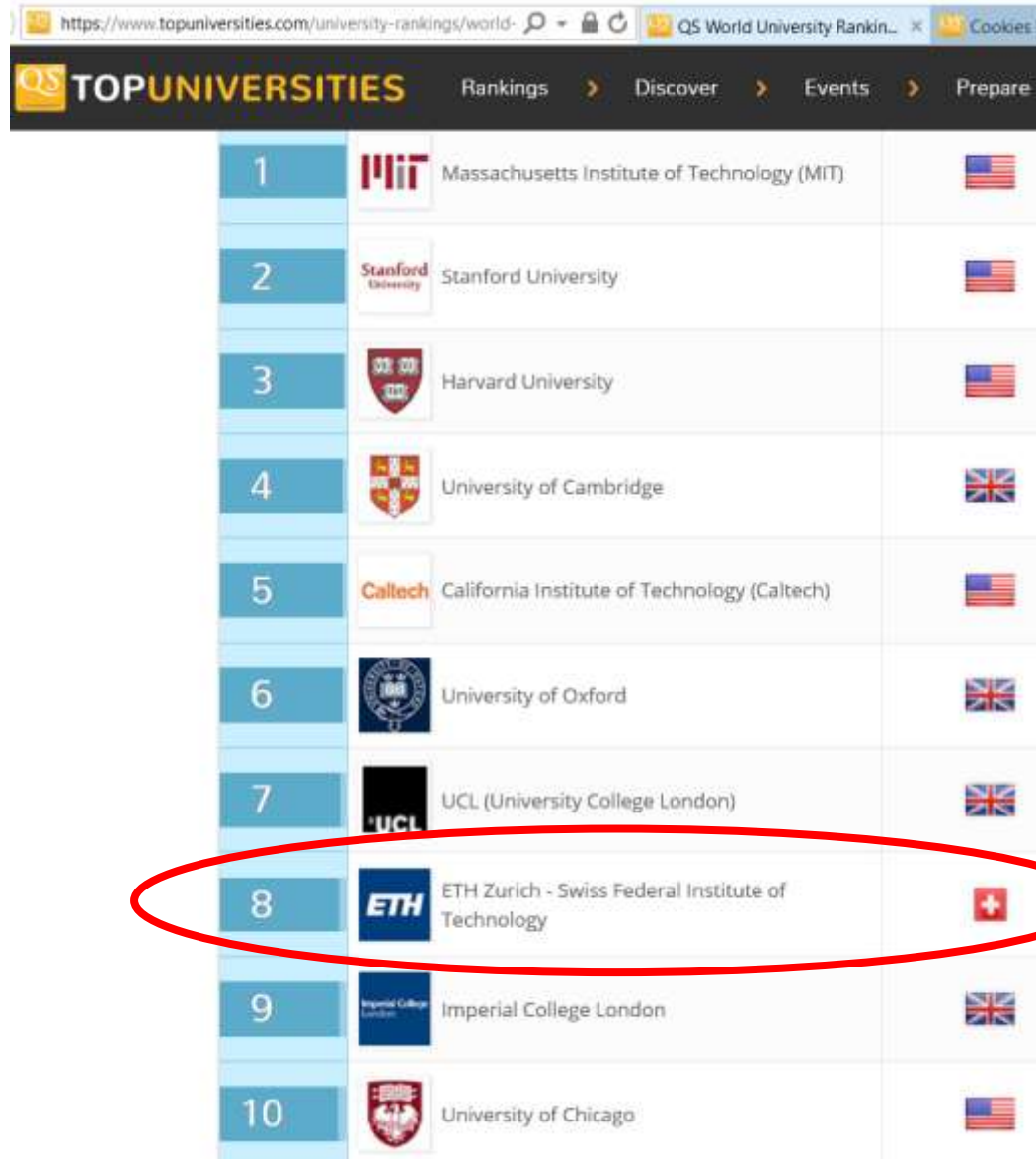
Achim Walter, Study Director of Agricultural Sciences, ETH Zürich

ETH Zürich: Research & Teaching in general

- ETH is financed by the federal government; exists since 1855
- Total Number of BSc- and MSc-students: ca. 15'000
- 24 Bachelor Study Programs
- 43 Master Study Programs
- Ca. 500 Profs, 4000 doctoral students, 7'000 other employees
- 21 Nobel Prize Laureates























Research & Teaching @ ETH Zürich: Top ranked



https://www.topuniversities.com/university-rankings/world- QS World University Rankin... Cookies P

QS TOPUNIVERSITIES Rankings > Discover > Events > Prepare

1		Massachusetts Institute of Technology (MIT)	
2		Stanford University	
3		Harvard University	
4		University of Cambridge	
5		California Institute of Technology (Caltech)	
6		University of Oxford	
7		UCL (University College London)	
8		ETH Zurich - Swiss Federal Institute of Technology	
9		Imperial College London	
10		University of Chicago	

ETH Zürich ranks in the top 10 of global university rankings such as QS ranking, THE ranking...



Challenges & Peculiarities of our study program

- the only one in Switzerland on Ag. Sc. @ university level -
- **Agricultural Sciences are in the center of several areas of conflict**
 - Nobel Prize Research ↔ Down-to-earth Applications
 - National ↔ International
 - Environmental Systems ↔ Food Value Chains
 - Biotechnology ↔ Bio-Farming / Organic Agriculture



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■ Dynamic developments around us

- Student numbers are rising (right: BSc-beginners)
- Largest turnover in professorships since start (1871)
- Departments recently rearranged (D-USYS / D-HEST)
- Concerted actions on CH agricultural knowledge system



So, what is the biggest problem?

Request to our rectorate: Study reform (2013-17)



Phases of so called ‚Studiengangsinitiative‘ – process of study program reform at ETH Zürich

Kickoff 2013: Analyse situation – suggest a schedule how to proceed



- Application handed in by study director and study administration
- Financial contribution of ETH: Ca. 50 % of full-time-position (FTE) during 4 years
- Budget for workshops, travel etc.
- Additional 50 % FTE for the reform need to be provided by the department

Presented during Kickoff-retreat in 2013:

BÜRO FÜR ARBEITS- UND SOZIALPOLITISCHE STUDIEN BASS AG
KONSUMSTRASSE 20 · CH-3007 BERN · TEL +41 (0)31 380 60 80 · FAX +41 (0)31 398 33 63
INFO@BUEROBASS.CH · WWW.BUEROBASS.CH

BASS

‘SVIAL-Study’

(employers’ report on strengths and weaknesses of young employees)

**Arbeitsmarktstudie im Bereich der Hochschulabsolvent/innen
in Agrarwissenschaft und in Lebensmittelwissenschaft in der
Schweiz**

Definitiver Schlussbericht

AGRO
futur

Tabelle 15: Übereinstimmung der benötigten mit den vorhandenen Kompetenzen bei den Agronom/innen

ETH (a

Kompe

Study results of SVIAL employers' survey

Projektmanag.	MAK	22	46%	22	46%	4	8%	48	100%	6	11%	2.1	1.6	-
Kommunikation	MEK	25	51%	21	43%	3	6%	49	100%	5	9%	2.2	1.7	--
Deutsch	SPK	15	29%	30	59%	6	12%	48	100%	3	6%	1.9	1.7	-
Probleme lösen	MEK	24	50%	22	46%	4	8%	48	100%	6	11%	2.3	1.7	--
Arbeitstechnik	MEK	22	49%	23	46%	1	2%	45	100%	9	17%	2.4	1.8	--
Präsentationstech.	MEK	21	43%	23	46%	5	10%	48	100%	4	7%	2.3	1.9	-
Arbeiten im Team	MAK	21	43%	24	49%	1	2%	49	100%	5	9%	2.6	2.0	--
BWL	KSF	21	46%	23	46%	2	4%	46	100%	8	15%	2.5	2.1	-
Französisch	SPK	11	22%	20	40%	11	22%	50	100%	4	7%	2.6	2.4	-
Pflanzenbau	MAK	13	28%	24	52%	9	20%	46	100%	5	9%	2.4	2.5	+
VWL	KSF	12	24%	23	51%	10	22%	45	100%	9	17%	2.5	2.5	+
Personalführung	MAK	25	56%	15	33%	4	8%	45	100%	9	17%	3.2	2.5	--
Biologie	KNF	3	7%	23	46%	13	31%	42	100%	12	22%	2.1	2.6	+
Stat. Methoden	MEK	16	33%	19	40%	1	2%	48	100%	6	11%	2.6	2.6	+
Mathematik	KNF	5	12%	19	40%	19	44%	43	100%	11	20%	2.1	2.7	++
Pflanzenschutz	AFK	16	33%	21	49%	6	14%	43	100%	17	20%	2.8	2.7	-
Tierernährung	AFK	13	28%	27	63%	5	11%	43	100%	11	20%	2.5	2.8	+
Englisch	SPK	9	19%	21	43%	17	36%	44	100%	13	24%	2.9	2.9	++
Versuchsplanung	MEK	12	24%	17	39%	1	2%	44	100%	10	19%	2.8	2.9	+
Tierhaltung	AFK	9	21%	23	52%	11	26%	43	100%	10	19%	2.6	2.9	+
Tierzucht	AFK	2	7%	23	52%	13	31%	44	100%	10	19%	2.5	3.0	++
Pflanzenzucht	AFK	1	3%	23	52%	1	2%	44	100%	10	19%	2.7	3.1	+
Chemie	KNF	1	3%	24	56%	14	36%	39	100%	15	28%	2.5	3.1	++
Recht	KSF	1	3%	24	56%	5	12%	43	100%	11	20%	3.4	3.2	-
Soz./Psy.	KSF	14	35%	18	46%	3	8%	40	100%	14	26%	3.4	3.3	-
Physik	KNF	1	3%	18	46%	19	49%	39	100%	15	28%	2.6	3.4	++
Labormethoden	AFK	5	12%	25	61%	11	27%	41	100%	13	24%	3.0	3.5	+

My / our take home messages:

- We have a good teaching program
- This may not become less practice-oriented
- We need to improve students in soft skills and by "training on the job" (both in research and application)

Our students need to be able to solve 'new problems'

They require a strong skill set in natural sciences



Bemerkungen: KB = Kompetenzbereich; k.A. = keine Antwort; Skala von 1 (stark vorhanden/benötigt) bis 5 (gar nicht vorhanden/benötigt). Quelle: Unternehmensbefragung Februar/März/April 2013; eigene Berechnungen

Analysis of the situation and participatory discussions between students...



**...employers / experts from the job market
(business, administration, associations)...**



...and professors and other docents of ETH (all pictures: first Agrofutur-Retreat in Olten 2013)



After two years of discussions (2013-2015)...



Important soft skills – general aim:

Improve ability to perform well in

a) Science

b) More application-oriented jobs

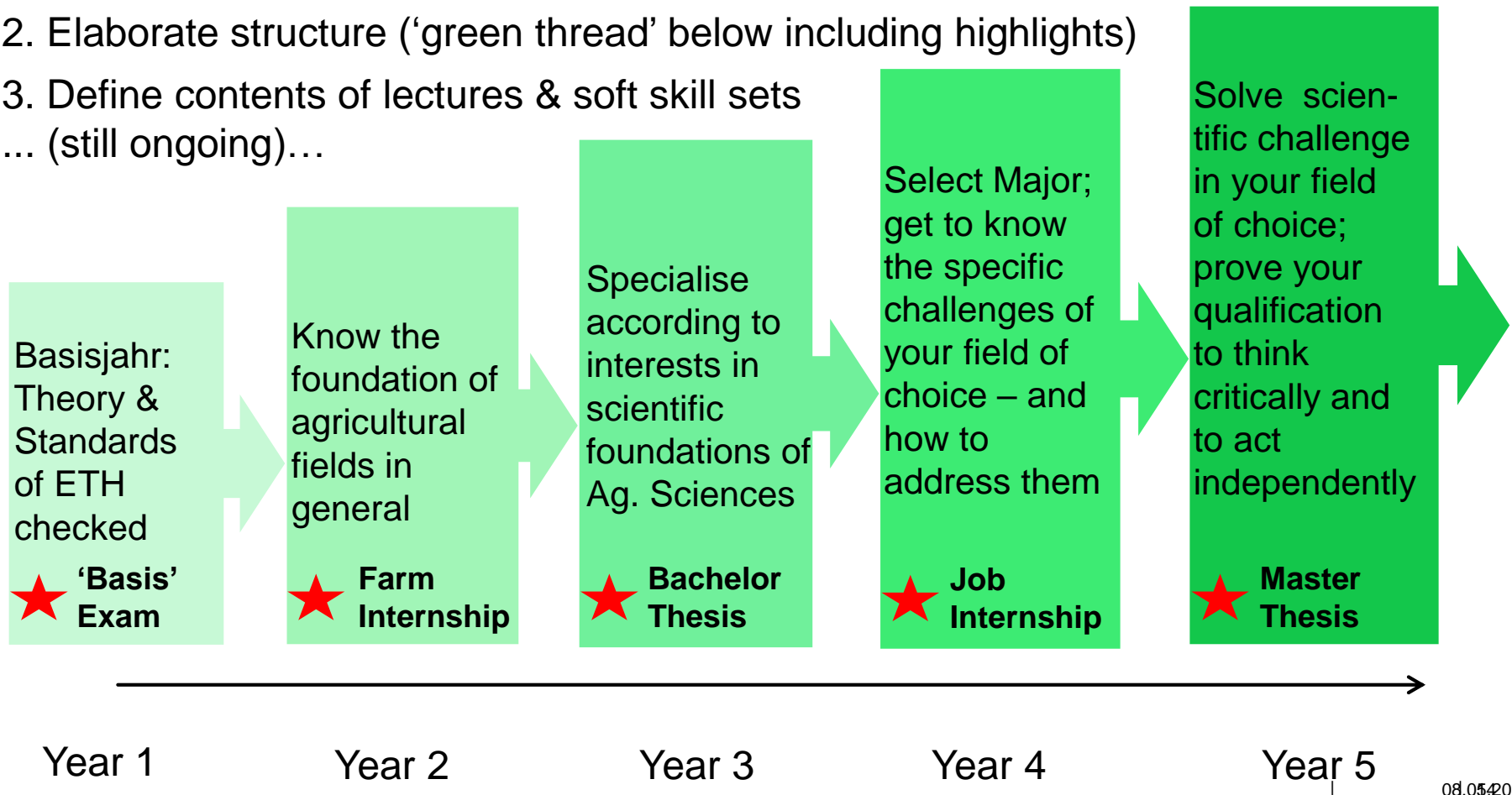
by strengthening skills in

- Presentation
- Writing
- Argumentation
- Teamwork
- Project Management

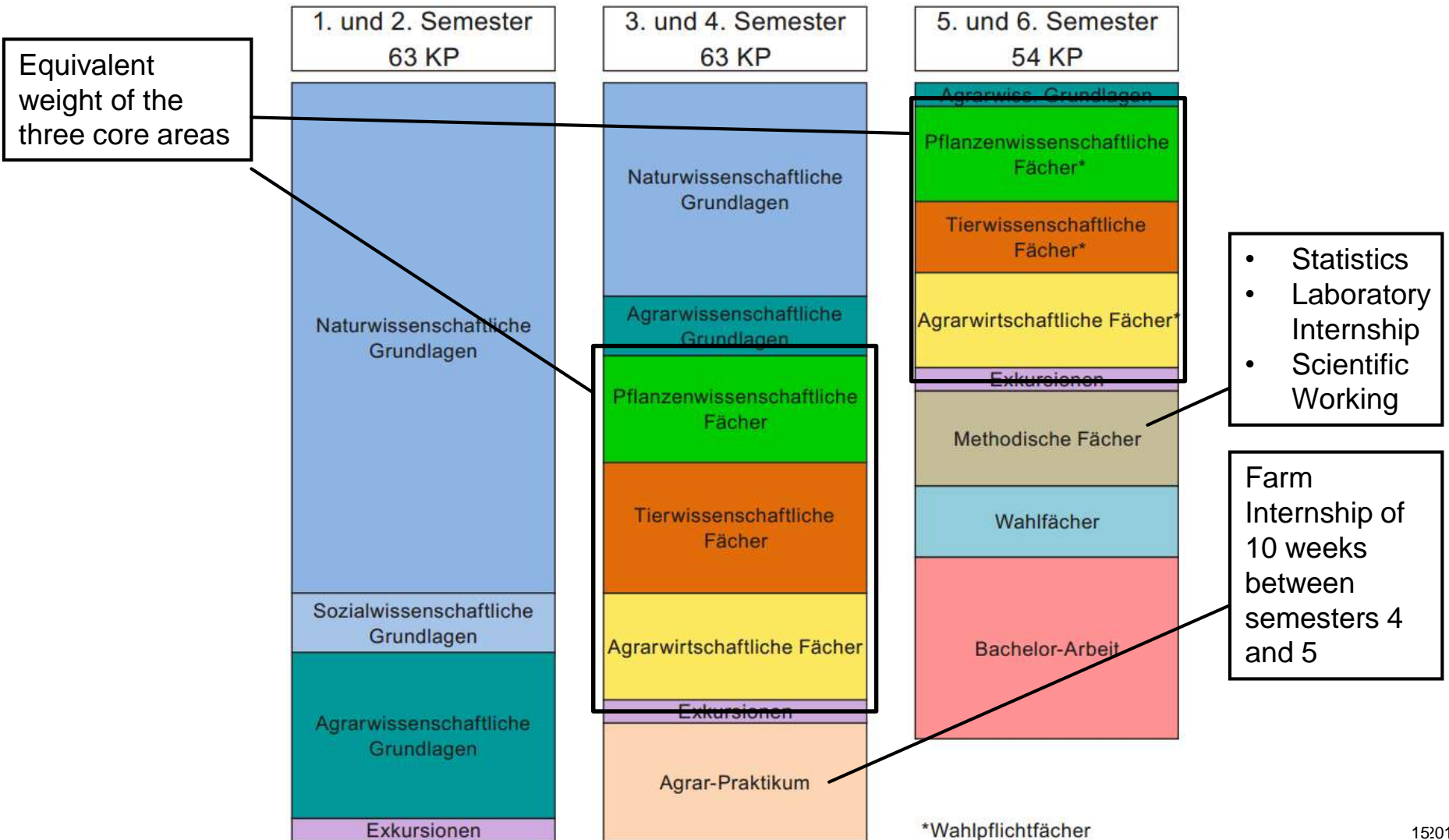
New Structure of Ag. Study Program (fall 2016)

Sequential procedure to elaborate this structure:

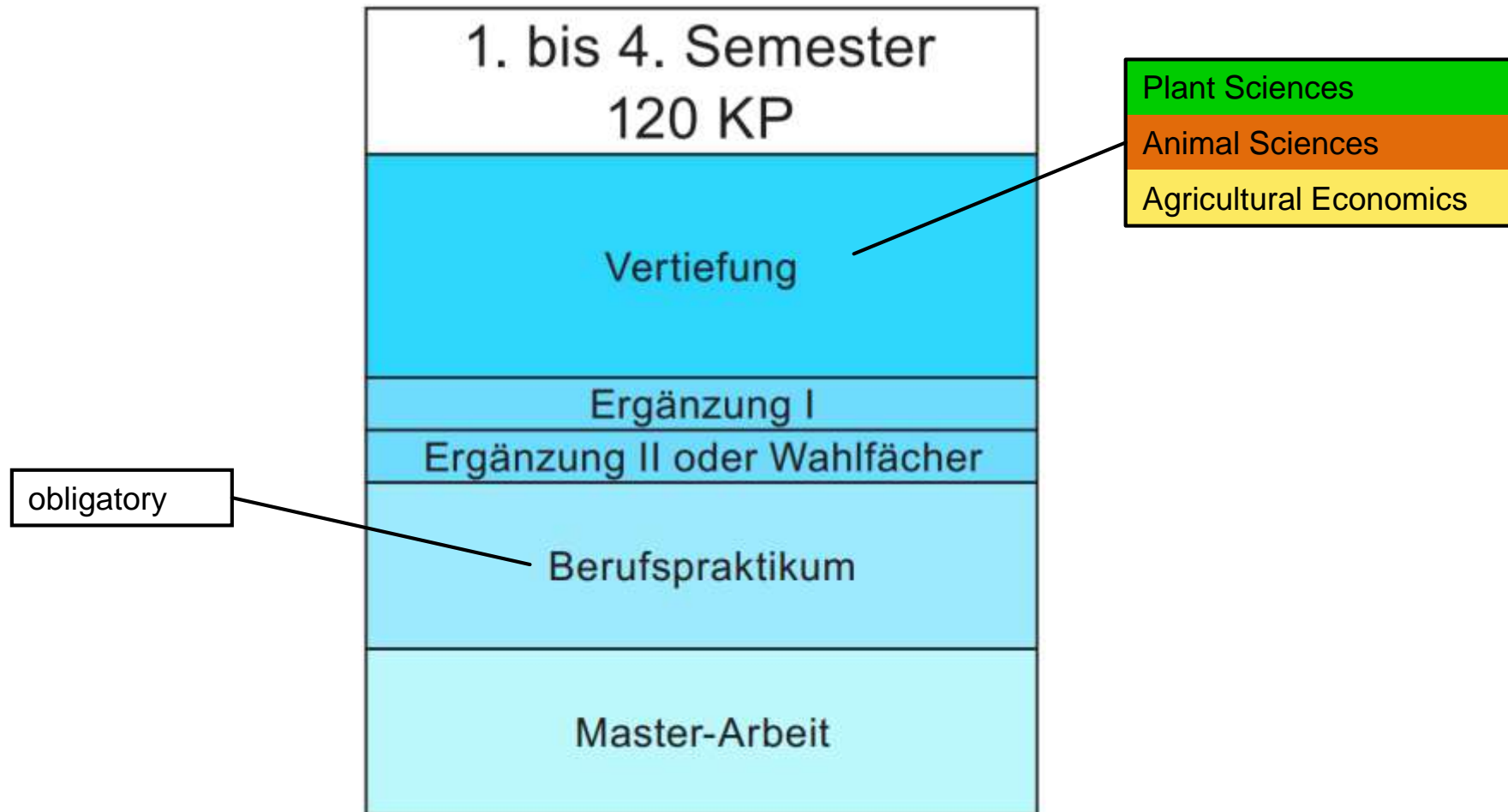
1. Elaborate 'Qualification Profiles' for BSc and MSc Study Programs
2. Elaborate structure ('green thread' below including highlights)
3. Define contents of lectures & soft skill sets
- ... (still ongoing)...



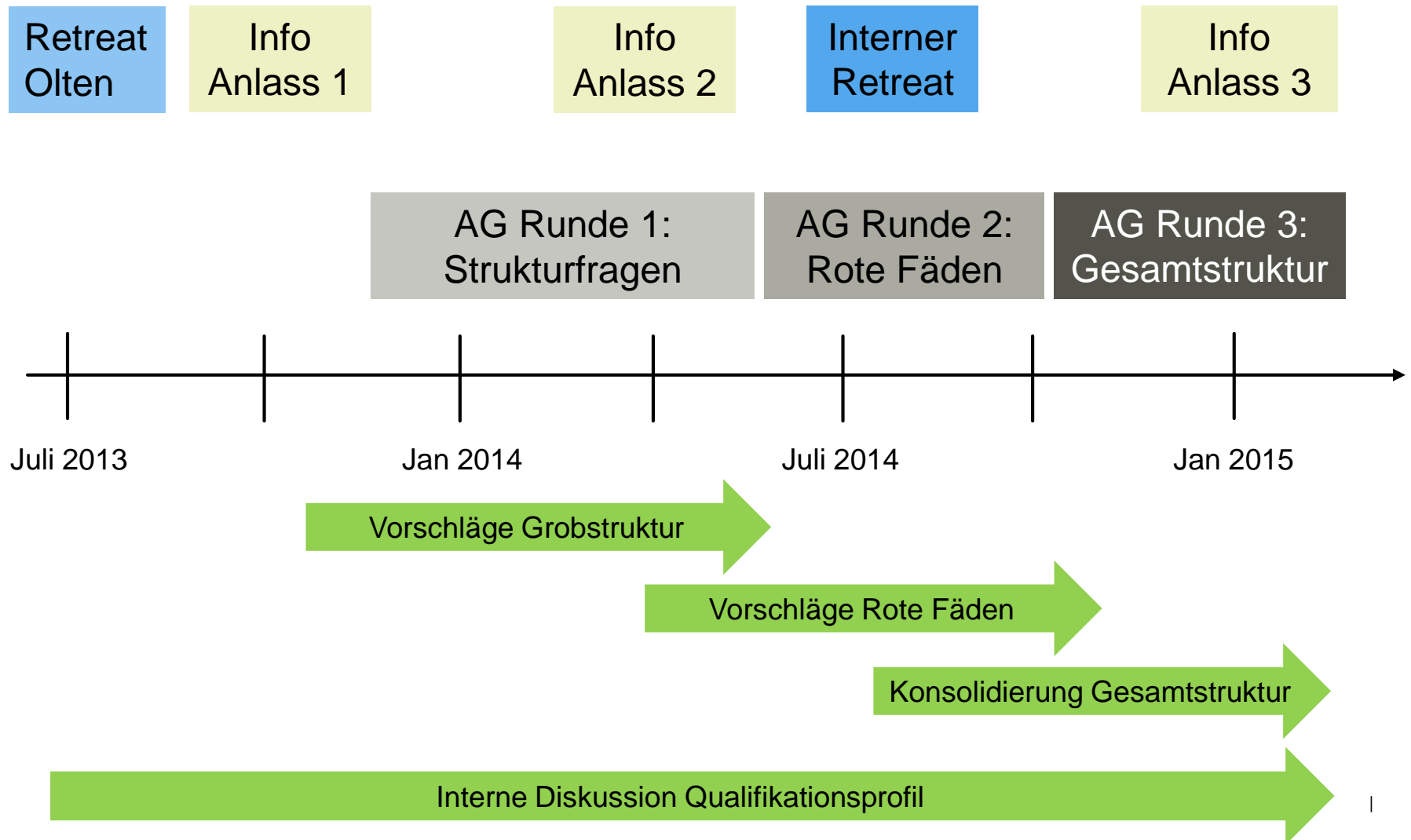
Structure of BSc Program (6 semesters)



Structure of MSc Program (0.5 a extended)



Agrofutur: Project Structure (07/2013 - 01/2015)



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Each year: A fair / poster exhibition / workshops, where internship topics are presented...

Farm Internship: ‚Agrar-Praktikum‘ in BSc



**Connect intern-
ships with science-
oriented classes**

Zweite Sitzung AG ‚Agrar-Praktikum‘

Datum und Zeit 03. März 2015, 14.30-16.00 Uhr

Ort CHN P12

Teilnehmende Achim Walter, Brigitte Dorn, Michael Kreuzer, Astrid Oberson, Simon Peter, Lienhard Dürst, Corinne Ruh, Pirmin Reichmuth, Simon Rothenbühler, Diana Zwahlen (entschuldigt: Louisa Sarakinis)

Ausgearbeitet und diskutiert:
Details zu Vorbereitung,
Durchführung und Nachbereitung.

- Identifizierung einer ‘Agro-Frage’
- Vorstellen an ‘Agro-Tag 1’ für jüngere Studis –
- Aufnehmen dieser Frage für ‘Wiss. Arbeiten/Schreiben’



Job Internship: ‚Berufspraktikum‘ im MSc



Zweite Sitzung AG „Berufspraktikum“

Datum und Zeit 26. Februar 2015, 09.00-10.30 Uhr

Ort LFW B52

Teilnehmende Achim Walter, Lienhard Dürst, Susanne Ulbrich, Michel Dumondel, Brigitte Dorn, Andreas Schmidli, Lukas Kronenberg, Raphael Etterlin, Diana Zwahlen (entschuldigt: Leo Meile)

- Projekt im Berufsumfeld, 16 Wochen
- Vorstellen: ‘Agro-Tag 2’ für jüngere Studis; Betriebspräsentationen
- Details zu Vor- u. Nachbereitung wie Feedback-Formate Praktikumsgeber...

Sitzung zum Berufspraktikum “Agro-Food” mit Industriepartnern

Datum und Zeit 20. März, 09.15-11.00 Uhr

Ort LFW D12

Teilnehmende Achim Walter (ETH), Martin Keller (fenaco), Markus Willimann (Emmi), Otmar Hofer (BINA), Michel Roux (SVIAL), Lienhard Dürst (ETH), Leo Meile (ETH), Brigitte Dorn (ETH), Diana Zwahlen (ETH)

ETH erteilt Studenten Gummistiefel-Befehl

Agronomen sollen mit mehr Bezug zur Praxis

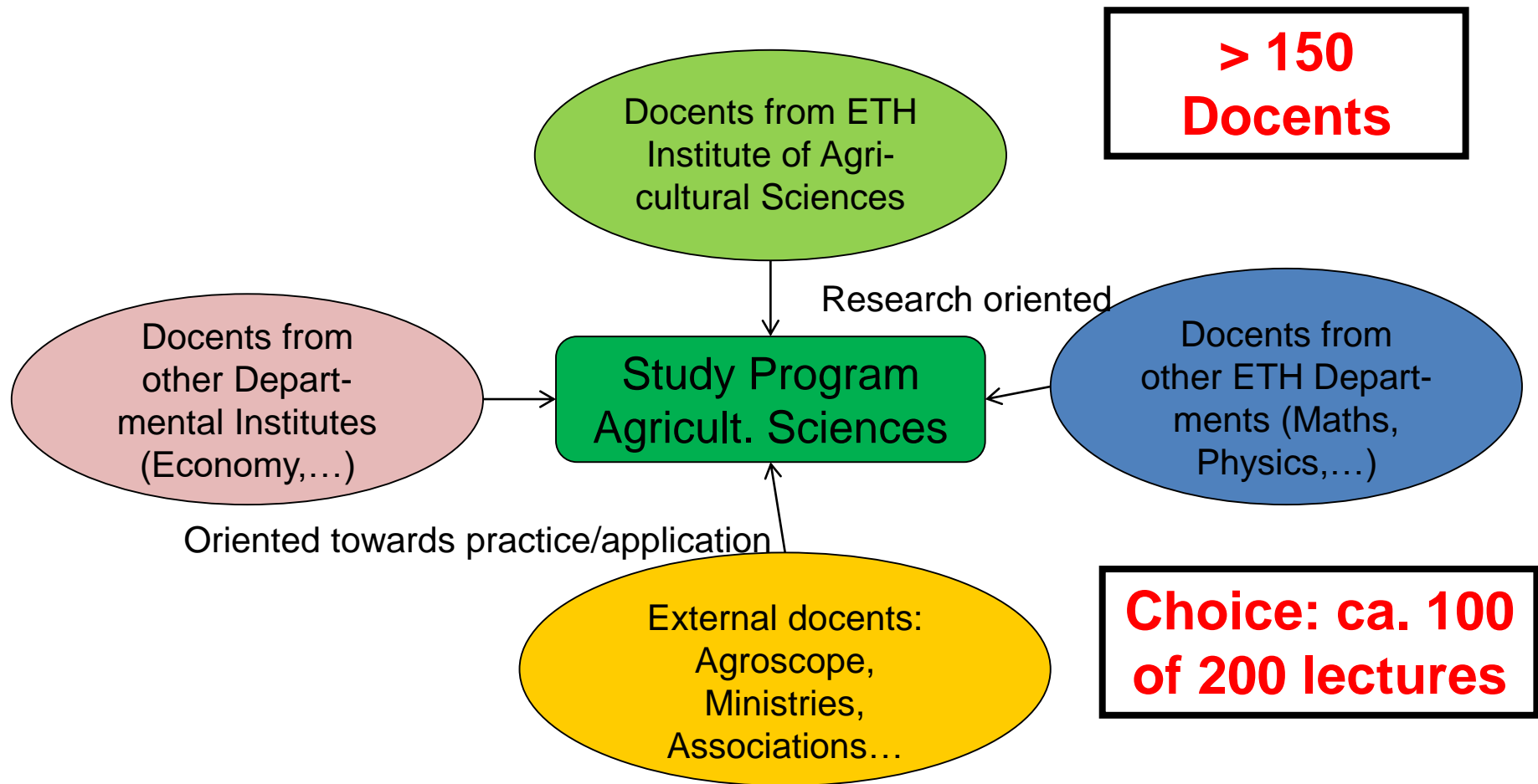
Nach dem Streit um eine Kröte- und Stille haben sich Bauern und ETH wieder gefunden. Mit einer Reform will das Agrarstudium mehr in die Betriebe rücken.

Vermutlich, dass das den Bauern sonst aufgeschlossen ist, sagt er. Der Konflikt habe aber vor allem offenbart, dass der Bauernverband nicht gut genug darüber informiert sei, was Agrarwissenschaften an der ETH sei.

10 Wochen müssen die Agrarwissenschaften an der ETH sein.



Organisation of Teaching



Agrofutur II – Current ,To Dos‘

- Communication of the study program reform for all kind of stakeholders and young potential new students
- Elaboration of central courses, to which more than one professorship is contributing
- Implement, how ‘soft skills’ are exactly taught: Which competence in which course – how to avoid redundancy...
- Establish a scheme that makes sure that quality of teaching doesn’t decrease throughout years and that dialogue about content with students and stakeholders is kept alive (teaching evaluations, advisory boards, workshops on teaching...)

Thanks a lot for your attention!

Students and docents after a discussion event in April 2015



Final outcome: Required Credit Points in MSc

- One of three Majors: Animal Sciences, Crop Sciences or Agricultural Economics 40 of 120
- Minor I 10 of 120
- Minor II or Elective Courses 10 of 120
- Job internship 30 of 120
- Master Thesis 30 of 120