



University of
Zurich ^{UZH}

ETH zürich



University
of Basel

Zurich-Basel Plant Science Center

Guide to the PSC PhD Program in Science & Policy 2020

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1. Why a PhD Program in Science & Policy?

The Zurich-Basel Plant Science Center (PSC) offers a cutting-edge PhD Program in Science & Policy with high-quality transdisciplinary skills training. The natural sciences have strong implications for political topics, e.g. in the fields of sustainable development, adaptation and mitigation potentials of climate change, food system changes, food security and sustainable agriculture, policies for land use changes, biodiversity conservation, regulations for genetically modified organisms, policies and governance of the energy sector etc.. As a young researcher, you may perceive a gap between research and its implementation in these domains, and you may be wondering how this gap could be bridged.

Are you interested in how to involve different stakeholder groups in the decision-making process? How scientific evidence is created and communicated to different actors in the policy-making process, and why some topics do not make it to the political agenda? Would you like to learn to build communication strategies for different target groups? Do you want to know how to communicate risk and uncertainties? Interested in knowing more about the main actors in the policy-making process in Switzerland and abroad?

Then, the PhD Program on Science & Policy is the right choice!

With this program you will:

- Improve your communication of scientific evidence towards policymakers, the media and the public
- Know how to involve different stakeholder groups in a participative process
- Understand the general process of policy development and endorsement
- Use existing tools and platforms for contribution of research results into political processes
- Increase your network of peers and policy implementing organizations in your own field of research

What if you are leaving the academic world after your PhD? Our policy workshops as well as the courses of the main PSC PhD Program in Plant Sciences aim at training you in a range of transferable skills that will be valuable for a successful career outside of academia, especially in some implemental or policy-making organization. The courses in the main PSC PhD Program in Plant Sciences are also open for you to participate. Besides, many potential future employers inside and outside of academia expect completion of a structured PhD program.

We also have a 'Science and Policy' Blog, where you are invited to post interesting articles, events, comments relating to science and policy: [https://blogs.ethz.ch/Science and Policy/](https://blogs.ethz.ch/Science_and_Policy/)

2. Admission, Registration and Regulations

2.1. Admission to the PSC PhD Program

The PhD Program is open to you if your research group has a membership within the PSC (overview of affiliated groups: www.plantsciences.uzh.ch/aboutus/people.html).

All PSC PhD students must be enrolled at the UZH, ETHZ or at the UNIBAS. The candidate is conditionally accepted to the PhD Program after requirements are fulfilled. Final acceptance depends on the formal admission requirements of the UZH, ETHZ or UNIBAS.

There are two tracks to join the PSC PhD Program. Track I and Track II (<https://www.plantsciences.uzh.ch/en/teaching/registration.html>)

To ensure equal treatment of Track I (recruitment via Life Science Zurich Graduate School, LSZGS) and Track II (direct application to the Principle Investigator, PI) candidates, and in accordance with the rules of the LSZGS, group leaders are required (as of January 2013) to organize a formal admission interview with their future PhD students if recruited via Track II. The interview should be conducted in presence of at least one other PI or faculty member, and the supervisor should fill out an interview protocol to be submitted to the program office. Please contact your supervisor if you are a Track II student.

2.2. Registration for the PSC PhD Program

All necessary documents (incl. an overview of all necessary processes) can be downloaded on our webpage: www.plantsciences.uzh.ch/teaching/phdplantscience/procedures.html

All students: Register for the PSC PhD Program of their choice by filling in the registration form provided on our webpage within 3 months after start of your PhD. We will then send you a welcome package with all necessary documents.

NOTE: For the progress supervision of the PhD students, the PSC and the UZH MNF are requested to use two different data and document management systems, depending on your home institution!

ETHZ/UNIBAS → **Dissertation Go (DissGo)**: <https://www.dissgo.uzh.ch/login>
You will receive your login after having sent the registration form for the PhD Program.

UZH MNF → **StudentAdmin**: <https://studentadmin.mnf.uzh.ch/>
You will receive your login after successful matriculation at the UZH.

At these databases you need to upload all the documents for certifying the progress of your studies (e.g. thesis committee meeting protocols, certificates of courses, etc.).

University of Zurich (UZH), Faculty of Science (MNF)

All PhD students must register for a structured PhD Program. The PSC office must sign the “Acceptance confirmation Structured Doctoral Program” letter that is part of your matriculation documents (for information about the matriculation see: <http://www.uzh.ch/en/studies/application/doctoralstudies>)

PSC can only sign the form after admission interviews have been conducted, and after we have received the signed interview protocol and the signed registration form. Registration is necessary within 3 months of beginning your PhD. Templates for both documents are available here: <https://www.plantsciences.uzh.ch/en/teaching/procedures.html>

Furthermore, PhD students must register to the UZH MNF by using the following link:
Registration Doctoral Studies <http://www.mnf.uzh.ch/en/studium/phd/anmeldung.html>.

For more information on the Graduate Schools and Doctoral Studies at the MNF, please visit the following website <http://www.mnf.uzh.ch/en/studium.html>.

ETH Zurich (ETHZ)

PhD students must register to the ETHZ Admission for Doctorate by using the following link:
<https://www.ethz.ch/en/doctorate/registration-admission.html>.

They need to fill the form to complete their application to the ETHZ:
https://www.ethz.ch/content/dam/ethz/main/doctorate/files/application_form_doc.pdf.

University of Basel (UNIBAS)

PhD students must register to the UNIBAS, Philosophisch-Naturwissenschaftliche Fakultät by using the following link:

<https://philnat.unibas.ch/de/forschung/promotionphd/immatrikulation-ab-hs-2016-registered-fall-semester-2016-or-later/>.

2.3. Institution-specific regulations during PhD studies

First, you need to carry out your PhD studies in accordance with the regulations of your home institution (=Academic affiliation of the host laboratory where the research work is carried out). Thus, please refer to the regulations for PhD students of ETHZ, UZH or UNIBAS and of your home department/faculty.

Second, you need to comply with the regulations of the PhD Program.

On our website you'll find an overview table as a checklist of documents to be submitted during your PhD studies: <https://www.plantsciences.uzh.ch/en/teaching/procedures.html>

Here we present a brief summary of some of the relevant regulations at the three partner institutions:

University of Zurich (UZH), Faculty of Science (MNF)

For more information on the Graduate Schools and Doctoral Studies at the UZH MNF, please visit the following website <http://www.mnf.uzh.ch/en/studium.html>.

Teaching requirements: PhD candidates must complete the "Planning teaching hours" form from the Department (Fachbereich) of Biology for the fulfilment of a minimum of 100 teaching hours and maximum of 420 hours. Please consult the following website for in-depth explanations of the teaching requirements: <https://www.biologie.uzh.ch/de/Studium/Doktorat.html>.

Planned teaching activities need to be submitted to via UZH MNF StudentAdmin.

Thesis Committee: The PSC PhD student and the supervisor select the thesis committee 6 months after the beginning of the project. The composition of the committee has to be as following: at least three members, including the supervisor. Two members of the committee (including the chairperson) are from the MNF with "Promotionsrecht" (Professors with the right to confer a PhD). Members with "Promotionsrecht" can be consulted on the following website:

<https://www.mnf.uzh.ch/en/fakultaet/fakultaetsangehoerige/promotionsrechtler.html>.

The thesis committee composition **must be communicated to the program office** and the UZH MNF via UZH MNF StudentAdmin.

The first **thesis committee meeting** should be held 6 – 12 months after the beginning of the PhD. Subsequent meetings are held every 12 months. If at the yearly meeting the thesis committee finds that the progress of the PhD candidate is not sufficient, it can request that the Dean of Studies disqualify the candidate. At least three members of the thesis committee (including thesis supervisor) have to be present. Participation of external members can also be arranged by using Skype, etc. It is the responsibility of the PhD student to set up the composition of the thesis committee, arrange the yearly thesis committee meetings, and document the activities.

The signed thesis committee meeting protocol is to be submitted to UZH MNF StudentAdmin within 8 weeks after the meeting took place.

All templates are available at:

<https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/procedures.html>.

For details see: <http://www.mnf.uzh.ch/en/studium/reglemente.html#4>

ETH Zurich, D-USYS and D-BIOL

Research Plan: A written research proposal, including the research plan, is to be defined 12 months after registration. The research plan needs verification through the representative of the doctoral board and the thesis committee. Should a thesis be carried out outside the ETHZ domain, it should be specified in the research plan. Doctoral students who are requested to take qualifying exams may only submit their research plan once they have completed those exams.

The research plan needs to be submitted to the ETHZ Doctoral administration first! (Deadline, see ETHZ MyStudies). Afterwards, the Research Plan (pdf) needs to be uploaded to DissGo.

Information on the research plan:

<https://www.ethz.ch/services/en/teaching/administration-doctorate/informationen-departemente/forschungsplan.html>.

Submission of the research plan for D-BIOL: <https://www.biol.ethz.ch/en/doctoral-studies/research-proposal.html>; and for D-USYS: <https://www.usys.ethz.ch/en/doctorate.html>.

Thesis Committee: The PSC PhD student and the supervisor select the thesis committee 6 months after the beginning of the project. For D-BIOL: The committee has min. three members: the official thesis supervisor (professor at the Department), the direct supervisor (if applicable), two additional professors or senior scientist of which one is independent from the institute of the official supervisor. For D-USYS: Direct supervisor plus at least one co-examiner (should not be from own group and not be a co-author with the candidate on papers or manuscripts up to the point of the PhD defence).

The thesis committee composition must be communicated to the PSC program office in the Doctoral Agreement which has to be send to the program coordinator.

The first committee meeting should be held 6 – 12 months after the beginning of the PhD. Subsequent meetings are held every 12 months. It is the responsibility of the PhD student to set up the thesis committee, arrange the yearly thesis committee meetings, and document the activities. Participation of external members can also be arranged by using Skype etc.

The signed thesis committee meeting protocol is to be submitted to DissGo within 8 weeks after the meeting took place.

All templates are available at:

<https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/procedures.html>.

D-BIOL: <https://www.biol.ethz.ch/en/doctoral-studies.html>

D-USYS: <https://www.usys.ethz.ch/en/doctorate.html>

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ETHZ (all other Departments)

For information about your doctoral studies at ETHZ are available here:

<https://ethz.ch/students/en/doctorate.html>

Particular requirements of different ETHZ departments are available here:

<https://ethz.ch/en/doctorate/legal-basis.html>.

University of Basel, Philosophisch-Naturwissenschaftliche Fakultät

Thesis Committee: The composition of the doctoral committee consists in the first supervisor, second supervisor, external members (e.g. experts and other experts, subject to application). The thesis committee composition must be communicated to the PhD Program office in the Doctoral Agreement (i.e. UNIBAS Doktoratsvereinbarung).

The thesis committee composition must be communicated to the PSC program office in the Doctoral Agreement which has to be submitted to DissGo.

The first **thesis committee meeting** should be held 6 – 12 months after the beginning of the PhD. Subsequent meetings are held every 12 months.

The signed thesis committee meeting protocol (i.e. UNIBAS Doktoratsvereinbarung) has to be submitted to DissGo within 8 weeks after the meeting took place.

You can find the templates on the following webpage of the PSC:

<https://www.plantsciences.uzh.ch/en/teaching/phdplantscience/procedures.html>.

For a description, please refer to:

https://philnat.unibas.ch/fileadmin/user_upload/philnat/3_Forschung/Doktoratsstudium_L_eitfaden_ENG_Version_10.2017_1.pdf.

Exam Registration and Doctoral Examination

The final degree is conferred by your home institution.

UZH MNF

For your registration to the examination, have a look at:

<http://www.mnf.uzh.ch/en/studies/students/doctoral-studies-at-mnf.html#c470>

ETHZ

For your registration at the doctoral administration, have a look at:

<https://ethz.ch/content/associates/students/en/doctorate.html>

UNIBAS, Department of Environmental Sciences

Please study the document provided by the faculty:

<https://philnat.unibas.ch/de/forschung/promotionphd/immatrikulation-ab-hs-2016-registered-fall-semester-2016-or-later/>

2.4. Admission to Courses

We accept PhD students from LSZGS programs into our courses, provided that spaces are available. PSC students registered in the PSC PhD Programs (i.e. Science & Policy or Plant Sciences) have enrolment priority. For PhD students registered in LSZGS programs, all courses of the PSC PhD Programs are fully recognized.

PhD students select their individual course work in agreement with their PhD supervisor or their PhD thesis committee.

2.5. PSC PhD Certification

Upon successful completion of the PSC PhD Program in Science and Policy, the PSC will award a program certification (= diploma supplement) based on the following criteria (see also point 3. Curriculum):

- 12 credits (ECTS) acquired during doctoral term from lectures, courses and workshops. 1 ECTS is equal to either a lecture of 1 hour per week during one semester or a full two- to three-day workshop including home-work or preparatory work (=30 learning hours).

- 8 ECTS from Science and Policy Workshops (compulsory activities) organized by the PhD Program in Science and Policy. We fully accredit the following workshops organized by the PSC (<https://www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy/courses.html>)
- 1 ECTS from the course "Introduction to Political Sciences" (Compulsory activity in Basics of Policy Sciences) organised by the PSC (<https://www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy/courses/approved.html>). Alternatively, other courses can fulfil the requirement for "Basics of Policy Sciences" in the Science & Policy curriculum. Please, contact the PSC PhD program coordinator and ask for approval in any case you choose an alternative course.
- 3 ECTS may be acquired through elective Activities such as:
 - **Technical Courses:** Intensive workshops on skills, methods and techniques; Transferable Skill Courses
 - PSC: Careers in Science or Policy, or both? (1 ECTS)
 - PSC: Scenario-building and modelling (1 ECTS)
 - PSC: System Thinking (1 ECTS)

Or in courses outside of our own program, for example from the PhD Programs associated within the Swiss Plant Science Web (www.swissplantscienceweb.ch/education/phd-programs/) or other national and international PhD courses. Note that, all ECTS acquired outside of UZH, UNIBAS, ETHZ or associated PhD Programs need a confirmed accreditation through the PSC office. Fill the form at <https://www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy/procedures.html> --> Accreditation of external ECTS.

- 1 ECTS can be earned for active participation in international scientific symposia with own scientific contribution (oral or poster presentations, preferentially with science-policy connection) (max. 1 ECTS). Please contact the coordination office to receive the adequate template to fill.
- It is possible to obtain credit points through the organization of the PSC PhD Symposium, preferentially with science-policy section (max. 3 ECTS)

The PSC issues a PhD Program certification (incl. a transcript of all records) after all requirements have been fulfilled and the Doctoral Degree Certificate of your home university has been awarded.

For receiving the PSC PhD Program certificate:

- **Certificates** (pdfs) of all training activities (i.e. courses, workshops, summer school, conferences¹, etc.) need to be uploaded to DissGo (ETHZ, UNIBAS) or UZH MNF StudentAdmin (UZH)

¹ Accreditation of credits for external course participation (incl. poster presentation or talks at international conferences) has to be requested using the corresponding document on the PSC Webpage: <https://www.plantsciences.uzh.ch/en/teaching/procedures.html>

- A copy of your **Doctoral Degree Certificate** has to be send to the PhD Program coordinator via E-Mail (pdf).

The certification will be prepared and send to you within 3 weeks of submission.

2.6. Confidentiality

It is an important goal that the participants of the PhD Program exchange their scientific results between different institutes and their host institution. Any such results shall be kept strictly confidential by all participants of the program and shall not be disclosed to persons outside of the program as long as the results are not published by the author/originator of the results. No participant of the PhD Program shall use any scientific result to the detriment of one of the host institutions. In particular, no participant shall impair a host institution's right to seek protection for intellectual property contained in such results by a way of a premature publication or other premature disclosure of results.

3. Curriculum

Note: For all students that have started their PhD after February 2016 it is mandatory to visit the LSZGS introduction event “Introductory Lecture to Good Scientific Practice and Scientific Integrity” (2 hours, no ECTS). Within the event you will sign the declaration of “Good scientific practice” that will become a part of your DissGo (ETHZ) or UZH MNF StudentAdmin (UZH) documents. Please, register via: <https://www.lifescience-graduateschool.uzh.ch/en/courses/tsc.html>. All PhD students that have or will visit a course on “Research Integrity” or “Ethics” in their PhD Program don’t need to visit this introduction course.

Module	ECTS
<p>Compulsory Activity:</p> <p>4 out of 6 modules - Policy Workshops, offered by PSC, 2 ECTS each, [corresponding: 3.1]:</p> <ul style="list-style-type: none"> • Evidence-based Policy-making in Plant Sciences • Stakeholder Engagement • Communicating Science • Building Political Support • Analysis and Communication of Risks and Uncertainties • Understanding Policy Evaluation <p>1 Lecture in Basics of Policy Sciences (i.e. Introduction to Political Sciences, 1 ECTS), [corresponding: 3.2]</p>	9
<p>Elective Activities:</p> <ul style="list-style-type: none"> • Technical Courses: Intensive workshops on skills, methods and techniques • Transferable Skill Courses • PSC: Scenario-building and modelling (1 ECTS) [corresponding: 3.3] • PSC: System Thinking (1 ECTS) [corresponding: 3.3] • PSC: Careers in Science or Policy, or both? (1 ECTS) [corresponding: 3.3] 	3
<p>Other Elective Activities: [corresponding: 3.4-3.7]</p> <ul style="list-style-type: none"> • Participation in international scientific symposium with own scientific contribution (oral or poster presentation, preferentially with science-policy section) (max. 1 ECTS) • Organization of PSC PhD Symposium, preferentially with science-policy section (max. 3 ECTS) • ECTS from the offer of the program of technical and scientific courses and transferable skill courses. Transferable skill course can also be visited at LSZGS, GRC, GRACE and other continuing education offers at ETHZ, UZH and UNIBAS. 	
	12*

* At UNIBAS, a total of 18 ECTS are requested.

PhD students select their individual course work in agreement with their PhD supervisor or their PhD thesis committee.

The actual list of all current workshops and courses (for both PhD programs, ‘Plant Sciences’ and ‘Science & Policy’) can be found on our website:

www.plantsciences.uzh.ch/teaching/phdplantscience/courses.html

3.1. Science and Policy Workshops (A to F)

Please note: In the weeks between the two workshop days you should take some extra time for group and individual work of min. 30 hours.

Workshop A: Evidence-Based Policy-Making (2 ECTS)

Lecturers and case study supervisors:

Dr. Daniela Eberli (Dept. of Political Science, University Zurich), Holger Gerdes (Ecologic Institute), Dr. Eva Lieberherr (Natural Resource Policy, ETHZ), Dr. Jerylee Wilkes-Allemand (Natural Resource Policy, ETHZ), Dr. Susanne Menzel (Swiss Federal Office for Agriculture, FOAG)), Dr. Luisa Last (PSC)

The aim of this course is to develop skills and actions to improve the effectiveness of science in informing policy-makers. The lectures will introduce the concepts of environmental governance and evidence-based policymaking. In the case studies, you will study and evaluate concrete examples of policymaking. You will learn how scientific evidence is incorporated by investigating selected examples and processes. The second course day is dedicated to the presentation and discussion of the case studies and what has been retrieved from them. Furthermore, there will be the presentation of a best practice example.

Specific learning **objectives** are:

- You understand the concept of evidence-based policy-making
- You know other factors that interplay in policy making aside from evidence
- You know factors that influence the policy-making process
- You can argue about the possible advantages of a governance approach to environmental problems
- You have a basic understanding of the political and institutional issues that surround environmental governance on the global, federal and cantonal scale
- You can formulate a policy brief
- You are able to analyze a policy making process (identify involved actors, their interests, positions and strategies to influence the outcome of the policy making process)
- You value the criteria for good policy advice
- You - as a person with scientific expertise - are able to modify your approaches to generate knowledge in response to the concerns of policy makers

Individual Performance and Assessment: Attendance and active participation in the course (16 hours). In order to obtain the credit points, participants are required to hand in an individual assignment to be carried out at home and a group/case work to be presented during the second course day (44 hours). Case study work involves literature research, expert interviews and group discussions.

Workshop B: Stakeholder Engagement (2 ECTS)

Lecturers and case study supervisor: *Dr. Minu Hemmati (Berlin, Germany)*

During their work life, most life scientists will have to deal with issues relating to the development of their field, some of which may be subject to controversial debates in society and politics. They may be asked to give advice to governmental institutions on policies relating to natural resource governance, conservation, sustainable use of ecosystems, and others. Life scientists may also be invited to participate in stakeholder engagement processes, as experts, as representatives of the scientific community or other organizations or sectors they may work for. Communicating and collaborating effectively across the boundaries and differences of various stakeholder groups and engaging constructively with representatives from government, business and civil society in multi-stakeholder processes will be key competencies in this context. In this course, students will learn to understand different stakeholders and multi-stakeholder processes, and effectively engage in multi-stakeholder settings. The course will combine presentations of background information, practical exercises, group discussions and individual reflection.

Specific learning **objectives** are:

- Gain a basic understanding of stakeholder engagement and multi-stakeholder processes;
- Get an overview of possible issues within Life Sciences where stakeholder engagement could play a role;
- Learn to identify and analyse stakeholders;
- Understand how to engage with different stakeholders and work effectively in various multi-stakeholder settings;
- Understand different levels of engagement, including their strengths and weaknesses; and
- Learn about criteria and methods for evaluating stakeholder engagement processes.

Individual Performance and Assessment: Attendance and active participation in the course (25 hours). In order to obtain the credit points, participants are required study pre-reading / reading essentials before the workshop, to hand in an individual and group assignments to be carried out at home and a group/case work to be presented during the second course day (44 hours).

Workshop C: Communicating Science (2 ECTS)

Lecturer and case study supervisor: *Dr. Jacopo Pasotti*

In this course, students will learn basics on how to communicate science in an effective way to the media, policy-makers and a wider public. They will be introduced to different communication tools and best-practice examples. Scientists in all fields are expected to perform public outreach occasionally on matters ranging from research funding to assist policy-makers in taking decisions. In doing this, they face particular challenges. Challenges range from being clear, convincing, accurate, and, at the same time, engaging. Academic

researchers play an essential role in allowing policymakers to develop and properly assess science policy options, speaking to the media, and contributing to the improvement of public's critical thinking. If advised and coached appropriately they can engage in a true dialogue that enhances mutual understanding between academia and the public.

Specific learning **objectives** are:

- Learn to identify and communicate aspects of their research that are relevant to policy-makers and different stakeholder groups
- Practice writing techniques to effectively reach a non-specialist audience
- Know and understand different communication tools such as short texts and press releases
- Practice public speaking techniques to react to interviews and a non-specialist audience

Individual Performance and Assessment: Attendance and active participation in the course (16 hours). In order to obtain the credit points, participants are required study pre-reading / reading essentials before the workshop, to hand in an individual and group assignments to be carried out at home and a group/case work to be presented during the second course day (44 hours).

Workshop D: Building Political Support (2 ECTS)

Lecturers and case study supervisors: *Dr. Sarah Bütikofer, Global Governance, ETH Zürich; Marcel Falk, chief communication officer, Swiss Academy of Sciences; Dr. Sebastian Koehler, Center for Data and Methods, University of Konstanz (CDM); Dr. Luisa Last, PSC*

During the last decades different ways of bridging science and policy have been explored. Policy is understood as a principle or guideline for action in a specific context. In this course, the students shall learn what kind of actions are necessary to implement policies in different sectors, such as public agencies, the civil society or the private sector. Who are the main actors and when do they need to be involved? *Decision and policy-makers in Switzerland and the European Union* - This lecture gives an overview on main actors in the policy-making process in Switzerland the European Union. *Process of policy endorsement* - This lecture introduces the essential steps in the process of policy endorsement in Switzerland and the European Union, including examples related to plant sciences and ways to form alliances with policy-makers at national and European scale. Getting support from policy-makers will depend among others, upon convincing them of the benefits that implementing the actions can provide and upon the timing. The aim of the course is to know where it is possible to exert influence on the political process as a scientist, an expert, a lobbyist or an interested Swiss or European resident/citizen. Knowing the decision makers is central to exerting influence on negotiations and decision-making processes. On the second course day, a visit to the Swiss Parliament and an interview with a parliamentarian is scheduled.

Specific learning **objectives** are:

- Identify the relevant policy- and decision-making sectors in Switzerland and the European Union
- Understand the common procedures for establishing and monitoring measurable national and European goals and targets
- Identify the different legislative measures existing in Switzerland and in the European Union
- Know different existing policy management and oversight arrangements
- Plan for successful impact

Individual Performance and Assessment: Attendance and active participation in the course (16 hours). In order to obtain the credit points, participants are required study pre-reading / reading essentials before the workshop, to hand in an individual and group assignments to be carried out at home and a group/case work to be presented during the second course day (44 hours).

Workshop E: Analysis and Communication of Risks and Uncertainties (2 ECTS)

Lecturers and case study supervisors: *Cornelius Senf (Humboldt University, Berlin), Dr. Christoph Beuttler (Risk Dialogue Foundation, St. Gallen), Dr. Elisabeth Ehrensperger (TA Swiss), Dr. Melanie Paschke (PSC)*

The reliability of scientific data and models are frequently subject of public and political debate. The aim of this course is to understand the concepts of risk, uncertainty and ignorance in relation to these data and models in order for course participants to be more aware of and work more effectively at the science-policy interface. During the first two workshop days, lectures will introduce the concepts of risk, uncertainty and ignorance and apply these in discussion to the course participants' problems. In exercises, the participants will get first hands-on experiences with applying quantitative (risk-type) uncertainty models to practical examples.

Specific learning **objectives** are:

- Understand the concepts of risk, uncertainty and ignorance
- Apply quantitative models to measure and propagate uncertainty
- Understand the role of risk-based evidence as a decision tool/framework for policy choices (e.g. IPCC, Technology Assessment)
- Develop effective strategies for communicating risk and uncertainty

Individual Performance and Assessment: Attendance and active participation in the course (24 hours). In order to obtain the credit points, participants are required study pre-reading / reading essentials before the workshop, to hand in an individual and group assignments to be carried out at home and a group/case work to be presented during the second course day (36 hours).

Workshop F: Understanding Policy Evaluation (2 ECTS)

Lecturer and case study supervisor: *Dr. Tobias Arnold (INTERFACE, Lucerne)*

The course provides a general overview of different policy evaluation approaches, as well as opportunities for concrete applications and reflections on impact models. It aims at discussing how, when, by whom and for what purpose policy is evaluated as well as under what conditions the effectiveness and efficiency of a policy can be measured. Based on the theoretical and methodological introduction on policy evaluation conducted by social scientists, participants reflect on how natural science can contribute to policy evaluation and on how research can become socially relevant.

Between the first and the second workshop day, participants are solving a case study (in groups or individually). The main objective of the case study is to practice the application of logic models.

Specific learning **objectives** are:

- Know different types of policy evaluation and their methods
- Understand logic models in the context of policy evaluation
- Gain insights on how policy evaluation helps to improve policy implications
- Apply policy evaluation logics in a case study

Individual Performance and Assessment: Attendance and active participation in the course (16 hours). In order to obtain the credit points, participants are required study pre-reading / reading essentials before the workshop, to hand in an individual and group assignments to be carried out at home and a group/case work to be presented during the second course day (44 hours).

3.2. Basics of Policy Sciences

We are offering a tailor-made block course, which gives you a broad overview over political processes and the world of policymaking:

Introduction to Political Sciences (1 ECTS)

Lecturer: *Dr. Sarah Bütikofer (Department of Political Science, University of Zurich)*

The course is an introduction to politics in a globalized world, with a focus on how political science tries to understand and explain cross-country and cross-time differences. The course will begin by introducing students to some of the main empirical variations in political behavior, institutions, and actors, focusing mainly on democratic and partially democratic countries. We mainly discuss theoretical approaches to the study of politics and policies across a range of states, international organizations and issue areas.

Specific learning **objectives** are:

- Introduce students to the main differences between democratic and non-democratic regimes

- Explain how political institutions work
- Explain how political behaviour and institutions shape policy outcomes
- Prepare students to achieve further knowledge of political processes

Individual Performance and Assessment: Attendance and active participation in the course (20 hours). In order to obtain the credit points, participants are required to hand in an individual and group assignments to be carried out at home and a group work to be presented during the second course day (10 hours).

Alternatively to this course, you can choose from several lectures in policy sciences (min. 1 ECTS). For an updated course catalogue that meets our criteria to be of high benefit for a basic introduction into the political sciences, please go to our website: <https://www.plantsciences.uzh.ch/en/teaching/phdsciencepolicy/courses/approved.html>

For students from the UNIBAS who want to follow lectures at the ETHZ: Please note that pursuant to an official agreement all students from the PSC may register at ETHZ as a Special Student. See Information for “Fachstudierende” at ETHZ: Special Students UBa (<https://www.ethz.ch/en/studies/non-degree-courses/special-students/special-students-university-of-Basel.html>)

If you want to attend these courses at the ETH Zurich, please complete this form: Registration as Special Student “UBa – PSC” (<https://www.ethz.ch/content/dam/ethz/main/education/non-degree/fachstudierende/formulare/90en/registrationform-special-uba-psc-en.pdf>). Please send the signed form together with a copy of your student ID to the PSC office: Zurich-Basel Plant Science Center, ETH Zurich, TAN, D 5.1, Tannenstrasse 1, 8092 Zurich. Only then can we guarantee that you can take these courses at the ETH free of charge. For registration to these courses please go to: ETHZ MyStudies (<https://www.lehrbetrieb.ethz.ch/myStudies/loginPre.do?lang=en>)

3.3. Specialized Science and Policy Courses

Scenario-building and modelling (1 ECTS)

Lecturers: *Véronique Lamblin (Futuribles, France) Claude Garcia (ETHZ, Switzerland)*

This 3 day a workshop consists of two components highly relevant to scientific conceptions and visions of the future. The first day will focus on coupling modeling and scenario-building through a role-playing game experiment. The day will be structured in 3 parts. Firstly, we will play a game of resource management called ReHab, pitching players as Harvesters against Park Managers in a landscape with resources and protected species... Then, we will debrief the game session to elicit the lessons learnt through the game, the role of knowledge, trust, monitoring, etc. in managing natural resources. Finally, we will discuss the Companion Modelling approach and the use of simulation models and/or role-playing to foster dialogue, devise management strategies and explore alternative scenarios. We will address the strengths of the approach, as well as its limits. Day two and three will focus on scenario-building. It will be organized around a practical workshop allowing students to test the

scenario method, specific to foresight practices, through the exercise. The goal is not to perform a real foresight study in just 2 days, but to ensure that students 1) understand the basic requirements to build consistent and argued scenarios and 2) the different uses of scenario building.

System thinking (1 ECTS)

Lecturer: *Dr. Martin Reynolds, The Open University, UK*

Participants will develop skills in systems thinking in practice using ideas from boundary critique and critical systems heuristics (CSH). Participants effectively design a reference system for their case study based on applying the CSH boundary-setting questions. Through surfacing key inter-relationships, perspectives, and boundaries, participants will explore the possibilities and limitations of making factual judgments, value judgments, and boundary judgments associated with the 'wickedness' of their case study situations. The workshop will be a combination of presentation and mini-lectures (40%) centred on a core demonstration case study running throughout the event, group-work sessions (40%) based on individuals' choice between two to three other case studies, and plenary reflection and discussion (20%). Participants should also be encouraged to keep reflective notes through personal journaling during the course of the workshop. Morning and afternoon sessions should be of approximately same duration - 3 hours each, including 20 minute breaks. Figure 1 below provides a general model of the workshop.

Careers in Science or Policy, or both? (1 ECTS)

Guest speakers: *Charlotte Pavageau (Biovision); Simon Zeller (Office for Nature, Hunting and Fishing, Canton SG); Lisa King (WWF France); Philipp Aerni (Center for Corporate Responsibility and Sustainability); Serenella Sala (European Commission, Joint Research Centre); Jasmin Schubert (RethinkResource GmbH); Sascha Ismail (Swiss Academy of Sciences SCNAT); Ute Budliger (PSC & Institut für Gartentherapie); Jeanne E. Tomaszewski (World Food System Center); Simon Briner (Federal Office for Agriculture FOAG); Franziska Humair (Federal Office for the Environment FOEN); Claudia Boelter (KWS SAAT AG); Sabine Perch-Nielsen (Ernst Basler + Partner); François Meienberg (Berne Declaration); Friedrich Wulf (Pro Natura, Friends of the Earth); Dominik Klauser (Syngenta Foundation); Eva Spehn (Swiss Academy of Sciences SCNAT); Michele Garfinkel (European Molecular Biology Organization EMBO); Thomas Marty (Berinfor AG); Thomas Brook (International Union for Conservation of Nature and Natural Resources - IUCN) and Claude Garcia (ETHZ, Agricultural Research Centre for International Development CIRAD).*

This course offers a perspective on possible career paths at the interface of science with policy. It is structured as input-talks, followed by discussion rounds. Recent graduates also from the PSC PhD program "Science and Policy" as well as more mature professionals will be invited, representing career paths in government, politics, NGOs or private companies. In the discussions, we will elaborate with the speakers what kind of skills, experiences and qualities are sought in the respective sector. Moreover, how their responsibilities, impact and working day looks like. The participants prepare by researching the institutions and preparing

questions in advance for the speakers. Moreover, they will have the chance for networking.

3.4. Courses in Research Skills and Transferrable Skills

The PSC offers a wide range of courses on research skills for plant scientists and on transferable skills for all life sciences within the PhD Program Plant Sciences. Details and registration: www.plantsciences.uzh.ch/teaching/phdplantscience/courses.html

The PSC organizes some of its transferable skill courses in cooperation with the LSZGS. All skills courses are accredited within the PSC qualification framework. Details and registration: <http://www.lifescience-graduateschool.ch/graduate-courses/transferable-skill-courses.html>

Transferable Skill Courses, UNIBAS (e.g. GRACE). Details and registration: <https://www.unibas.ch/de/Forschung/Graduate-Center/Doktorierende/Training-Coaching-und-Beratung/Transferable-Skills.html>

Transferable Skill Courses, UZH, Graduate Campus (GRC). Details and registration: <http://www.ueberfachliche-kompetenzen.uzh.ch/index.html>

(NOTE: for ETHZ and UNIBAS students: if you register for these courses, please contact the PSC PhD Program Coordination Office (psc_phdprogram@ethz.ch) additionally, since we have to confirm your PhD program participation.)

3.5. Other Courses offered through the Universities

Excellent English language skills are one of the requirements for successful completion of the PSC PhD Program. Additional training can be obtained through:

Language Skills for PhD students of UZH and ETHZ: <http://www.sprachenzentrum.uzh.ch>

Courses of the Didactica Program of UZH:

some of the courses offered by "Hochschuldidaktik UZH" can be finished with ECTS (active participation and individual assessment necessary).

Details and registration: <http://www.hochschuldidaktik.uzh.ch/de.html>

3.6. Poster presentation at an International Conference (max. 1 ECTS)

We can award 1 ECTS for a poster or oral presentation at an international conference. We need a pdf of the poster, resp. the presentation abstract as proof.

3.7. PSC PhD Symposium (3 ECTS)

Note: every two years

Together with a group of 5 – 6 PSC PhD students, you will be responsible for the organization of an international and interdisciplinary PSC symposium

(<https://www.plantsciences.uzh.ch/en/outreach/conferences/pastsymposia.html>).

As a member of the scientific and organization committee, you will fulfil the following tasks:

- Development of a symposium topic or question
- Invitation of speakers from all over the world to contribute to a high-quality scientific program
- Organization of the symposium day
- Fundraising and finances (budget)

4. Reimbursement of Travel Expenses for PhD students at UNIBAS

Enrolled PhD students in our programs from UNIBAS can ask for reimbursement of their travel (bus or train ticket, 2nd class) to PSC, ETHZ, UZH or other national training events. Contact Maura Ellenberger (UNIBAS, maura.ellenberger@unibas.ch). Please keep original ticket/receipt for reimbursement.

5. Legal basis for the PhD Program regulations at the home institutions

UZH

- Verordnung über die Promotion an der Mathematisch-naturwissenschaftlichen Fakultät der Universität Zürich (Promotionsverordnung) vom 31. Januar 2011.
- Doktoratsordnung für die Promotion an der Mathematisch-naturwissenschaftlichen Fakultät der Universität Zürich vom 13.12.2012.

ETHZ

- Ordinance on Doctoral Studies at the Swiss Federal Institute of Technology Zurich (Ordinance on Doctoral Studies ETH Zurich of 1 July 2008 (Version: 1 November 2013) (<https://rechtssammlung.sp.ethz.ch/Dokumente/340.31en.pdf>).
- D-USYS: Department of Environmental Systems Science (D-USYS) Detailed regulations for Doctoral Studies D-USYS (effective on 01.11.2013).
- D-BIOL: Department Biology (D-BIOL) Detailed Regulations for Individual Doctoral Studies from 1 December 2009 (As of 1 January 2014).
- Detailed regulations for individual doctoral studies (further ETH Departments) are available online: <https://ethz.ch/en/doctorate/legal-basis.html>.

UNIBAS

- Promotionsordnung der Philosophisch-Naturwissenschaftlichen Fakultät der Universität Basel vom 15. September 2015 (https://www.unibas.ch/dam/Oeffentliche-Dokumente/Rechtserlasse_LegalRegulations/Phil.-Nat.Fakultaet_FacultyofScience/Promotion_Doctorate/446_730_P_Phil_Nat_00.pdf).