



University of
Zurich ^{UZH}

ETH zürich



University
of Basel

Zurich-Basel Plant Science Center

Guidelines 2024 to the PSC PhD Program Plant Sciences

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1 PSC PhD Program in Plant Sciences

1.1 Benefits

Welcome to the PhD Program in Plant Sciences of the Zurich-Basel Plant Science Center (PSC). Within the PSC PhD Program in Plant Sciences, you are embedded in a lively and international community of about 600 researchers.

As a graduate student, you make research your absolute priority. You will be expected to develop into an independent researcher, able to publish, present and communicate your work to a variety of audiences, including the public, to plan your research project and to get funding for your research.

PSC training provides an introduction to conceptual and technical approaches in research and also techniques and methodologies at the forefront of plant sciences. A special focus is on developing necessary digital skills, such as programming, data analysis, and data science, including advanced areas like machine learning, artificial intelligence and more.

Additionally, the PSC PhD Program in Plant Sciences supports you in acquiring transferable skills, such as project management, scientific writing and presenting, managing publication workflows and assembling grant proposals. Our program also offers trainings to help you build a competitive academic career by highlighting one's responsibilities as a researcher, gaining awareness of good practices in scientific data management, and opening our scientific community to you to build up your own professional network.

The PSC qualification framework aims to build transferable skills and competencies for a successful career in science and beyond. Completion of a structured PhD Program is expected by many potential future employers, both inside and outside academia. The guidelines should help you to plan your doctoral studies and tailor your training to your needs. The guide outlines the professional skills and interdisciplinary research competences you should develop during your doctoral studies (see competence matrix in Section 3). In the Course Catalogue, we present the wide range of workshops. To be awarded with the PSC PhD Program Certification, you must complete 12 ECTS during your 3-year doctoral study.

We also offer an opportunity to develop management skills by participating in the organization committee of our international PSC PhD symposium (organized bi-annually by doctoral students).

1.2 Governance of the Program

The PhD Program in Plant Sciences is approved as a structured PhD program by leading universities: the ETH Zurich (ETHZ), the Universities of Zurich (UZH) and the University of Basel (UNIBAS) and is a part of Life Science Zurich Graduate School (LSZGS).

It is lead by one representative of PSC principal investigators (PI, director: Prof Ueli Grossniklaus, UZH), PSC head of studies (Dr. Melanie Paschke, PSC) and the PSC PhD program coordinator (Dr. Bojan Gujas, PSC) that is your contact point for questions. Two times per year, there is a board meeting of PhD programs at LSZGS.

Each PhD Program has an opportunity to elect one representative of students, giving the doctoral students a voice for decisions. The doctoral representatives from all LSZGS PhD programs elect four representatives who have voting rights during the board meetings of the LSZGS. The election will be reconfirmed every year.

2 Admissions, 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 members: www.plantsciences.uzh.ch/aboutus/people.html).

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

There are two tracks to become a PhD student. Track I covers recruitment via the Life Science Zurich Graduate School (LSZGS). Track II concerns direct applications to the Principle Investigator (PI). To ensure an equal application process of Track I and Track II, both tracks require a formal admission interview between PI and their future doctoral students, in accordance with the rules of the LSZGS (as of January 2013). 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. Contact your supervisor if you are a Track II student. Please find further information here: (<https://www.plantsciences.uzh.ch/en/teaching/registration.html>)

2.2 Registration for the PSC PhD Program

Once enrolled at one of the three universities, the student can register for the PhD Program in Plant Sciences. All necessary documents (incl. an overview of all necessary processes) can be downloaded on our webpage:

<http://www.plantsciences.uzh.ch/teaching/procedures.html>

For registration to the program fill the form provided on our webpage **within 3 months after the start of your PhD**. Later registration is possible upon request. We will then send you a welcome package with all necessary documents. Within the first year of your PhD students enrolled at ETHZ or UZH could also change to other PhD programs of LSZGS. Please contact us to guide you through the process.

Registered doctoral students are requested to use centralizes student data management systems (see below). In these databases, you will upload documents certifying the progress of your studies (for example thesis committee meeting protocols, certificates of courses, etc.).

ETHZ

→ **Dissertation Go (DissGo)** is a student platform for documentation of course work carried out in the program. You will receive your login after sending the registration form for the PhD Program to the coordinators. DissGo link: <https://www.dissgo.uzh.ch/login>

→ **ETHZ MyStudies** is a platform where students can manage their academic activities, including course registration, examination scheduling, and accessing learning materials.

Link for MyStudies: <https://myStudies.ethz.ch>

UZH MNF

→ **StudentAdmin** is the online system of the Faculty of Science, UZH to manage processes for PhD students., You will receive your login after successful matriculation at the UZH. Link for StudentAdmin is: <https://studentadmin.mnf.uzh.ch/>

UNIBAS

→ **Dissertation Go (DissGo)** is a student platform for documentation of course work carried out in the program. You will receive your login after having sent the registration form for the PhD Program. DissGo link: <https://www.dissgo.uzh.ch/login>

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

All doctoral students must register for a structured PhD Program with the signed registration form and the signed protocol from the admission interviews. Templates for both documents are available here:

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

Furthermore, doctoral 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 be enrolled at ETHZ via the ETHZ Admission for Doctorate first (<https://www.ethz.ch/en/doctorate/registration-admission.html>). The PhD Program in Plant Sciences has been accepted as a structured program at the D-USYS and D-BIOL. As such it supports doctoral students to acquire the 12 ECTS within their regular doctoral studies (mandatory for all doctoral students).

All doctoral students must register for the PhD Program with the signed registration form and the signed protocol from the admission interviews. Templates for both documents are available here:

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

University of Basel (UNIBAS)

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

<https://www.unibas.ch/en/Studies/Application-Admission/Application/Doctoral-Studies.html>

All doctoral students must register for the PhD Program with the signed registration form. The template for the registration form is available here:

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

2.3 Institution-specific regulations during your PhD study

You need to carry out your doctoral studies in accordance with the regulations of your home institution (ETHZ, UZH or UNIBAS), where the host laboratory is academically affiliated and the research work is carried out. **Please refer to the regulations for doctoral students of ETHZ, UZH or UNIBAS in the first and of your home department/faculty in the second level.** Regulations of the PhD Program in Plant Sciences are mostly aligned with the regulations of your host institutions. On our website you can find an overview table as a checklist of documents to be submitted during your doctoral studies: <https://www.plantsciences.uzh.ch/en/teaching/procedures.html>.

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

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>.

Teaching requirements: The doctoral student must complete the “Planning teaching hours” form from the Department (Fachbereich) of Biology for the fulfilment of a **minimum of 150 teaching hours and maximum of 420 hours**, considering additional Department-

dependent regulations. Planned teaching activities need to be submitted to UZH MNF platform StudentAdmin. Please consult the following website for details of the teaching requirements: <https://www.biologie.uzh.ch/de/Studium/Doktorat.html>.

Thesis Committee: The doctoral student and the supervisor select the thesis committee **six months after the beginning of the PhD project**. The composition of the committee has to be as follows: 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). The thesis committee composition **must be communicated to the program office** and the UZH MNF via StudentAdmin. Members with “Promotionsrecht” can be consulted on the following website: <https://www.mnf.uzh.ch/en/forschung/fakult%C3%A4tsmitglieder/professor-innen.html> .

The first Thesis Committee meeting should be held **6 – 12 months after the beginning of the doctorate**. Subsequent meetings are held at least every 12 months. 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 video conference systems. It is the responsibility of the doctoral student to set up the composition of the thesis committee, arrange the yearly thesis committee meetings, and document the activities. The thesis committee meeting protocol, signed by all participants, is to be submitted to UZH MNF StudentAdmin **within eight weeks after the meeting** took place.

The doctoral candidate can be disqualified by the Dean of Studies, if the thesis committee finds at the yearly meeting that the progress of the PhD candidate is not sufficient.

All templates are available at:

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

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

Exam Registration and Doctoral Examination: The final degree is conferred by your home institution. For your registration to the examination, have a look at: (<https://www.mnf.uzh.ch/en/studium/phd/checkliste-fuer-doktorierende.html>)

ETH Zurich

Supervision: All doctoral students who have started their doctorate after 01.01.2022 have to follow the new regulations of ETH Zurich.

Doctoral students at ETHZ are supervised by at least two people. The (1) official supervisor of the doctoral thesis (professor at the Department) and (2) the second advisor (an adjunct professor or Privatdozent/in, provided that (a) she or he works full-time at the ETHZ, and (b) both institutes have agreed). The second supervisor must be defined latest till submission of the doctoral plan. The doctoral administration (doktorat@ethz.ch) must be

notified of the second advisor before the aptitude colloquium. Doctoral students have the right throughout the doctoral study to request another person to be available for additional professional or nonprofessional advice and support as needed.

Information about your doctoral studies at ETHZ and requirements of different ETHZ departments are available here: <https://ethz.ch/students/en/doctorate.html>;
<https://ethz.ch/en/doctorate/legal-basis.html>.

Template for registration of second supervisor is available here:
<https://ethz.ch/students/en/doctorate/second-advisor.html>

Departments D-USYS and D-BIOL

Doctoral Plan (replaces Research Plan):

A written research proposal, including the research plan and teaching requirements, is to be defined minimum 15 working days before the Aptitude Colloquium (D-USYS) and latest 10 months (D-BIOL) after registration. Should a thesis be carried out outside the ETHZ domain, it should be specified in the doctoral plan. The doctoral plan needs to be submitted to the aptitude committee and the doctoral studies panel (see deadlines in MyStudies).

Aptitude Colloquium: The aptitude colloquium is an oral defense of the research plan to be held latest 12 months after registration at ETHZ (see MyStudies). The defense lasts around 60 minutes including a presentation by the doctoral student (max 30 minutes) and a discussion between the doctoral student and the aptitude committee about the doctoral plan. The aptitude committee is composed of the chairperson and the Thesis Committee. The chairperson must be (a) a member of the doctoral studies panel (Doktoratsausschuss) or (b) a person appointed by the doctoral studies panel who must be a full or associate professor at ETHZ department. The PhD-Student is responsible for organizing the aptitude colloquium, which can be conducted with partial or full physical presence of the aptitude committee and the doctoral student or entirely by video conference.

Information on the Doctoral Plan and Aptitude Colloquium:

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

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

Information for submission of the Doctoral Plan:

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

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

Progress report (replaces Thesis Committee Meeting Protocol): All doctoral students must complete progress reports. This is due after the appointment of a second supervisor. The PSC recommends involving external partners or supervisors. The progress report must be

completed annually. The progress report forms the basis for the annual status conversation. The document must be kept for the entire duration of the doctorate. The duty of safekeeping is incumbent on the persons involved (doctoral students, dissertation supervisors, second advisors)!

Annual status conversation: All doctoral students must have an annual status conversation with the supervisor of their doctoral thesis. This is due after the appointment of the second supervisor. The supervisor of the doctoral thesis will determine the date. It consists of 2 parts and covers the following topics: Part 1 (Scientific Progress) and Part 2 (performance assessment, career and personal development).

The minutes of the status conversation must be kept for the entire duration of the doctorate. The duty to keep the minutes is incumbent on the persons involved (doctoral students, dissertation supervisors, second advisors)!

Exam Registration and Doctoral Examination: The final degree is conferred by your home institution. For your registration at the doctoral administration, have a look at: <https://ethz.ch/students/en/doctorate/doktorpruefung.html>

UNIBAS, Philosophisch-Naturwissenschaftliche Fakultät

Thesis Committee: The doctoral committee consists of a First Supervisor, a 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 by submitting the Doctoral Agreement (i.e., UNIBAS Doktoratsvereinbarung) to DissGo.

The first **Thesis Committee Meeting** should be held 6 – 12 months after the beginning of doctoral studies. Subsequent meetings take place at least once a year. The signed thesis committee meeting protocol (i.e., UNIBAS Doktoratsvereinbarung) must be submitted to DissGo **within eight weeks after the meeting took place**. You can find the templates for the protocol on the following webpage of the PSC:

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

For further description, please refer to:

https://philnat.unibas.ch/fileadmin/user_upload/philnat/3_Forschung/Doctoral_studies_-_Guidelines_Version_06.2023_english_update.pdf

Exam Registration and Doctoral Examination: The final degree is conferred by your home institution. Please study the Documents for Doctoral Degree Procedure 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 or postdocs into our courses, provided that places are available. PSC students registered in the PSC PhD Programs (i.e. Plant Sciences or Science & Policy) 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 Inter-university course attendance and ECTS Transfer

To ensure that every doctoral student in the PhD program has access to all courses and course registrations at all three universities, we strongly recommend that the doctoral student registers as a guest student at the other universities as early as possible, taking into account the registration windows. This also enables the automatic transfer of ECTS, which makes it easier to compile the coursework for registration for your thesis defense.

Course offer at UZH

Doctoral students at UNIBAS have to register first at UZH for Module Mobility: <https://www.uzh.ch/cmssl/en/studies/application/chmobilityin.html>

Doctoral students at ETHZ have to register first at UZH as: Special student "University of Zurich (UZH)", <https://ethz.ch/en/studies/non-degree-courses/special-students/special-students-university-of-zurich.html> Graduate Campus (GRC, UZH): <https://www.grc.uzh.ch/en/skills.html>, register for Module Mobility first!

Course offer at ETHZ

Doctoral students at Uni Basel have to register first at ETHZ as: Special student "University of Basel (UBa)", <https://ethz.ch/en/studies/non-degree-courses/special-students/special-students-university-of-basel.html>

Doctoral students at UZH have to register first at ETHZ as: Special student "University of Zurich (UZH)", <https://ethz.ch/en/studies/non-degree-courses/special-students/special-students-university-of-zurich.html>

Course offer at UNIBAS

GRACE: <https://www.unibas.ch/en/University/Administration-Services/Vice-Presidents-Office-for-Education/Academic-Programs/Graduate-Center/Transferable-Skills.html>

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 if 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. 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, Certification, Course Catalogue

3.1 Curriculum of the PhD Program in Plant Sciences

The PSC PhD Program in Plant Sciences requires that students acquire 12 ECTS (students enrolled at ETHZ and UZH) or 18 ECTS (students enrolled at UNIBAS) to complete their regular doctoral studies.

Credits (ECTS) can be acquired from lectures, courses, workshops or summer schools that are accredited in our regular curriculum. 1 ECTS is equal to 25-30 learning hours (this equals either a lecture of 1 hour per week during one semester or a full two- to three-day workshop including homework and preparatory work).

3.1.1 Compulsory Activities

Mandatory courses include participation in the **PSC colloquium on "Challenges in Plant Sciences"** (2 ECTS) and the course on Research Integrity.

If you have already participated in the colloquium during your Master's studies you can choose your 12 ECTS freely from other courses organized or accredited by the PSC.

Course on Research Integrity must be attended by all students of ETHZ, UZH and UNIBAS. Students from **UZH and UNIBAS** must attend the LSZGS introduction event "Introductory Lecture to Good Scientific Practice and Scientific Integrity" (2 hours, no ECTS). Within the event students will sign the declaration of "Good scientific practice" that will become a part of your DissGo (UNIBAS) or MNF StudentAdmin (UZH) documents. Please, register via the LSZGS website using the link : <https://www.lifescience-graduateschool.uzh.ch/en/courses.html>. NEW! Please generate a login (register) on the Participant Homepage (see previous link) first!

All doctoral students of **ETHZ** must visit a course on "Research Integrity" at ETHZ (1 ECTS) offered every term in your department. The PSC offer is linked to "Ethics and Scientific Integrity for Doctoral Students (D-USYS, 701-5001-00L)". Please register via MyStudies.

As special students (see 2.5), doctoral students from UZH or UNIBAS can register for this course via MyStudies too.

3.1.2 Core Elective Activities

PSC course catalogue offers a variety of Core Elective Activities, from which a minimum of 4 ECTS should be gathered. Please note that for obtaining a PhD degree from your home institution a special requirements may be imposed. Selection of courses and other elective activities should be previously agreed with the thesis supervisor. For more details regarding the courses, please see the section 3.2.

3.1.3 Other Elective Activities

Beside courses, PSC recognises and offeres activites that promote students integration into the scientific community, that can count towards the total of ECTS needed for program completion. For example, a 1 ECTS can be earned for active participation (poster presentation or a talk) at **international conferences**, but needs a confirmed accreditation through the PSC office. For more information, please read: <https://www.plantsciences.uzh.ch/en/teaching/procedures.html>.

Up to a maximum of a 1 ECTS can be accredited for active **participation in committes at ETHZ** when serving one year. Furthermore, 2 ECTS can be earned for active participation in one of the **GreenLabs projects** at UZH, refer to the PSC website for detailed. information: <https://www.plantsciences.uzh.ch/en/teaching/coursecatalogue.html>. Finally, if you join the **committee for organizing the PSC PhD symposium** (all 2 years) you can accredit 2 ECTS.

Specila note: doctoral students of University of Basel must collect in total **18 ECTS**. Additional up to 6 ECTS could be gathered by attending seminars, colloquia and lectures at UNIBAS (Promotionsfach - Botanik). For more details, please consult the guidelines of your host institution.

PSC Summer Schools: Our summer schools allow students to engage in cutting-edge plant science topics and to meet the experts from all over the world. The summer schools address the biggest challenges currently facing science and society. Example topics from recent years are listed here and can be found under following link:

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

- 2022** PSC Summer School: Application of Machine Learning in Plant Sciences
- 2021** RESPONSE Summer School: Responsible Research, Innovation and Transformation in Food, Plant and Energy Sciences
- 2018** PSC Summer School: Responsible Research and Innovation in Plant Sciences

Note that, all ECTS acquired outside of ETHZ, UZH, UNIBAS or associated PhD Programs need a confirmed accreditation through the PSC office. Fill the form to get the accreditation of external ECTS:

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

Table 1. Curriculum.

Activities	ECTS
<p><u>Compulsory Activity:</u></p> <ul style="list-style-type: none"> • Colloquium “Challenges in Plant Sciences”: 2ECTS • Research Integrity At ETHZ: 1 ECTS through visiting a course on Research Integrity in your department. Register in MyStudies. At UZH and UNIBAS: In minimum the LSZGS “Introductory Lecture to Good Scientific Practice and Scientific Integrity” (0 ECTS) must be visited. <i>For details, see section “Course on Research Integrity”.</i> 	<p>2 (UZH & UNIBAS), 3 (ETHZ)</p>
<p><u>Core Elective Activity:</u></p> <ul style="list-style-type: none"> • Research & Technical Skill Courses in all areas of Plant Sciences: Intensive workshops on skills, methods and techniques used in plant science research. • Digital Skills & Statistics Courses • Transferable Skill Courses (Communicating and Disseminating Science / Professional Conduct in Research / Research Management / Professional and Career Development / Finance, funding and resources etc) 	<p>min. 4</p>
<p><u>Elective Activity:</u></p> <ul style="list-style-type: none"> • Participation in international scientific symposium with own scientific contribution (oral or poster presentation) (max. 1 ECTS) • Engagement in green labs (only UZH, max. 2 ECTS)** • Organization of PSC PhD Symposium (2 ECTS) 	<ul style="list-style-type: none"> • maximum 6 <u>12</u>*
<p><u>TOTAL</u></p>	<p>12 <u>18</u>*</p>

* For students enrolled at UNIBAS, as a total of 18 ECTS are requested.

** If you want to get science communication or green lab activities accredited have a look at our specialized guidelines.

3.2 Course Catalogue

All courses of the PSC have been developed to advance the acquisition of research and technical skills, digital skills and transferable skills that will serve you both in and outside of academia.

Please check the course catalogue at:

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

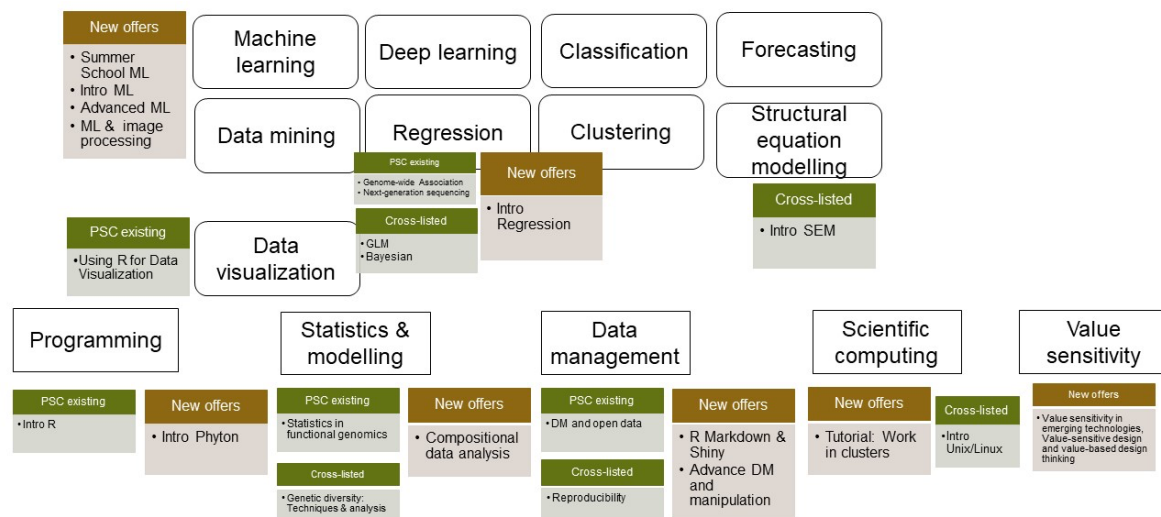
3.2.1 Technical & Research Skills

Technical and research skills of the program are developed in all areas from molecular sciences to ecology and system approaches. The courses are developed to allow an understanding and mastering of relevant research methodologies and techniques and their appropriate application including but not limited to: Light microscopy and 3D image representation, chlorophyll fluorescence, DNA sequencing, RNA biology, functional genomics, plant phenotyping, microbiomics, QTL analysis, genome-wide association studies, genetic diversity techniques and analysis, plant phylogeny, alpine ecology, introduction to transdisciplinarity and sustainability, etc.

3.2.2 Digital Skills

Currently the PhD Program is enhancing the curriculum with courses that are related to digital skills and competencies (please see the image below).

PhD education: Extended curriculum digital skills



The Digital Skill Curriculum in the PhD Program Plant Sciences

Programming

Introduction to UNIX/Linux and Bash scripting BIO609, 0 ECTS, HS
 Introduction to R, 1 ECTS, HS
 Genetic Diversity: Techniques (2 ECTS, HS) and Analysis (2 ECTS, FS)
 Crosslinked: Introduction to Phyton

Data Management

Reporting using Markdown, Quarto and, 1 ECTS, biannually in FS
 Advanced Data Management and Manipulation using R, 1 ECTS, annually in FS

Reproducibility

Crosslinked: Get R_ready: Dynamic Reporting & Reproducibility in Research
 Crosslinked: Open and Reproducible Science: Dependable Computations and Statistics

Computation

New: Tutorial on how to work with clusters; no ECTS, will start in HS23

Imaging

Advanced course on 3D plant microscopy and image processing, 1 ECTS, FS
 Machine learning and image processing in plant sciences and related disciplines, 1 ECTS, start in HS 23

Machine Learning

Introduction to machine learning methods in plant sciences (Module 1 & 2), 3 ECTS, HS
 Planned 2023: Deep learning methods in image processing, 1 ECTS, HS

Statistic, Modelling

Statistical modelling, 1 ECTS, FS
 Compositional data analysis, 1 ECTS, biannually FS
 Introduction to Genome-Wide Association Studies (GWAS), 1 ECTS, bi-annually in HS
 Next generation sequencing and its Application using Machine Learning 1, 1 ECTS, HS
 Next generation sequencing 2, 1 ECTS, FS
 General linear and linear mixed models in R, 1 ECTS, crosslinked, FS
 Introduction to structural equation modeling, 1 ECTS, crosslinked, HS
 Planned 2023: Bayesian Statistics and Application

Visualisation

Scientific visualisation using R, 1 ECTS, HS

Research Ethics:

Value-based design processes in emerging technologies; 1 ECTS

Transferable Skills

A wide range of courses concerning transferable skills for PhD students are available within the PSC PhD Program in Plant Sciences. Details and registration:

<https://ethz.ch/staffnet/en/service/courses-continuing-education.html>. Please choose the course category “Plant Sciences”.

Transferable skill courses are also offered by the **Life Science Zurich Graduate School**: <https://www.lifescience-graduateschool.uzh.ch/en/courses.html>

by the **Graduate Campus (GRC)**, UZH <https://www.grc.uzh.ch/en/skills.html> and by **GRACE**, **UNIBAS**: <https://www.unibas.ch/de/Forschung/Graduate-Center/Doktorierende/Training-Coaching-und-Beratung/Transferable-Skills.html>

(NOTE for GRC courses: ETHZ and UNIBAS students: Contact the PSC PhD Program Coordination Office (psc_phdprogram@ethz.ch) if you want to register for these courses. We have to confirm your PhD program registration.)

The PhD Program in Plant Sciences is currently offering training in a wide range of transferable skills, for example:

Communicating and Disseminating Science

- Scientific Writing 1 & 2
- Managing your Publication Workflow and Open Data
- Scientific Presentation Practice
- Scientific Communication Practice
- Professional Conduct in Research
- Ethics and Scientific Integrity for Doctoral Students
- Writing a Post-doctoral Grant
- Filmmaking for Scientists
- Teaching Science at University
- Creative Science Communication
- Wissenschaftskommunikation und Exkursionsleitung im Botanischen Garten der Universität Basel (in German)

Research Management

- Project Management in Research

All our classes also include training on the most forefront technologies for example the sustainable and responsible use of generative AI in the working processes of publishing and data analysis.

Funding and Resources

- Project Management in Research

3.3 PSC PhD in Plant Sciences Certification

The PSC issues a PhD Program certification (diploma supplement including a transcript of all records) after all requirements have been fulfilled and the Doctoral Degree Certificate of your home university has been awarded. Successful completion is based on fulfilling the curriculum (see also point 3. Curriculum):

To receive the PSC PhD Program certificate, please upload all certificates (pdfs) of training activities to DissGo (ETHZ, UNIBAS) or UZH MNF StudentAdmin (UZH) and send a copy of your Doctoral Degree Certificate to the PhD Program coordinator via e-mail (pdf).

4 Reimbursement of Travel Expenses

Doctoral students from UNIBAS enrolled in our PSC programs can ask for reimbursement of their travel expenses (bus or train ticket, 2nd class) to PSC training events. Contact the UNIBAS PSC Coordinator and present your 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 21st November 2021 (Version: 01. Jan 2022) (<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 (as of 01 Januar 2022).
- D-BIOL: Department Biology (D-BIOL) Detailed Regulations for Individual Doctoral Studies D-BIOL (as of 27 Januar 2022).
- 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).