

Evaluation PSC PhD Program in Plant Sciences, 2003 – 2009

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Introduction to the PSC PhD Program in Plant Sciences

One of the key responsibilities of the Zurich-Basel Plant Science Center (PSC) is the planning, coordination and organization of internationally competitive PhD and Master's programs, which include a comprehensive range of courses for Master's and PhD students. Since 2002/2003 the PSC has continually organized and delivered several courses each semester that are specifically tailored to PSC students and that are offered exclusively through the PSC. These courses provide the young scientists with:

- A solid introduction to the diverse conceptual and technical approaches taken in Plant Sciences research
- An integrated view of the various specialized fields
- Up-to-date scientific knowledge from new research fronts
- Support in the acquisition of key skills that are required in academic and professional life

The PSC PhD Program in Plant Sciences was officially introduced in the winter term of 2002/2003.

The program was developed in close contact with researchers and as cooperation of the three partner universities (University of Zurich, ETH Zurich, University of Basel). Thereby a strong focus was set on interdisciplinary approaches.

For each semester the PSC – in collaboration with its members – assembles a specific program of courses that reflect the interests of a wide range of PhD students in the field of plant sciences. All PhD students enrolled at PSC member institutes can participate in the PSC PhD Program in Plant Sciences at no extra cost. At the end of their enrollment as PhD students, PSC PhD students receive

a certificate of achievement from the PSC that documents their participation in the PSC PhD Program in Plant Sciences and the credit points achieved during their education and training. The key goals of the PSC PhD Program in Plant Sciences focus on:

- Providing PhD students with an integrated view of various specialized fields and up-to-date scientific knowledge from new research fronts in plant sciences.
- Providing PhD students with an introduction to diverse conceptual and technical approaches in research in plant sciences.
- Making the competences and the infrastructure of the three partner Universities accessible to all PhD students who participate in the program.
- Enhancing interdisciplinary research competence of PhD students in the field of plant science.
- Equipping PhD students with a range of transferable skills relevant to a future career in academia as well as beyond (e.g. management skills and communication skills [oral and written])
- Creating courses and research projects based on inter-institutional collaborations, thus encouraging students to work as members of flexible teams.
- Attracting and recruiting particularly well qualified candidates to do their graduate education and research at the PSC.
- Offering all PhD and Master's courses in English, to meet the needs of the large number of international students enrolled at the three partner universities.

Learning Contents of the PSC PhD Program in Plant Sciences

PhD students attend courses tailored to their needs within the PSC PhD Program in Plant Sciences.

They can choose courses from the following PSC PhD Modules (except for the mandatory part):

PSC Module	To Learn About: Learning Objectives?	Awarded CP
Mandatory part: Colloquium 'Challenges in Plant Sciences'	Integrated knowledge about plant sciences, from the molecular level to the	2

	level of the ecosystem, from basics to application	
Short Courses in Plant Sciences	Firm understanding of the conceptual and technical approaches in plant research including statistical approaches in plant sciences	Between 1 - 3
Transferable Skills Courses	Practicing of key skills like research management, personal/social skills, professional conduct in research.	Between 1 – 1.5
Seminars in Plant Sciences	Deep insight in the theory behind a certain plant sciences discipline.	2
Intensive Block Courses in Plant Sciences	Intensive training on certain approaches in plant sciences. Note: these courses are normally offered at the Master's level but can be tailored to PhD's needs.	Max. 6
Organization of PSC PhD Symposium	Organization of an international symposium	3

The PSC PhD Program in Plant Sciences Aims at Developing the Following Key Competencies of PhD Students

All courses of the Zurich-Basel Plant Science Center have been developed to assist PhD students in the training of research skills and transferable skills. The courses focus on:

- Training in **Research Skills and Techniques** (e.g. in statistics, experimental design, research methods in plant sciences)

- Understanding of the **Research Environment** and **Scientific Community** you are working in (e.g. understanding standards of good research practice and ethical standards, understanding funding and publication practices in research)
- **Research Management** (e.g. project management in research)
- Training in **Personal Effectiveness** (e.g. time management)
- Training of **Communication Skills** (e.g. Scientific Writing, Scientific Communication Practice)
- **Networking and Teamworking**
- **Career Management** (e.g. career development in academics, self marketing)

An overview of all courses offered between 2003 and 2008 is presented in Appendix 1.

PhD Students Registered in PSC PhD Program in Plant Sciences, Courses Offered and Number of Course Participants

An overview of PhD student numbers registered in the PhD program between 2003 and 2009 gives table 1.

Table 1: Number of PhD students registered in the PSC PhD Program in Plant Sciences

Year	ETH Zurich	University of Zurich	University of Basel
WS 2002/2003 – SS 2005	112	68	22
WS 2005/2006 – HS 2007	144	73	17
2008	128	51	28
2009	127	55	36

Between 2003 and 2009, the PSC offered 163 courses. Of these 145 courses were carried out while 18 had to be cancelled due to, for example, not enough participants or illness of the lecturer. In this period, the number of graduate courses offered by the PSC doubled, e.g. from 13 (2003) to 28 (2009). Most courses are offered exclusively through the PSC (68 courses), by University of Zurich (34

courses), ETH Zurich (34 courses), University of Basel (10 courses) or as a collaboration of the partner universities (17 courses).

In total, 2023 participants attended of the PSC graduate courses in the period under review (see Appendix 1). The number of participants increased and courses are often fully booked within hours: Winter term 2002: 115 participants, autumn term 2009: 158 participants (increase of 40%), summer term 2003: 54 participants, summer term 2009: 161 participants (increase of 175%).

Number of participants by university in the period under review was: ETH Zurich – 1107 participants, University of Zurich – 660 participants, University of Basel – 157 participants and other institutions, mainly from the ETH domain (WSL, EAWAG) – 99 participants.

General Satisfaction with the PSC Graduate Courses between 2003 and 2008

The evaluation forms completed by students show that the courses were judged to be good or excellent. In addition to the education and training they received in specialist subjects, the students greatly appreciated that the courses also gave them the opportunity to make personal and professional contacts with members of other research groups. Because the questions and language (German to English) of the evaluation forms changed in winter term 2005/2006, results are presented in two sections.

Evaluation Winter Term 02/03 – WS 05/06

Die meisten Teilnehmer finden das PSC Graduierten Programm vielseitig, interessant, gut organisiert, hilfreich und schätzen, dass fachspezifische aber auch Kurse aus anderen Wissens- respektive Fachbereichen angeboten werden wie z.B. Ethik, Self Management, Medientraining etc. Gemäss Aussage der Teilnehmer erweitert sich damit der Blickwinkel und ermöglicht die Betrachtung der Naturwissenschaften unter neuen Gesichtspunkten.

Das PSC Programm wird wegen dem vielfältigen Angebot geschätzt: Viele Teilnehmer sind der Meinung, dass das PSC – Programm ein gutes Forum ist in dem das eigene Wissen auf den neuesten Stand gebracht und Wissen ganz allgemein ausgetauscht werden kann.

Das Programm Kurse bietet die Möglichkeit, Leute aus anderen Fachbereichen und Forschungsgruppen kennen zu lernen und so neue Sichtweisen, Ideen etc. auszutauschen. Dies stärkt die Zusammenarbeit allgemein.

Praktisch alle Teilnehmer wünschen sich Englisch als Kurssprache.

Die detaillierte Evaluation findet sich im Appendix III.

Evaluation Summer Term 2006 – 2008

Of the 65 courses carried out between 2006 and 2008, we could include the evaluation forms for 63 courses in this report. For two courses the feedback form were not handed back. Students were asked to answer the question whether they would recommend the course they have taken to other PhD students. We received a response to this question for 31 **transferable skills courses between 2006 and 2008**: 30 courses would be recommended by more than 70% of the course participants. For 25 courses on **methods in plant sciences**, 23 would be recommended by more than 70% of the course participants (data not shown).

Detailed evaluation of all PSC courses for the period 2006 – 2008 is presented in Table 2. In our evaluation form, students could disagree or agree with different statements on a 4-point scale with 4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree. Most courses were rated very positively: PhD students strongly agreed or agreed with all aspects of the course regarding organization, content, instructor feedback and supervision, quality of the manual, balance between theoretical and practical parts, working atmosphere and the fulfilling of student expectations and needs. (Average of students agreement > 3.)

Courses with a negative evaluation in some aspects were Scientific Illustration (Paschke, 2008) for several aspects; Plant Nutrition (Frossard, 2007) for its working atmosphere; Spatial Patterns (2007), Fluorescence Microscopy (Sauter, 2007), Leadership Skills (Muff, 2007) and Epigenetics (Meins, 2007) for their handouts; Leadership Skills (Muff, 2007) for an imbalance of theory and practice. Pace of instruction was negatively evaluated for Scientific Illustration (too slow) and for Contemporary Applied Statistics for Ecology (CASE, Hector, 2008) (too fast).

Evaluation of Colloquium "Challenges in Plant Sciences"

The former colloquium "Spectrum in Plant Sciences" was completely re-designed and has been offered as "Challenges in Plant Sciences" since autumn term 2005/2006. The colloquium "Challenges in Plant Sciences" provides students with integrated knowledge in different fields of plant sciences, connecting established fields in the basic sciences (e.g. molecular plant biology and ecology) and those related to applied sciences (e.g. biotechnology and plant breeding) through presentations given and prepared by students and staff together. PhD students and Master's students are together involved in the organization of the individual colloquium sessions. The professors start by giving a short 'impulse' talk on their topic and then a team of three students prepare a lecture on a given current topic, together with the PSC professors. This colloquium has now become a core event of the PSC training.

In the first year (WS 2005/2006) of the newly structured colloquium, students were not satisfied with the organization and consequently reported that the colloquium did not fulfill their overall expectations (value for satisfaction = 1.5; table 3). In the following years general satisfaction was high (value = 3.27, in autumn 2007; value = 3.0 in autumn 2008) and the colloquium was rated very positive in most aspects. However, in autumn 2008 students reported that the colloquium did not help them gain an overview of plant sciences (beside the topic they were preparing themselves) because the presentations were too detailed and too fast to provide an in depth understanding (rating of the aspect "I improved my knowledge in the field of plant sciences" < 2.5). We need to improve the mode of presentations.

Table 2: Course Evaluation 2006 - 2009 with n = number of questionnaires. Statements could be evaluated on a 4-point scale with 4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree.

	Number of Questionnaires	The Course was well organized?	The topics covered met my expectations?	The instructor explained clearly?	Manual was helpful & useful also for future?	Good balance between theoretical & practical?	level of course was according to my needs?	working atmosphere was good?		I learned & benefited from this course?	The instructor meet an appropriate pace? 1 = too slow/too fast, 2 = just right
HS 2009											
Transferable Skill Courses											
Scientific Career Strategy	14	3.29	3.21	3.14	3.07	3.64	3.36	3.79	3.29		1.9
Scientific Writing I	18	3.83	3.56	3.78	3.83	3.61	3.61	3.89	3.78		1.89
Scientific Communication	12	3.75	3.5	3.83	3.58	3.67	3.5	3.67	3.67		1.83
Self-Marketing Skills	11	3.09	2.82	3.18	2.64	2.91	2.73	4	3.09		1.91
Statistic Courses											
Statistics for molecular Biologists	11	3.91	3.73	3.82	3.45	3.36	3.82	4	3.91		2
Methods in Plant Sciences											
Molecular Ecology & Phylogeny	9	3.89	3.67	3.78	3.89	3.78	3.78	4	3.89		2
Non-structural Carbohydrates Genomics & System Biology	8	3.88	3.38	4	3.75	3.75	3.13	4	3.63		2
Modelling approach in Plant Sc.	4	3.5	3.5	3.75	2.5	1.75	3.5	4	3.25		2
Functional Genomics	14	3.71	3.14	3.21	3.43	3.29	2.71	3.64	3.29		1.57
Radio Isotopes in Plant Nutrition	8	3.63	3.63	3.63	2.5	3.63	2.75	3.38	3.63		2
Average	1	4	3	3	3	4	3	3	3		0
		3.65	3.41	3.61	3.26	3.34	2.95	3.84	3.54		1.91
FS 2009											
Transferable Skill Courses											
Project Management	12	4	3.75	4	3.58	3.92	3.83	3.92	3.92		2
Scientific Writing 2	19	3.79	3.68	3.95	3.79	3.37	3.63	3.95	3.74		1.95
Writing a Post-	15	3.4	3.5	3.6	3.27	3.27	3.29	3.8	3.4		2

doctoral Grant										
Presentation Skills	11	4	3.82	4	3.73	3.83	3.73	4	3.91	2
Online Publication										
Practice Professional Career	10	3.5	3.6	3.5	3.6	3.6	3.5	3.8	3.6	1.9
Professional Career	11	3.91	3.73	3.55	3.45	3.73	3.82	3.82	3.82	1.91
Methods in Plant Sciences										
Chromosome Counting	14	3.21	3.14	3	3.29	3.5	3	3.71	3.36	1.83
Plant Innate Immunity	12	3.83	3.83	3.75	4	3.58	3.83	4	3.83	1.92
QTL-Analysis	16	3.75	3.38	3.63	2.94	3.75	3.25	3.88	3.56	1.81
Plant Chromosomal Evolution	7	3.14	3.43	3.57	2.86	3	3.43	3.43	3.57	2
Basic Plant Disease Diagnostic	11	4	3.73	3.91	3.64	3.82	3.5	3.73	3.91	2
Ecosystem Management	10	3.6	3.9	3.8	1.7	3.9	3.7	3.9	3.8	2
Average		3.68	3.62	3.69	3.32	3.61	3.54	3.83	3.70	1.94

FS 2009

N

The Course was well organized?

The topics covered met my expectations?

The instructor explained clearly?

Manual was helpful & useful also for future?

Good balance between theoretical & practical?

Level of course was according to my needs?

Working atmosphere was good?

I learned & benefited from this course?

The instructor met an appropriate pace?
1 = too slow/too fast, 2 = just right

HS 2008**Transferable Skills Courses**

Scientific Illustration	11	2.45	2	3.09	2.64	3.18	2	2.91	2.55	1.36
Self Marketing Academic	11	4	3.45	3.64	2.73	3.64	3.36	4	3.64	2
Career Scientific Writing 1	14	3.79	3.21	3.57	2.57	3.5	3.21	3.86	3.5	1.71
Science Communication	18	3.72	3.28	3.94	3.83	3.56	3.11	3.72	3.39	1.78
	13	3.31	3	3.38	2.85	3.23	3	3.46	3.46	2

Methods in Plant Sciences

Functional Genomics	12	3.5	3.75	3.5	3.42	3.58	3.42	3.92	3.83	1.75
Statistics for Ecology (CASE)	21	3.38	3.43	3.81	3.48	3.71	3.1	3.62	3.67	1.43
Genomics of Plant Pathogen	8	3.63	3.38	3.5	3.25	3.25	3.38	3.88	3.75	2
Average		3.47	3.19	3.55	3.10	3.46	3.07	3.67	3.47	1.75

FS 2008**Transferable Skills Courses**

Project Management Online	12	4	3.58	3.67	3.33	3.5	3.25	3.67	3.58	2
Publication Professional Presentation	10	3.5	3	3.6	3.5	3.1	2.6	3.7	3.1	1.9
Scientific Writing 2	8	4	3.88	4	3.63	3.88	4	4	4	2
Professional Career	19	3.84	3.47	4	3.58	3.37	3.42	3.74	3.58	2
	14	3.64	3.93	3.79	3.07	3.43	3.64	3.93	3.86	1.93

Statistics Courses

Multiple Regression	8	2.88	3.38	3.75	3.38	3.75	3.25	3.88	3.63	1.88
Meta-Analysis	5	3.2	3	3.6	2.8	3	3	3.6	3.2	2

Methods in Plant Sciences

Beinn Eighe Course	10	3	3.6	3.5	2.2	3.2	3.6	4	3.7	2
Transport Processes	9	3.78	3.67	3.56	3.22	3.78	3.56	3.89	3.67	1.78
Alpine Ecology	14	3.79	3.71	3.93	3.36	3.64	3.5	3.86	3.79	2
Mediterra. Ecosystems	5	3.6	3.6	4	3	3.6	3.6	3.8	2.6	1.6
Gardening	5	3.6	2.6	3.6	3.4	3.4	2.8	3.4	2.4	1.8
Average		3.57	3.45	3.75	3.21	3.47	3.35	3.79	3.43	1.91

HS 2007**Transferable Skills Courses**

Academic	13	3.54	3.23	3.46	2.54	3.38	3.08	3.62	3.38	1.77
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Career University Teaching Scientific Writing 1	7	4	3.86	4	3.71	3.86	3.86	4	4	1.86
Methods in Plant Sciences	18	3.89	3.61	3.94	3.67	3.56	3.28	4	3.78	1.89
Statistical Methods Fluorescence Microscopy Non-Structural Carbohydr. Mycorrhizal Fungi Plant Nutrition Grassland Sciences 2	12	3.75	3.67	3.42	3.67	3.83	3.5	3.62	3.67	1.5
	5	3.6	3.6	3.8	3	3	3.6	3.8	3.8	2
	8	4	3.75	3.88	3.75	3.75	3.63	3.75	3.75	1.88
	7	3.86	3.29	3.57	3.57	3.57	3.14	3.71	3.71	1.43
	2	3	4	3.5	2.5	4	3.5	2	4	2
	1	3	2				3	4	3	
Average		3.63	3.45	3.29	2.93	3.22	3.40	3.61	3.68	1.59

**FS
2007**

Transferable Skills Courses

Scientific Presentation Scientific Writing 2 Professional Career Science Communication Photoshop, Framemaker	11	3.91	3.36	3.91	3.55	3.82	3.45	3.91	3.36	2
	15	3.73	3.67	3.93	3.67	3.33	3.53	3.8	3.67	1.8
	11	3.73	3.27	3.82	3.55	3.55	3.36	3.73	3.82	2
	12	3.83	3.5	3.83	3.42	3.5	3.42	3.75	3.83	2
	9	3.89	3.44	3.78	3.67	2.89	3.44	4	3.56	2

Methods in Plant Sciences

Functional Genomics QTL Analysis	1	3	3	3	3	4	3	4	3	2
	13	4	3.62	4	2.69	3.31	3.08	4	3.85	1.92
Average		3.73	3.41	3.75	3.36	3.49	3.33	3.88	3.58	1.96

**WS
2006/07**

Transferable Skills Courses

Professional Career Scientific Writing 1	12	3.67	3.83	3.75	3.5	3.58	3.67	3.92	3.5	1.92
	19	3.84	3.68	3.84	3.68	3.42	3.53	3.79	3.63	1.94

Statistics Courses

Spatial Patterns	9	3.78	3.11	3.33	2.33	3.67	3.67	4	3.67	1.78
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Methods in Plant Sciences

Population Genetic Fluorescence Microscopy	16	3.13	3.19	3.44	3.06	3.13	3.31	3.63	3.31	1.94
	6	2.83	3.17	3	1.83	3.33	2.67	3.67	3.33	
Average		3.45	3.40	3.47	2.88	3.43	3.37	3.80	3.49	1.52

SS

2006

Transferable Skills Courses

Scientific Presentation	10	4	4	4	3.9	3.9	3.7	4	4	1.7
Non-Violent Communic. Self	11	3.64	3.18	2.91	2.82	3	2.64	3.64	3.55	1.73
Management Leadership Skill	12	3.83	3.25	3.92	3.5	3.58	3.25	3.83	3.75	2
	8	3.63	3.63	3.88	2.38	3.88	3.5	4	3.88	1.75

Statistic Courses

Study Design	19	3.21	3.21	3	3.42	3.58	2.79	3.89	3.42	1.68
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Methods in Plant Sciences

Epigenetic Functional Genomics	12	3.67	3.42	3.67	2.42	1.83	3.08	3.92	3.33	1.67
Plant Disease Diagnostic	12	3.67	3.67	4	2.92	3.08	3.42	3.92	3.83	1.92
Average	12	3.83	3.33	3.67	3.5	3.58	3.24	3.83	3.58	1.92
		3.69	3.46	3.63	3.11	3.30	3.20	3.88	3.67	1.80

WS

2005/06

Transferable Skills Courses

Scientific Writing 2	17	3.88	3.71	3.76	3.59	3.59	3.65	3.88	3.65	2
Leadership Skill Business, Management Research Proposals	11	3.27	3.27	3.64	2.64	3.73	3.64	3.73	3.73	2
	14	3.57	2.86	3.53	3.36	3.21	3	3.64	3.14	1.79
	17	3.71	3.18			3.53	3.24	3.65	3.53	

Methods in Plant Sciences

Microscopy Chlorophyll Fluorescence	11	3.55	3.73	3.45	3.09	3.55	3.64	3.91	3.82	1.73
Statistical Methods	7	3.14	3.57	3.42	3	3.14	3.29	3.71	3.43	1.71
Non-Structural Carbohydrate Genetic Disease Resistance	11	3.72	3.09	3.18	3.64	3.55	2.91	3.82	3.64	1.64
	8	4	3.63	3.63	3.63	3.88	3.38	3.88	3.75	1.75
	13	3.77	3.62	3.62	2.38	3.46	3.31	3.92	3.62	1.92
Viticulture	8	4	3.75	3	3.88	3.13	4	4		2
Average		3.66	3.44	3.12	2.92	3.48	3.41	3.81	3.23	1.65

SS

2005

Transferable Skills Courses

University Teaching	9	3.78	3.89	4	3.89	3.78	3.67	3.89	4	1.78
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Table 3: Evaluation of the colloquium “Challenges in Plant Sciences” (Winter term 2006/2007 to autumn term 2008) with n = number of questionnaires. Statements could be evaluated on a 4-point scale with 4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree. The questionnaire of WS 2006/2007 was shorter than in the following years but for comparison 2006/2007 is included in the table below.

Challenges in Plant Sc.		N	The colloquium fulfilled my overall expectations												
			The form of a blockcourse (0.5 day, and 1.5 days) was adequate	The general time investment for the colloquium was adequate	The information given about the organization of the colloquium was satisfying	The length of the group presentation (50 minutes) was good	The group size was manageable	I improved my knowledge in the field of plant sciences	The content level was adequate	The kick-off talks held by the lecturers were interesting and motivating	The offered topics were interesting	The support and help of the tutors was good	The tutor took enough time to help us	The literature presented by the tutors was adequate	
HS 2008	33	2.97	3.24	2.82	3.42	3.15	3.30	2.58	2.94	3.30	2.48	3.24	3.03	3	
HS 2007	16	3.27	3.07	2.75	3.19	3.31	3.69	3.06	3.25	3.00	3.13	2.87	2.87	3	
WS 05/06	??	1.50		2.25				2.75	3.00		2.75				

Open Remarks on the PSC PhD Program in Plant Sciences

All remarks 2003 – 2008 are presented in Appendix III. Some students remarked that there are not enough places in the popular courses (e.g. scientific writing). Courses with a great demand should be repeated more frequently or more places should be available in the most popular courses. Some students wished that more courses were offered in Basel and that more courses were offered at the ETH Zurich rather than at the Botanical Garden, University of Zurich.

What courses do PSC PhD students want? Students were asked to respond to the question “What additional topics do you miss?” According to their responses, students want training courses on personality development, communication and presentation skills, rhetoric, job hunting skills (CV writing, preparing portfolios, job interview, job application training) and career development. They also wanted courses on time and project management and basic courses in management and economics for biologists.

Since 2006 we have already integrated a course on career development, communication, presentation and project management. Courses on time management will be offered more regularly in the future.

In contrast, some students wanted more practically, technically orientated courses to improve skills needed in the laboratory. Students also wanted courses about scientific programming (Perl, C++, Java...), about advanced computer skills in Excel, Access, Adobe Illustrator, InDesign and about bioinformatics. Some students expressed a desire for more statistical courses and an introduction to R-programming. Some students stated that important topics are missing, like GIS/Satellite imagery, courses about research ethics and courses about perspectives in (plant) biotechnology and in biotechnology applications.

We think that universities offer enough training in advanced computer skills. As of spring 2009 the PhD program integrates a new course 'Responsible Conduct in Research for Plant Scientists'.

Appendix 1: Graduate Courses offered between 2003 and 2009

Graduate Courses offered WS 02/03 – SS 05

Courses	Lecturers	Participants
Winter semester 02/03		
Ethics in the sciences and responsibility of scientists	Dr. Barbara Skorupinski, Institut für Sozialethik UZH, Andreas Peter, Assistent am Institut Romand d'Ethique, University Geneva	12 PhD
Wissenschaftskommunikation – Medientraining für Wissenschaftler	Helga Kessler, Wissenschaftsjournalistin	12 PhD
Scientific Writing Practice	Penelope Oertli-Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	20 PhD
Seminars in Plant Population Biology and Biodiversity Research	Prof. Bernhard Schmid and further teachers, Institute of Environmental Sciences, UZH	5 PhD
The Genetics of Disease Resistance in Plants	Prof. Beat Keller, Dr. Catherine Feuillet, Institute of Plant Biology, UZH, Prof. Bruce McDonald, Institute of Plant Sciences, ETHZ	12 PhD
Understanding the transfer of nutrients and contaminants from the soil to the plant using isotopes	Prof. Emmanuel Frossard, Dr. S Sinaj, Dr. A Albrecht Plant Nutrition, Institute of Plant Sciences, ETHZ	8 PhD
The chloroplast: A model system for organelle development	Dr. Felix Kessler, Plant Biochemistry and Physiology, Institute of Plant Sciences, ETHZ	8 PhD
Molecular evolution and phylogeny reconstruction	Prof. Elena Conti, Molecular Systematic and Evolution, Institute of Systematic Botany, UZH	12 PhD
Colloquium „Spectrum in plant sciences“	24 Speakers	26 PhD
Summer semester 03		
Project Management for Scientific Intents	Caroline von Schulthess, arc development GmbH	12 PhD
Functional Genomics: Introduction to transcriptional profiling and proteomics	Dr. Lars Hennig and Dr. Sacha Baginsky, Institute of Plant Sciences, ETHZ	12 PhD
QTL Analysis in Arabidopsis: Theory and Practical Applications	Prof. Ueli Grossniklaus, Institute of Plant Biology, UZH; Prof. Tom Juenger, University of Texas, USA	18 PhD
Phytochemicals — drugs for bugs and people	Prof. Dr. Thomas W. Baumann, Institute of Plant Biology, UZH; Dr. Caroline Weckerle, Institute of Systematic Botany, UZH; Dr. Florian Schiestl, Geobotanical Institute, ETHZ	12 PhD
Winter semester 03/04		
Spectrum in Plant Sciences, Colloquium	26 Speakers	26 PhD
Epigenetic regulation in plants	Prof. Fred Meins, Jr., FMI, Basel; Prof. Wilhelm Grissem, Institute of Plant Sciences, ETHZ; Prof. Ueli Grossniklaus and Dr. Claudia Köhler, Institute of Plant Biology, UZH	23 PhD
Molecular phylogeny of endomycorrhizal fungi	Dr. Dirk Redecker, Botanical Institute, UniBS	8 PhD
Transport processes in plants	Prof. Enrico Martinoia, Dr. M. Geissler, Dr. M. Klein, Dr. S. Sujeoung Suh, Institute of Plant Biology, UZH	12 PhD
Karriereplanung für Frauen	Dr. Diana Soldo, Zurich-Basel Plant Science Center; Dr. Petra Lindemann-Matthies, Institute of Environmental	9 PhD

	Sciences, UZH	
Statistics for free: An Introduction to ANOVA and Regression using 'R' open-license software	Prof. Andrew Hector, Institute of Environmental Sciences, UZH	24 PhD
Scientific Writing Practice: Writing up Research	Penelope Oertli-Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	24 PhD
Seminar in Plant Population Biology and Biodiversity Research	Prof. Andrew Hector and Prof. Bernhard Schmid, Institute of Environmental Sciences, UZH; Prof. Peter Edwards and Dr. Hansjörg Dietz, Geobotanical Institute, ETHZ; Prof. Jacob Schneller, Institute of Systematic Botany, UZH	3 PhD
Seminars in Plant Developmental Genetics	Prof. Ueli Grossniklaus, Dr. M. Collinge, Dr. M. Curtis and Dr. C. Köhler, Institute of Plant Biology, UZH	7 PhD
Seminars in Plant Ecology	Prof. F. Bazzaz, Harvard University, USA	11 PhD

Summer semester 04

Functional ecology of alpine plants	Prof. Christian Körner and Dr. Jürg Stöcklin, Botanical Institute, UniBS; Dr. J. Esper, Eidg. Forschungsanstalt WSL	10 PhD
Functional Genomics: Introduction to transcriptional profiling and proteomics	Dr. Lars Hennig and Dr. Sacha Baginsky, Institute of Plant Sciences, ETHZ	12 PhD
Scientific Presentation Practice	Penelope Oertli-Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	12 PhD
Successful Self Management	Dr. Maja Storch, Head of ZRM, Pedagogical Institute, University Zurich	15 PhD
Biostatistics – special topics	Dr. Andy Hector, Institute of Environmental Sciences, UZH and Dr. Owen Petchey, Animal and Plant Sciences, University of Sheffield, UK	12 PhD
Introduction to effective leading and coaching	Katrin Muff, MBA business consulting	14 PhD
Photoshop, FrameMaker, Powerpoint	Jean-Jacques Pittet, Institute of Plant Biology, UZH	23 PhD
Viticulture: Practical aspects of production, phytosanitary aspects and current research priorities	Dr. C Gessler, Centre Safacrop, Institute of Plant Sciences, ETHZ; Dr. E. Mescalchin, Dr. I. Pertot and Dr. C. Ioriatti, Istituto Agrario San Michele, Italy	8 PhD
Statistical Model Selection and Interference	Prof. David Anderson, USA	20 PhD
Seminar in plant population biology and biodiversity research	Prof. A. Hector, B. Schmid, Prof. J. Schneller, UZH; Prof. P. Edwards and Dr. H. Dietz, ETHZ	11 PhD

Winter semester 04/05

Spectrum in Plant Sciences, Colloquium	24 PSC Professors	34 PhD
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Innate immunity in Plants	Prof. Th. Boller, Dr. G. Felix, Dr. S. Robatzek, Dr. D. Chinchilla, Botanical Institute, UniBS	10 PhD
Principles of phylogeny reconstruction	Prof. E. Conti, UZH	21 PhD
Statistic for free: Linear Models in R	Prof. A. Hector, UZH	22 PhD
Wissenschaft kommuniziert – Medientraining für Wissenschaftler	Helga Kessler, Wissenschaftsjournalistin	12 PhD
Scientific writing practice	Penelope Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	21 PhD
Effective teamwork peer cooperation & networking	Katrin Muff, MBA businesses consulting	14 PhD
Photoshop, Powerpoint, FrameMaker	Jean-Jacques Pittet, UZH	20 PhD
Web publishing	Dr. Melanie Paschke, PSC	17 PhD
Seminar in plant population biology and biodiversity research	Prof. A. Hector, Prof. B. Schmid, UZH; Prof. P. Edwards and Dr. H. Dietz, ETHZ; Prof. J. Schneller, UZH	7 PhD
Summer semester 05		
Functional Genomics	Dr. Lars Hennig and Dr. Sacha Baginsky, Institute of Plant Sciences, ETHZ	14 PhD
Gas Exchange Measurements	Roland Künzli, Firma DMP	9 PhD
How to apply for an academic and non academic position	Dr. Pavel Kraus	17 PhD
How to become the best leader you can be	Katrin Muff, MBA businesses consulting	10 PhD
Introduction to University teaching and learning	Dr. Pamela Alean-Kirkpatrick, University Teaching and Learning Centre (AfH), University of Zurich	6 PhD
Photoshop, FrameMaker	Jean-Jacques Pittet	21 PhD
QTL Analysis in Arabidopsis	Prof. Ueli Grossniklaus, Institute of Plant Biology, UNIZ; Prof. Tom Juenger, University of Texas, US	16 PhD
Scientific Presentation Practice	Penelope Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	13 PhD
Spatial statistics and time series analysis	Dr. Peter Stoll, Institute of Environmental Science, UniBS	9 PhD
The essence of business and management	Katrin Muff, MBA businesses consulting	15 PhD
Understanding the transfer of nutrients and contaminants	Prof. Dr. E Frossard, Institute of Plant Sciences, ETHZ	9 PhD

Graduate Courses offered WS 05/06 – HS 09

Courses	Lecturers	Semester	Participants
Academic Career Strategy	Dr. Monika Clausen, Dr. Monika Clausen & Netzwerkpartner GmbH	HS 07 HS 08 HS 09	14 PhD 15 PhD 14 PhD
Alpine Ecology	Prof. Christian Körner and Dr. Jürg Stöcklin, Botanical Institute, UniBS	SS 06 FS 08	15 PhD 17 PhD
Angiosperm Systematics	Prof. P. Linder, Prof. E. Conti, Prof. F. Schiestl, Dr. R. Nyffeler, M. Kessler (all UZH)	FS 09 – HS 09	2 PhD
Conservation Field Course in Scotland	Prof. Jaboury Ghazoul, Lucy Rist, Florian Knaus, Ecosystem Management, ETH Zurich	FS 08 FS 09	11 PhD 9 PhD
Current Topics in Grassland Sciences 1	Prof. Nina Buchmann, Institute of Plant Sciences, ETH Zurich	FS 08	2 PhD
Current Topics in Grassland Sciences 2	Prof. Nina Buchmann, Institute of Plant Sciences, ETH Zurich	WS 05/06 WS 06/07 HS 07	3 PhD 4 PhD 2 PhD
Chlorophyll Fluorescence in Plant Biology	Dr. Jörg Leipner, Dr. Andreas Hund, Agronomy and Plant Breeding, Institute of Plant Sciences, ETH Zurich	WS 05/06 FS 08	8 PhD 7 PhD
Chromosomal Counting Technique for the Research of Polyploid Species	Prof. Dr. K. Shimizu (UZH), Prof. Dr. K. Watanabe (Japan), Dr. R. Shimizu-Inatsugi (UZH)	FS 09	19 PhD
Colloquium “Challenges in Plant Sciences”, former: Spectrum in Plant Sciences	PSC professors	WS 05/06 WS 06/07 HS 07 HS 08 HS 09	39 PhD 27 PhD 16 PhD 32 PhD 32 PhD
Computational Biology	Prof. Kentaro Shimizu, Prof. Christian von Mering, Prof. Andreas Wagner, UZH	HS 07 HS 08 HS 09	5 PhD 9 PhD 10 PhD
Discussions on Plant Chromosomal Evolution	Prof. Dr. Kuniaki Watanabe (Japan), Dr. Rie Shimizu-Inatsugi UZH)	FS 09	7 PhD
Discussion in Genomics and Systems Biology	Profs. Akiko Satake (University of Hokkaido), Kentaro Shimizu, University of Zurich	HS 09	3 PhD
Epigenetic Regulation in Plants	Prof. Frederick Meins, Jr., FMI , Basel Prof. Ueli Grossniklaus, Institute of Plant Biology, UniZH Prof. Wilhelm Gruissem, Prof. Claudia Köhler, Dr. Lars Hennig, Institute of	SS 06	19 PhD
Essence of Business and Management	Katrin Muff, MBA businesses consulting	WS 05/06	19 PhD
Fluorescence Microscopy	PD Dr. C. Sautter, Institute of Plant Sciences, ETH Zurich	WS 06/07 HS 07	8 PhD 5 PhD
Functional Genomics	Dr. Lars Hennig and Dr. Sacha Baginsky, Institute of Plant Sciences, ETHZ	SS 06 FS 07 HS 08 HS 09	12 PhD 11 PhD 12 PhD 8 PhD
Genetic of Disease Resistance in Plants (new: Molecular Biology and Genomics of Plant-Pathogen Interactions)	Prof. Beat Keller, Plant Molecular Biology, Institute of Plant Biology, UZH; Prof. Cesare Gessler, Institute of Integrative Biology, ETHZ	WS 05/06 HS 08	13 PhD 10 PhD
Innate Immunity	Prof. Thomas Boller, University of Basel	FS 09	12 PhD

Introduction to Gardening	Dipl. biol. Theres Zwimpfer; Institute of Environmental Sciences, UZH	FS 08	5 PhD
Introduction to University Teaching	Dr. P. Alean-Kirkpatrick, University Teaching and Learning Centre (AfH), University of Zurich	HS 07	8 PhD
Introduction to Phylogenetic Analysis	Prof. Dr. Elena Conti, Institute of Systematic Botany, UZH	SS 06 HS 08	11 PhD 1 PhD
Leadership Skill	Katrin Muff, MBA businesses consulting	WS 05/06 SS 06	15 PhD 8 PhD
Linear Models: Contemporary Analysis For Ecologists	Prof. Andy Hector, Institute of Environmental Sciences, UZH	HS 08	23 PhD
Mediterranean Ecosystems	Prof. Ch. Körner and Prof. J. Stöcklin, Botanical Institute, UniBS	FS 08	5 PhD
Meta-Analysis	Dr. Jessica Gurevitch, University of New York, Stony Brook	FS 08	5 PhD
Multiple Regression Model Selection	Prof. Andy Hector, Institute of Environmental Sciences, UZH	FS 08	8 PhD
Microscopy	Dr. Roland Gebert, Dr. Christof Sautter, Dr. Lloyd Vaughan, ETHZ	WS 05/06	12 PhD
Modeling Approach in Plant Sciences	Prof. Kentaro Shimizu, University of Zurich	HS 09	16 PhD
Molecular Analysis of Myccorhizal Fungi	Dr. D. Redecker, Botanical Institute, University of Basel	HS 07	7 PhD
Molecular Ecology and Phylogeny of Mycorrhizal Fungi	Dr. A. Gamper, Botanical Institute, University of Basel	HS 09	6 PhD
Non-Violent Communication	Caroline von Schulthess, certified trainer, arc development GmbH, Thalwil	SS 06	13 PhD
Online Publishing, Communicating and Creating a Web Presence: How to Make your Research Visible	Dr. Melanie Paschke, PSC	FS 08 FS 09	10 PhD 10 PhD
Photoshop, Framemaker	Jean-Jacques Pittet, UZH	WS 05/06 SS 06 FS 07	16 PhD 13 PhD 11 PhD
Plant Disease Diagnostic	Dr. Ueli Merz, Institute of Integrative Plant Sciences, ETH Zurich	SS 06 FS 09	11 PhD 13 PhD
Plant Non-Structural Carbohydrate	Prof. F. Keller, Institute of Plant Biology, University of Zurich	WS 05/06 HS 07 HS 09	8 PhD 8 PhD 8 PhD
Population Genetic Data Analysis	Dr. Felix Gugerli & Dr. Rolf Holderegger, WSL Birmensdorf	WS 06/07	21 PhD
Project Management for Research	Dr. Pamela Alean-Kirkpatrick, alean-academics, Eglisau	FS 08 FS 09	14 PhD 13 PhD
QTL Analysis in Arabidopsis	Prof. Ueli Grossniklaus, Institute of Plant Biology, UniZH Prof. Tom Juenger, University of Texas, US	FS 07 FS 09	20 PhD 20 PhD
Radio-Isotopes in Plant Nutrition	Prof. E. Frossard, Institute of Plant Sciences, ETH Zurich	HS 07 HS 09	4 PhD 3 PhD
Responsible Conduct in Research for Plant Scientists	G. Achermann (ETH Zurich), N. Buchmann (ETH Zurich), M. Paschke (PSC)	FS 09	1 PhD/1 Master
Self Management	Dr. Maja Storch, Head of ZRM, Pedagogical Institute, University Zurich Andrea Szekeres-Haldimann, ZRM Coach, University Zurich	SS 06	13 PhD
Self-Marketing Skills	Dr. Monika Clausen, Dr. Monika	HS 08	11 PhD

	Clausen & Netzwerkpartner GmbH	HS 09	11 PhD
Seminar in Population Biology	Prof. A. Hector and Prof. B. Schmid, Institute of Environmental Sciences, UniZH; Prof. P. Edwards and Dr. H. Dietz, Geobotanical Institute, ETHZ; Prof. J. Schneller, Institute of Systematic Botany, UniZH	WS 05/06	4 PhD
Science Communication	Dr. Jacopo Pasotti	FS 07 HS 08	12 PhD 13 PhD
Scientific Illustration	Dr. Melanie Paschke, PSC	HS 08	11 PhD
Scientific Illustration with R	Prof. A. Hector, Institute of Environmental Sciences, UniZH	HS 09	15 PhD
Scientific Presentation	Penelope Oertli-Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	SS 06 FS 07 FS 08 FS 09	12 PhD 11 PhD 11 PhD 12 PhD
Scientific Writing 1	Penelope Oertli-Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	SS 06 WS 06/07 HS 07 HS 08 HS 09	12 PhD 12 PhD 18 PhD 20 PhD 19 PhD
Scientific Writing 2	Penelope Oertli-Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	WS 05/06 FS 07 FS 08 FS 09	20 PhD 15 PhD 20 PhD 20 PhD
Spatial Patterns in Ecological Systems	Prof. Kirk Moloney, Iowa State University, USA	WS 06/07	10 PhD
Start of Professional Career	Dr. Monika Clausen, Dr. Monika Clausen & Netzwerkpartner GmbH	WS 06/07 FS 07 FS 08	12 PhD 11 PhD 14 PhD
Statistical Methods in Biology	Dr. L. Hennig, Institute of Plant Sciences, ETH Zurich and Dr. H. Rehrauer, Functional Genomics Center Zurich	WS 05/06 HS 07 HS 09	11 PhD 12 PhD 12 PhD
Study Design and Data Analyses	Prof. Bernhard Schmid, Institute of Environmental Sciences, UniZH	SS 06	21 PhD
Transport Processes in Plants	Prof. E. Martinoia, Dr. M. Geisler, Dr. S. Hörtensteiner, Institut of Plant Biology, UZH	FS 08	9 PhD
Viticulture	Dr. Cesare Gessler, Institute of Plant Sciences, ETHZ	WS 05/06 SS 06	9 PhD 11 PhD
Wissenschaft kommuniziert	Helga Kessler, Wissenschaftsjournalistin	HS 07	9 PhD
Writing Research Proposals	Stefan Müller, Euresearch Head Office, Swiss National Contact Point (NCP) Daniela Di Mare, Euresearch, National Contact Point Priority 7 & Mobility Prof. Christian Körner, Botanical Institute, UniBS Prof. Beat Keller, Institute of Plant Biology, UniZH Penelope Barnett, M. A., lecturer at the Zürcher Hochschule Winterthur	WS 05/06	21 PhD
Writing a Post-doctoral Grant	Dr. M. Dahinden (PSC), Dr. med. A. Degen Iseli (eurelations), Dr. M. Paschke (PSC)	FS 09	15 PhD

Appendix II

Open Remarks Spring Term 2009

- “Good but too long. Maybe use 2 days and longer breaks in between talks. This will improve attentiveness“; “Missed direct feedback by tutor“; “Information on the website could be clearer; Students in Basel need to receive information on colloquium earlier (no more choices left in doodle poll)“; “Please supply a functional laser pointer and a mobile microphone, Different lecture hall needed (bad acoustics, tables needed)“, “Kick-off: preferably a general introduction to the lecturer’s institute/research activities. Avoid presenting content that students will have to present later on, provide literature of different authors“, “Some PhD students don’t work hard enough because they don’t get grades. Difficult for a master student to motivate PhD students in the group“; “Topic were too specialized and thus difficult to follow without additional background knowledge” (Challenges in plant sciences)
- “more insight into the assessment field“; “would be useful to invite an active head hunter to have real insight into workout” (Successful start of Professional Career)

Open Remarks Autumn Term 2008

- **PSC Graduate Program:** “Cool. Need more courses as they tend to fill up very fast“, “hard to get a place, would it be possible to have more groups“, “More choices please“; “More scientific courses“; “Good but some important topics are missing, like GIS“; “More staff out of the field”
“I would appreciate if there were more courses offered in Basel“, “It would be great if more courses are at ETH Centre and not at the Botanical Garden”
“Useful for development and broad view within my scientific area and also from outside issues”
- **Other topics** you would like to see offered: Communication across cultures, Course on reviewing papers and writing grand proposals; Ecological Modelling; Statistical topics, GIS/Satellite imagery; Programming (Perl, C++...) and advanced computer skills, Ecological Methods, Rhetoric
- Course should be offered frequently in the semester (Self Marketing)

- "You need to make interaction with students"; "Jacopo has to be more clear in his instructions. Second day better than first"; "Everything could be done in one day" (Science Communication)
- "Sometimes go faster. It's nice if everyone can talk about his/her idea, but for me they tend to be beside"; Course should include other options for PhD; opportunities outside academia; "It would be great to receive more suggestions, how to establish contacts, challenges of a Post Doc" (Academic Career)

"It might be helpful that this course is presented by someone who is still in academia, so that the students can really have an idea about an academic career" (Academic Career)

Handout was only given at the end (Academic Career)
- Theoretical parts should be shorter: should include use of software and different useful programs (List of programs for graphs and charts), practice in the computer room; course should focus on different programs helping with illustrations, (Scientific illustrations)

"Practical parts are a bit too long" (Scientific illustrations)
- "Organize better paper presentations"; "The organization of the journal club was very chaotic"; "Micro array course sample analysis can be more detailed and basic", very much information in this field, should last more than two days; Good introduction and basics of functional genomics (Functional Genomics)
- "well-organized; The instructor was very helpful, I enjoyed the course" "maybe more examples for self-study"; "Layout of the manual a bit confusing sometimes"; "Please spread in to four days rather than two days"; "Thank you for the biscuits!!!!!!!" (Scientific Writing 1)

Not absolutely necessary for graduate students to have this course in the graduate program, they are already expected to have a high level of English"; "Pace very slow due to different expectations and needs of people"; "For people with difficulties in English it is good, for others the level might have been a bit too low"; (Scientific Writing 1)
- "Very up to date, friendly and good working atmosphere", "good overview but very brief on all topics", "too less time for exercises", "Moderate R-knowledge should be a requirement for this course to speed up course; Some kind of recommendation in the course description, because difficult to follow without specific knowledge", "Very helpful, but I would like to have more time

to understand”, “Pace in the beginning too slow”, “I thought you would teach mixed effects models (as written in the description)”, “helpful to have handouts before the end of course” (Contemporary Analysis For Ecologists)

- “gives good basic knowledge” (Molecular Biology and Genomics of Plant Pathogen Interactions)

Open Remarks Spring Term 2008

- **PSC Graduate Program:** “very good interdisciplinary courses”; “Not enough courses on plant biology (too much outside science)”; “more scientific topics”; “more freedom in choosing courses”;

“Great program, but the seats are in many of the courses too limited and get booked very quickly”, “Courses which are in high demand, should be given more frequently”, “more courses located in Basel”

- **Other topics** you would like to see offered: update in molecular biology tools; course in pollination biology, Flora excursions with botanists, Statistic courses, modelling, Biodiversity, Ecological Modelling, Theoretical Ecology, Scientific programming, how to critically review research papers, Research Ethics, project management Practice with different levels
- “A very good insight and overview about conservation and land management farms in the Scottish Highlands and in general”; more information and reading before the course, material could have been provided before the course; “more theoretical inputs, more structure” (Beinn Eighe)
- “Very good because lectures covered many aspects of the alpine ecology, including the important point of land-use, agriculture and social implications”; “would be nice to learn a few more measurement techniques – more physiological measurements”; “Time for project was very limited”; “There could have been more programme outside, make a bit more use of the location we are at”; “inform students earlier and more precisely (also about costs etc.)” (Alpine Ecology)
- “Some more explanation before the exercises”; “It should be a little bit longer with more theoretical input” (Meta-Analysis)

- “Exercises are very helpful and good”, “Well organized and good atmosphere”; “Practical parts were too long” (Multiple Regression)
- “Very useful and valuable course”(Presentation skills)
- “Interesting course”; “less people in one group or more instructors, too much waiting time” (Transport Processes)
- “The instructor gave very warm atmosphere”; “more practical information about publication of academic papers”; “too much focus given to theoretical explanations”, “practical tips, more discussions” (Online Publication)
- “an outstanding course, it was very informative and fun”; “Don’t let participants dive into their over-detailed science, they should learn that a course is a chance to look at things at a broader scale”; “more practical exercises including more social communication skills”, “Some post docs would like to attend such courses as well”; “more focus on the ‘for research’ part”, “Definition of expressions, which scientists are not used to” (Project Management)
- “Sometimes too fast, no opportunity to look carefully to the plants”; (Mediterranean Ecosystems)

Open Remarks Autumn Term 2007

- **PSC Graduate Program:** “more training for soft skills”, “More courses to train students, who don’t aim to continue their career in the science”; “more practical courses to improve skills we can use in the lab”, “more multidisciplinary courses, less extremely specific courses, more changes from year to year, less alibi-courses”, “more statistical courses”; “provide more courses in English”; “more choices every semester”, “more places at the popular courses”, “more courses in Zürich”,; “Please avoid overlapping of dates of different courses”, “Very good program, orientated towards practical work”, “is helpful, especially when dealing with interdisciplinary aspect, business...”,
- **Other topics** you would like to see offered: more courses to refine soft-skills, Time & project management, Interview skills, Personality development, Job hunting skills (CV writing and preparing portfolios), some economics/business management courses, Communication skills, Rhetoric

Update in molecular biology techniques, more about phylogeny, Perspectives in (Plant) Biotechnology, Introduction to modelling tools used in biology,; Sociology in Agriculture, seed development, Conservation, Ecology, Computational Biology & Bioinformatics, Advanced Microscopy & Image Processing, Ethics in Biotechnology

- Additional help for Thomas in the practical part would help the students to follow and understand things better and prevents mistakes, when more than 2 groups are working in the lab. A volunteering PhD could do so.” (Plant Nutrition)
- “very nice and informative”, “more time to cover subject” (Professional Career)
- “should improve the manual”; “more about the theory involved in making final decisions about the data”; “time to address questions about problems with own research” (Myorrhizal Fungi)
- “Unterrichtsaufbau, -struktur und Einteilung sehr gut, gutes Arbeitsklima“, „Erster Tag hätte ein wenig gekürzt werden können, 2 Interviews, zuviel Einleitung“, „Mehr Praxis“ (Wissenschaft kommUZHiert)
- „Extend the course, to have time for covering more topics and for getting more practice in-between, maybe introduce level II“; “High quality course, very informative, could easily a bit longer” (University teaching)
- “I appreciated the balance of practical and theoretical knowledge, particularly the part about Raffinose – more applied”, “maybe deal more with the HPLC”, “laboratory too small for 8 people” (Non-structural Carbohydrate)
- “Esp. for Rehrauer: Remember that we are principally biologist, not accustomed to several mathematical terms”; “Please, examples not only about gene expression especially not for making comparisons, it would help, if different examples were included, use examples from molecular biology experiments”; “expand course duration to a week, so that more topics can be covered in detail”; “would be nice to be able to print out the handouts before course”; “explain more the commands that are used in the program” (Statistical Methods)
- “I don’t want to learn how to analyze text, but rather practice writing up science”; “Extend the course to 3 days to give the possibility to cover and analyse all the topics proposed” (Scientific writing 1)

- "Course should continue after retirement of Prof. Sautter"; "Handouts for each 'lecture'", more practical (Fluorescence Microscopy)
- "good mixture between theory and practical exercises", "It would be nice if some communication skills would be demonstrated or explained in more detail", "Use of PowerPoint instead of slights"; "more role games would even improve the already good quality of the course, more situation/practical experience – they reflect more the needs of one person", "better point out that it is for an academic career" "more frequent change of methods" (Scientific Career)

Open Remarks Spring Term 2007

- **PSC Graduate Program:** "Very good courses", "The program offers an opportunity to look above the edge, not only biological courses", "more choices", "more courses in English", more practical, technical courses, "more places in the courses –difficult to get a place", "Courses with great demand should be repeated more than once in the semester"
- **Other topics** you would like to see offered: more basic and advanced level statistic courses, more biology/plant biology courses, Photography course, Pollination Biology, Protein-DNA Interactions, more courses about plant development, molecular biology courses, Introduction into R-Programming, Bioinformatics, Lectures in quantitative biology, Embryo development, epigenetics, Economics and Management, Project Management, Bioethics, more statistics: setup of experimental design, more research topics, more non-biological courses, Adobe Illustrator, InDesign
- "Excellent working atmosphere"; "not a lot of new information, more an English course than a presentation course"; "I liked the feedback session maybe another spontaneous exercise"; "I would liked more tips how to change the improvable things. It was very helpful to watch oneself on video; much more information on presentation improvement" (Scientific Presentation)
- "This course is excellent, please don't change it, excellent course material"; "good to have a limited number of students –more time to get implied, liked that students are encouraged to actively participate"; "perfect course, maybe a bit too short", "sometimes too much theory, day

one: more practical parts” “please, run this course (if possible) every semester –difficult to book” (Scientific Writing 2)

- “More practical parts, software and analysis of data”; “There should be more time for the course, 3 days or more” “2nd day a bit too short to learn a lot, if you have no former knowledge about mapping, good course motivates to learn more about QTL mapping”, “need more time, 4 days”; “a handout, which explains the commands –we forget things after the course”; “Course should be longer, practical parts should be extended” (QTL Analysis)
- “Very good course, exercises were good”, “Some more exercises” (Science Communication)
- “Had a very good understanding of the components of a CV and what I would need and prepare for an interview”, more information about foreign job application and markets (EU), maybe an additional optional day, Possibility to have CV reviewed”, “more details on cover letters, writing practice for example” (Professional Career)
- “basic knowledge is already there, so focus on more special problems”; “Framemaker is very expansive, maybe some more information about InDesign” (Photoshop, Framemaker)

Open Remarks Winter Term 2006/2007

- **PSC Graduate Program:** broad variety of courses, should include more practically orientated courses
- **Other topics** you would like to see offered: “courses connecting different scientific topics”, Scientific journalism, How to visualize data with graphics, Bioinformatics (Excel, Access), a one week course about different kinds of microscopy, Basic course in management and economics for biologists, more statistical R-programme courses, Data-Analyses courses, Photo course
- “I would stress in the course description that it is for those who really want to leave science”; “More information and examples of good CV and coverletters”, “Exercise in class: writing a specific coverletter by every person and discuss it”; “maybe do the 2 days not consecutive so that one has more time to re-prepare the CV/coverletters“, “More separate between science and not science jobs” (Professional Career)

- "A well done, basic course", "It was a great possibility to learn about scientific writing, I learned a lot", "It would be better to have the second course sooner", "Doing more writing practice", "The material is condensed: 4 extra lessons would be great", "Why not in a block with the advanced course" (Scientific Writing 1)
- "too little time to work on the microscopes ourselves (a lot of time the instructor was doing everything himself)", "The number of students should be reduced", "more time for working with computer and microscopy", "More practical training, different samples and cases would be helpful" (Fluorescence Microscopy)
- "The course was very well structured and well explained", "More practice or longer extent", (Spatial Patterns)
- "I think that the course was great", "Maybe too much time spent on practical parts, would have been helpful to discuss more the differences between programs, parameter estimates etc.", "I thought that the practical parts was quite 'passive', but I also understand that it's difficult to work in groups and to show in the same time a new program", "The course structure was good in principle, but lacked for performance (practical parts)",
 "Would have been better to have the handout before to focus more on the explanations and add our notes on it", "It would be nice to have small script with basic instructions for programs, also handout to lecture", , "More examples and how to analyse them", "More information on output files", "Exercises more orientated towards the research field of the students", "Check if software works before beginning the exercises" (Population Genetic)

Open Remarks Summer Term 2006

- **PSC Graduate Program:** "It would be a good idea to have access to the master program", very interesting selection of courses, "not enough courses which can widen the scientific horizon", "Courses in general too short to get whole knowledge about the topic"
- **Other topics:** Metabolomics, more R-courses (it is impossible to get in there), advanced statistical courses, Neurophysiology, more courses training personal development, soft skills; job interview, job application training, Bioethics, Applied Biotechnology, Bioinformatics, More courses in Agriculture, Introductory courses outside plant sciences (Neurobiology, animal genetics), Basic genetics, plant breeding concepts, Stress management, Career development

- "Sometimes it would be more helpful to get more information about what a certain R-command does", "Separate between Stats and R-command", "The instructor jumped to often between the topics without mentioning it, difficult to follow", "more structuring of the course: first the explanation, than the example", "more examples for non-ecologist", "More time to work on examples", "It would be helpful to have an exercise book, the exercises were not clearly identified in the script, it was not really clear what to do", "should also include bit more on multivariate analysis" (Study design)
- "It can be nice to have advanced course as well on similar topics", "A date for evaluating the individual success in reaching the goal would be nice" (Self Management)
- "The teacher did a great job", "Very good course, very well explained, but I would like to have a little more comments on the appreciation sheet to improve better the bad points", "I am fully satisfied, even if I would appreciate a bit more practical training –personal experience training. More short practising of presenting", "Perhaps show better how the presentation should be structured and what's expected at 2nd day presentation", "It would be very nice to have a remark about your first day presentation at least 3 days before 2nd day of the course", "some tricks how to overcome nerves could be helpful" (Scientific Presentation)
- "More time with practical aspects and examples", "More time for discussion about concept", "how to answer positively to a request", "More theoretical input" (Non Violent Communication)
- "Instead of giving high level paper publications from science for presentation to students, it can also be more useful to make short presentations, This can help to build background before the course", "Send the papers for preparing a talk 14 days before", "More basic and probably less detailed information, More research examples that are related to epigenetic mechanism and explain them in detail", "Maybe give less data but slower and more structured", "Either no handout or a combined one" (Epigenetic Regulation)
- "Less microscopy, more theoretical aspects about plant diseases", "Describe a bit more about the use of the microscope", "an overview about the most current techniques available for disease diagnostic could be interesting" (Basic plant disease diagnostic)
- "more bioinformatics", "it would be good to extend the course to have more time to concentrate more on practical application and practising itself", "a tour through the whole genomic centre would be nice" (Functional Genomics)

- “Excellent course, could be a bit longer”, “make some course material (handout), provide timetable (structure of course a bit unclear)”

Open Remarks Winter Term 2005/2006

- **PSC Graduate Program:** “more choices”, “some courses more frequently offered”, “to have courses offered is very good; credit points collecting is Kindergarten!”, “every year the same, very one sided”, “more courses in Basel”, “Faster respond if someone is allowed to the course”, I would like to see better connections with human science, social politics...”,
- **Other topics:** Genetic courses, introduction courses in modern biochemical methods, Ethics in Science, Basic statistics for biology, English general lessons, Nature conservation, more scientific writing courses, Microbiology, Protein Structure, Secondary metabolism in plants, plant immunology, Grammar, efficient computer handling, Java-tool programming, Course about ‘How to write for the media’, advanced statistics, Informatics, Phylogeny methods, international business, Fruticulture
- “practical part to be extended”, “Handouts before the beginning of the course, so that notes can be taken” (Microscopy)
- “The course overall, handouts, discussion part very nice”, “sometimes too much information”, “a little less repetition”, “For someone out of the topic, it would not be possible to follow the course” (Genetic of disease resistance)
- “Well managed course, it was clear for me”, “Why in the PSC, why not for the whole university”, “Sometimes too much time spent on role plays, instead of learning ‘hard facts, I would have appreciated front teaching, with more material (PowerPoint etc.)”, “I would have liked to go more into detail”, “Missed some more critique and reflection on presentation and leadership skills”, “it would be a good idea to split the groups a bit more, so that everybody can work with everybody”, “Too many group works, would have liked to hear some examples, esp. right and wrong examples”, “Documents were sometimes really old, there are so many actual business cases” (Business and Management)
- “I would have liked a little bit more information in the handout or concrete recommendation for books were theories can be read”, “I would appreciate a clearer structure about the goals, what are we going to learn in detail” (Leadership skills)

- “a really good course, very interesting and well done”, “I would have preferred to discuss a bit more how to adapt the methods for my needs”, “different techniques to study same questions may helpful” (Non-structural carbohydrate)
- “Very good teacher and very good course – should be mandatory to all PhD students”, “Atmosphere very good, content very helpful”, “a block course would be better than lessons during the semester” (Scientific Writing 2)
- “Course well organized, maybe experiments took a bit too much time”, “a larger introduction – one instrument at a time explained, ‘Imaging part’ more and better explained” (Chlorophyll Fluorescence)
- “The course gave a good overview of the basic tools in statistics”, “Thanks for the hard work, handouts very well prepared”, “Very well organized course, but the mathematical parts were a bit to demanding”, “Nice and competent instructors, but sometimes the level is too high for me”, “maybe it would have been helpful to see different experiments and then discuss the possible tests for those experiments”, “More emphasis on basic terms and formulas, commands can be accompanied with formulas and more explanations”, “Distribute reading before course”, “End of each day: recapitulate”, “More time on solutions to problems” (Statistical Methods)
- “Very well-organized, nice atmosphere, very good teachers and experts”, “more emphasis on pathogen recognition, less on wine production”, “Big posters to summarize the topics, the contents”, “Make the course two days longer”, “More breaks between/during the sub-courses”

Open Remarks Summer Term 2005

- **PSC Graduate Program:** “it is really useful, a chance for young researcher to learn a lot besides their own subject”
- **Other topics:** Courses in Biotechnology applications, in communicating science to society, politics, Certificate courses for University teaching in English, Presentation skills, making document skills
- “Excellent course, I hope I can use all the techniques I have learned”, “Very good to give chance to improve career more than research (University teaching)

Appendix III: Evaluation Graduate Courses (WS 02/03 – WS 05/06)

Gesamtübersicht:

PSC – Graduate - Programm allgemein:

Die meisten Teilnehmer finden das PSC Graduierten Programm vielseitig, interessant, gut organisiert, hilfreich und schätzen, dass fachspezifische aber auch Kurse aus anderen Wissens- respektive Fachbereichen angeboten werden wie z.B. Ethik, Self Management, Medientraining etc. Gemäss Aussage der Teilnehmer erweitert sich damit der Blickwinkel und ermöglicht die Betrachtung der Naturwissenschaften unter neuen Gesichtspunkten.

Das PSC Programm wird wegen dem vielfältigen Angebot geschätzt: Viele Teilnehmer sind der Meinung, dass das PSC – Programm ein gutes Forum ist in dem das eigene Wissen auf den neuesten Stand gebracht und Wissen ganz allgemein ausgetauscht werden kann.

Das Programm Kurse bietet die Möglichkeit, Leute aus anderen Fachbereichen und Forschungsgruppen kennen zu lernen und so neue Sichtweisen, Ideen etc. auszutauschen. Dies stärkt die Zusammenarbeit allgemein.

Praktisch alle Teilnehmer wünschen sich Englisch als Kurssprache.

Kurse

Kursstruktur/Kursausschreibung:

Die meisten Teilnehmer wünschen sich gut strukturierte Kurse mit klar formulierten Zielen. Einige Teilnehmer erwähnten, dass der zeitliche Rahmen einiger Kurse zu knapp bemessen war, d.h. zu viel Stoff in den Kurs „gepackt“ wurde. Anmerkung einiger Teilnehmer: Kurs auf mehrere Tage aufteilen oder wöchentlich durchführen.

Besonders geschätzt werden kurze, prägnante Kursausschreibungen, aus denen Kursziele, Kursinhalte und die damit verbundenen Anforderungen an die Teilnehmer bereits vor der Anmeldung klar ersichtlich sind.

Einige Teilnehmer wünschen sich einen Kursindex oder eine kurze Übersicht am ersten Kurstag.

Einige bemängeln das Kreditsystem und finden 12 CP's zu viel. Der „Nutzen“ der Kurszertifikate ist nicht allen Teilnehmern klar.

Einige Teilnehmer wurden vor dem Kurs nicht genügend oder zu spät über Kurszulassung oder über vor respektive während dem Kurs zu Leistendes (paper für Präsentation vorbereiten, Hausaufgaben etc.) informiert.

Viele Teilnehmern bemängeln, dass die Kurse zu schnell ausgebucht sind und wünschen sich eine Erhöhung der Teilnehmerzahl oder dass Kurse doppelt geführt werden.

Praxisbezug:

Wichtig ist für den Grossteil der Teilnehmer, dass die Kurse einen grossen Praxisbezug aufweisen, d.h. das Methoden, Techniken (z.B. Labor, statistische Methoden etc.) gelernt und vertieft werden, die im Arbeitsalltag effektiv gebraucht werden. Studenten, die bereits mit den entsprechenden Methoden arbeiten, schätzen, wenn sie von Experten noch zusätzliche Tipps und detaillierter Informationen zu spezifischen, die tägliche Arbeit betreffende Fragen erhalten.

Die meisten Teilnehmer schätzten Kurse, in denen sie etwas „tun“ können d.h. Kurse in denen die neu gelernten Theorien direkt angewendet werden, z.B. am Computer (Statistik) oder im Labor (Labortechniken) oder auch wenn Lösungen in Gruppen diskutiert und selber erarbeitet werden.

Geschätzt wird ein realitätsnahes Setting des Kurses z.B. im Kurs „Ecology of Alpin Plants“, der auf dem Furkapass statt fand.

Betreuung:

Viele Teilnehmer schätzen es, wenn die Unterstützung der Dozenten und Instruktoren über den normalen Kursrahmen hinausgeht, d.h. die Studenten konkrete Fragen aus ihrer Forschungsarbeit auch ausserhalb der regulären Kurszeit stellen und diskutieren können und ihnen eine Art „Support“ (in kleinem Rahmen) angeboten wird z.B. Korrigieren von in Englisch verfassten Texten, Diskutieren von statistischen Problemen zu ihrer Forschungsarbeit, Fragen zu Computeranwendungen, Feedback zu Präsentationen.

Positiv erwähnt wird häufig ein „step-to-step approach“, des vermittelten Wissens. Wichtig ist den meisten Teilnehmern ein gutes Gleichgewicht zwischen Theorie/Vorlesungen und Praxis.

Teilnehmer von Kursen in denen im Labor respektive am Computer gearbeitet wurde, erwähnen häufig, dass es wichtig ist, dass genügend Betreuungspersonen zur Verfügung stehen, die Fragen klären und bei Problemen helfen.

Teilnehmer von Kursen in denen spezielle Computerprogramme verwendet wurden, wünschen sich „freie Lizenzen“, d.h. dass die entsprechenden Programme allen Teilnehmern gratis zur Benutzung zur Verfügung gestellt werden.

Dozenten / Kursatmosphäre:

Fach- und Sozialkompetenz (Begeisterung des Dozenten vom Thema, Hilfsbereitschaft, individuelles Eingehen auf die Teilnehmer etc.) sowie die didaktischen Fähigkeiten der Dozenten und eine gute Kursvorbereitung sind wichtige Punkte, ob der Kurs gut bewertet wird oder nicht. Auch schätzen die meisten Teilnehmer eine offene, angenehme und „anregende“ Arbeitsatmosphäre.

Kursunterlagen/Literaturhinweise:

Der Grossteil der Teilnehmer wünscht sich gut strukturierte, übersichtliche Kursunterlagen (eventuell auch eine CD), die später als Nachschlagewerk/Handbuch benutzt werden können. Auch weiterführende Literaturhinweise werden geschätzt. Abgegebene Skripte, Kursunterlagen und Dokumentationen sollten in Englisch verfasst sein.