



Styre: Fakultetsstyret ved Det humanistiske fakultet

Referatsak: 31/20

Møtedato: 08.12.2020

Dato: 23.11.2020

Arkivsaknr: 2020/13190-RAL

Orientering om masterprogram i bærekraft

Dokumenter i saken

- [UU-sak 46/20: Studieportefølje 2021](#)
- [Universitetsstyresak 131/20: Studieportefølje 2021](#)
- [Universitetsstyresak 132/20: Opptakssrammer 2021](#)

Bakgrunn

Utdanningsutvalget vedtok i i UU-sak 34/19 at det skulle nedsettes en arbeidsgruppe for utarbeidelse av et masterprogram i bærekraft.

Arbeidsgruppens søknad om oppretting av masterprogrammet ble oversendt direkte til Studiekvalitet-komiteen ved UiB og er et samarbeid med emner fra SV, MN og HF. Det var på søknadstidspunktet ikke avklart hvilket av samarbeidsfakultetene som skulle ha faglig og administrativt ansvar for programmet. I universitetsstyresak 131/20 forutsettes det at dersom programmet godkjennes, skal den administrative koordineringen av programmet legges til HF, Senter for Vitenskapsteori.

Studieplasser og finansiering

Programmet søkes etablert med 20 studieplasser. HF bidrar selv med ressurser tilsvarende 5 studieplasser, mens samlet opptaksramme ved HF økes med 15 studieplasser (toårig master). SV og MN forplikter seg til et undervisningsbidrag inn i programmet tilsvarende 10 studieplasser ved MN og 5 studieplasser ved SV. HF tilføres ikke basisfinansiering i form av 60 % andel av studieplassfinansiering for de til sammen 15 studieplassene som tilføres opptaksrammen ved HF, da basisfinansieringen for studieplassene ved MN og SV blir liggende ved hhv. MN og SV. HF har derfor søkt om tilførsel av 1,5 millioner for å finansiere faglig og administrativ drift av programmet. Dette skal dekke én faglig stilling og 0,5 administrativ stilling.

Programmets struktur og organisering

Programmet består av tre emner i første semester, opprettet spesielt for master i bærekraft, mens de øvrige emnene er eksisterende emner ved hhv. SV, MN og JUS. Det psykologiske fakultet bidrar med noe undervisning på enkeltemner.

Dekanens kommentarer

Opprettelsen av en tverrfakultær master i bærekraft er positiv for UiB og HF, men forutsetter videre arbeid både med faglig innhold. Organisering og økonomi. Saken i Utdanningsutvalget legger også til grunn videre arbeid med studieplan, organisatoriske og ressursmessige spørsmål før oppretting av programmet.

Dekanen ser også behov for at det arbeides med en tydeligere avklaring av emnekombinasjonene i programmet, for eksempel er mange av de valgfrie emnene høstemner, mens det er i andre semester vår at det er rom for valgfrie emner i studieprogrammet.

Studieplan og emnebeskrivelsen for SDG350/masteroppgaveemnet må beskrive organiseringen rundt tildeling av veileder for masteroppgaven og fordelingen mellom HF, SV og MN når det gjelder masterveiledning må avklares.

Det må utarbeides en emneplan med arbeidskrav og vurderingsform for tildeling av studiepoeng for internship slik at studentene kan oppnå 30 studiepoeng også for internship-semesteret.

Universitetsdirektøren skriver i universitetsstyresak 132/20 at «Vi vil også avklare de samlede kostnadene knyttet til faglig og administrativ koordinering av master i bærekraft». HF forutsetter at dette innebærer et tilskudd til fakultetet ettersom man ikke får tilført studieplasser. Alternativ finansiering ligger ikke i fakultetets budsjett. Det må også utarbeides samarbeidsavtaler mellom fakultetene om forpliktelser og fordeling av resultatmidler i programmet.

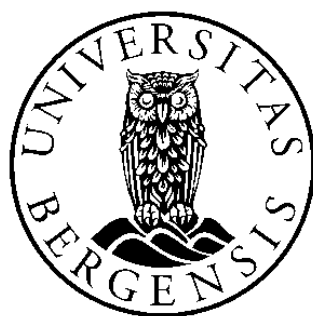
Alle avklaringer i studieplan og samarbeidsforhold må være avklart i god tid før utlysning av programmet.

Forslag til vedtak:

Fakultetsstyret tar saken til etterretning.

Jørgen Magnus Sejersted
dekan

Kim Ove Hommen
fakultetsdirektør



Oppretting av studier ved UiB

Søknadsskjema

September 2020

Søknad om oppretting av

Masters in Sustainability

September 2020

1. Generelt om studiet

Contemporary societies face great challenges in safeguarding the long-term sustainability of ecosystems and institutions on which they rely. The 21st century will see greater urgencies and emergencies relating to issues such as climate change and biodiversity loss, coupled with questions about development, equality, and democratic participation. Whereas initial warnings about deteriorating ecosystems have in great parts originated in academic and university settings, work on the implications, scales and complexities of the challenges have taken longer to develop in our universities. Concerns are that existing divisions of labour in the academe are not up to the task of addressing the challenges of sustainability. New fields such as sustainability science, climate science, and broad concepts such as Anthropocene and OneHealth, are examples of systemic approaches to sustainability problems, seeing these as interconnected and cutting across societal sectors and existing disciplinary academic fields.

This situation has been recognized at the University of Bergen, in the report *Utdanning 2030*, which was mandated by Utdanningsutvalget in 2018. The report is an outcome of several years of strategic efforts at the University of Bergen, and relates to the positioning of the University as academic hub for Sustainable Development Goals (SDGs). As stated in *Utdanning 2030* there is a need to develop reflexive and critical perspectives and capacities, suitable to a broadly oriented university (Breddeuniversitet), such as the UiB, and inclusive in terms of academic fields and approaches. The report argues for more cross-faculty and interdisciplinary perspectives and collaborations to be developed.

The present proposal is a main outcome of the suggestions made in *Utdanning 2030*. The idea is for this program to contribute to long-term strategic goals of the UiB (climate, marine and global development), in collaboration with related initiatives such as SDG Bergen, Bærekraftskollegiet, and sustainability-related fields of investigation and teaching. Such collaborations will have to work across faculties and departments at the UiB, aiming to open the path for other, related initiatives elsewhere, and to stimulate further collaborative efforts.

The proposed master's program introduces a set of knowledges, skills and competencies from systems thinking and modelling, and uses these to teach more interdisciplinary methods towards complex systems and societal institutions. This includes interactions with legal and governance structures, and novel forms of societal partnerships and collaborations. Special emphasis will be placed on knowledge for sustainability efforts, interdisciplinary relations between relevant academic traditions involved in sustainability research, and different knowledge cultures.

The purpose of the program is to develop students' analytical, critical and practical skills, in performing interdisciplinary work towards sustainability goals. The program will accept highly motivated students from a diversity of backgrounds, such as natural and social sciences, engineering, humanities and law. Teaching will be problem-based, centered around concrete

sustainability problems. It will include students as co-creators of their own learning, and as contributors in on-going assessments and adaptations of the program.

This proposal is the outcome of an intensive (online, due to C-19) work in a dedicated working group, nominated by the rectorate. It has consisted of members from several faculties at UiB, from academic communities with expertise and experience in sustainability, interdisciplinarity, student-centered and problem-oriented teaching methods. The group started its work in April 2020, with an explicit mandate from the UiB rectorate that the first courses should begin, if possible, in the autumn of 2021. This means that the work to develop this proposal has taken place under somewhat uncommon circumstances and great time pressure. There are issues still in need of resolution, and in this document we aim to be clear about unresolved challenges rather than ignoring them. Here, we mention the following:

- The group has not been able to include a student representative, but the program will be exposed to student evaluation ahead of the final deadline (in *Utdanningsutvalget*) of October 22. Once implemented, the program will include student evaluations and suggestions in its ongoing monitoring, self-assessment and quality assurance activities.
- We have not been able to include international collaboration agreements, again due to time constraints. In Annex 4 we list a number of existing collaborations between partners in this proposal and institutions world-wide. The problem is not to have collaborations; there is a need to sort out the exact kinds of collaborations suitable to this particular program, and include them in due time before program upstart.
- In the final moment of completing this text, the working group was released of the responsibility to provide letters of intent from the variously implied faculties and institutes. This was done so that allocations of funding and study places shall be dealt with by the central administration and *Utdanningsutvalget*.
- The application text is written in English, since several of the members of the working group do not have Norwegian as their mother tongue. We shall be happy to translate it into Norwegian (Nynorsk) ahead of the next deadline (*october 22.*). The mandate of the working group states that the program should be in Norwegian. Whereas we think this is a good principle, we recommend English for this kind of program: most of the course literature, including already existing courses, is in English, and the task of translation would be immense. During consultations with Bærekraftskollegiet, it became clear that '75 % of those likely to teach in the program will not be native Norwegian speakers.

We think the present proposal represents a complete and original starting point, and incorporates the relevant mechanisms for gradual adaptations and alignments of goals, methods and means, as the program hopefully gets implemented in practice.

Kryss av for type studium. Hver boks kan ha flere kryss

Typer laveregradsstudium (kryss av)	
<input type="radio"/>	Bachelorgradsstudium
<input type="radio"/>	Kortere studium på lavere grad som ikke fører til en grad (grunnutdanning), årsstudium
<input type="radio"/>	Studieretning innenfor en bachelorgrad
<input type="radio"/>	Fellesgrad
<input type="radio"/>	Videreutdanning
Type mastergradsstudium (kryss av)	
<input checked="" type="checkbox"/>	Mastergradsstudium 120 studiepoeng – § 3
<input type="radio"/>	Erfaringsbasert mastergradsstudium 90 studiepoeng – § 5
<input type="radio"/>	Erfaringsbasert mastergradsstudium 120 studiepoeng - § 5
<input type="radio"/>	Mastergradsstudium 300 studiepoeng
<input type="radio"/>	Fellesgrad
<input type="radio"/>	Videreutdanning
Hvorvidt studiet skal tilbys som (kryss av)	
<input checked="" type="checkbox"/>	Heltidsstudium
<input type="radio"/>	Deltidsstudium
<input checked="" type="checkbox"/>	Campus-/stedbasert studium
<input type="radio"/>	Samlingsbasert studium

	○ Nettstudium
	○ Nettstudium med samlinger

Oversikt som viser studiets oppbygging

Autumn	Ways of Knowing (5 ECTS)	Introductory course 15 ECTS
Semester 1	Systems Thinking and Modeling for Sustainability (10 ECTS)	
Spring Semester 2	Methods specialisation (10 ECTS)	Electives (20ECTS)
Autumn Semester 3	Master's thesis (30 ECTS)	
Spring Semester 4	Master's thesis (30 ECTS)	

Course code and title:

SDG310 Introduction

SDG311 Ways of Knowing

SDG 312 Systems Thinking and Modeling for Sustainability

SDG 350 Master's thesis

ESTIMATED OVERALL WORKLOAD: 1600 hours.

2. Krav til studietilbudet

The learning outcomes for the program are specified in the course descriptions and study plan, and are specifically designed to: 1) convey key knowledges, skills and competencies related to sustainability in interdisciplinary and societal contexts, and 2) to place students' active participation and learning center stage. As described in the study plan, students shall gain **knowledge** of central concepts in sustainability science and governance, systems thinking, and related regulatory and legal issues. They shall be given a thorough understanding of the background and complexities relating to sustainability in three main areas: climate and energy transitions, marine research, and global challenges. They shall develop the **skills** of critically identifying and applying knowledge from different sources using systems thinking and modelling, weighing knowledge and evidence from different sources and involved in competing sustainability goals, applying these to interdisciplinary teams. They shall be given **competencies** to engage with, discuss and communicate societal and environmental problems, putting their knowledge and skills to work in concrete real-life situations.

The master's program is designed with these outcomes in view, **integrating problem-based, student-led learning with lectures into a coherent whole**, focused on specific sustainability problems and cases. As an example of such a problem, we may choose the task to work out a comprehensive plan for how to clean up the lake Store Lungegårdsvann close to Bergen city center. Solutions would have to take into account both environmental and marine aspects, legal-regulatory ones, and the needs and interests of local communities. The cases should touch upon aspects from all three thematic areas, and include the active use of competencies and skills as taught in the three mandatory course courses (Introduction, Systems thinking and modeling, Ways of knowing). These three course courses are designed in an interactive and integrated way aimed at iterative cycles of learning and with considerable overlaps between the courses: The Introduction provides basic concepts and understanding of sustainability issues and concepts, Systems thinking and modeling provides methods and tools for engaging with them, and the Ways of Knowing provides reflection and awareness of the role of (different kinds of) knowledge in complex and protracted problem situations. The PBL and case-based approach implies reiterative cycles, sometimes returning to previous lessons learned but seeing them in new ways, and also as it plays out across the various courses (especially the mandatory ones). This implies some extent of overlap between learning goals, and also of methods and assessment forms, to lesser extents found in more disciplinary-oriented programs. The study plan and course descriptions reflect this reiterative nature of interdisciplinary learning (and research).

For the above reasons, the success of the program hinges on availability of good cases and well-considered problems, since these will function across the three mandatory course courses, and across specializations (climate, marine, global). Successful implementation will crucially depend on active integration of problems and cases throughout all courses by the teaching staff. The program, therefore, requires dedicated resources – teaching and administrative staff – to maintain and integrate problem-based learning and cases across specializations, to provide proper

supervision across mandatory and elective (specialization) courses, and for implementing the long-term goal to more firmly embed sustainability issues in the university organization.

As can be seen in the above table, the second semester is dedicated to electives (specialization), which will initially be carried out within existing courses at the UiB, broadly falling within one of the three areas climate and energy transitions, marine research and global development, or a combination of the three. We envisage that in a long-term perspective the master's will also generate specifically dedicated courses in the specialization domains. Specializations will include a dedicated methods part, and feed into the students' work on the master's thesis. Under scaffolded supervision, the student will design her own research project, incorporating both mandatory and eligible courses (i.e. constructive alignment). In order not to lose sight of the cross-cutting learning outcomes, but rather integrate these into the specialization, a seminar series (bi-weekly) is included in the master's thesis, dedicated to reiterations of main themes from the mandatory courses during work on the master's thesis.

In this way, the problem-based approach can be used to trace the students learning across the various courses and along their progressive work on specific problems (that cut across courses). The main **forms of assessments**, apart from the regular grading of the thesis, are portfolio-based and inserted at crucial stages of the students' learning trajectory, seen as engagements with problems and (course-specific) topics. Such engagements are both practical (team-working capacities), and theoretical (accounting for main concepts), and the forms of assessments must be sensitive towards this. They thus comprise both oral presentations, group-work and individual work, student peer review, and written assignments.

All activities will be taught and supervised by teachers with recognized research competence in the relevant fields. Problem-based learning will, to the greatest possible extent, be tied to inter-faculty learning and discussion arenas, especially Bærekraftskollegiet, but also other relevant for institutions such as Forum for Science and Democracy, and Bergen Innovation Hub. In addition to research-based lectures and supervision, therefore, the aim is to establish collective arenas for discussion and learning, for instance invited lectures by scholars, practitioners, activists, entrepreneurs or policy makers. It is vital to put students into contact with real-life and professional experiences and developments, to sensitize them to sustainability problems, and to teach how to organize, and participate in, public discussions and collective problem-solving. Also included here will be digital teaching formats such as video-transmitted lectures from actors involved in sustainability issues from across the world, and acting in both local and international levels. The program will draw upon its members' extensive international and national connections to put in place appropriate student exchange and internationalization arrangements¹.

¹ As stated: Such agreements are not yet in place due to the tight time constraints under which this application was developed.

The master's thesis shall be the outcome of a student led, and supervised ('scaffolded') process. The student will create a research design, starting in the second semester (elective courses / specialization), and terminating in the thesis work. In order to ensure continuity and overall coherence and communication between student specializations, we have included a seminar series to align the thesis work with general course topics (i.e. from the 1st semester). This course will take the shape of group supervised and student-led discussions into main themes, and their adaptations to each thesis topic. Courses will take place at three stages: before, during and after field-work (or practice).

Each student will receive supervision from more than one supervisor, reflecting the distribution between mandatory and eligible courses, and the need to cover all aspects of the students learning trajectory. A contract shall regulate the working relations and responsibilities between the student and supervisors. For students wishing to do a practice-oriented master's thesis, internship contracts shall be developed.

Because of the novelty of the program, but also because of the problem-based and student centered approach to learning, the courses and the overall program shall be monitored and regularly assessed. This will include students' assessments, experiences and proposals for how to improve the program.

The running of the program and its monitoring shall be overseen by the program board, consisting of representatives from all involved teaching environments, including pedagogical expertise. The problem- and case-based teaching structure requires continuous evaluation and discussion of the kinds of cases and problems used, and how they work to integrate different courses.

Teaching goals	Teaching methods	Means of evaluation
<p>Knowledge: of main sustainability concepts, methods and areas of application</p> <p>Skills: using systems thinking and modelling, applying knowledge from different sources in interdisciplinary teams</p> <p>Competencies: putting knowledge and skills to work in interdisciplinary teams and in relation to concrete real-life sustainability problems</p>	<p>Lectures (physical and digital; teacher-led and student-led), workshops, seminars</p> <p>Collective learning arenas: meeting sustainability practitioners</p> <p>Problem-Based, Student-active learning</p>	<p>Portfolio (individual) and group:</p> <ul style="list-style-type: none"> - Written assignments - Oral presentations - Project work - Master's thesis - Student peer review

Teaching goals, methods and evaluations are aligned: 'to provide students with knowledge and competencies to analyze, understand and shape solutions to wicked problems in ways deemed to be societally, ecologically and economically sustainable'. Emphasis is placed on developing students' ability to read critically their own and others'

work, on developing their academic writing and presentation skills, and on solving real-life problems in interdisciplinary teams.

Examples of potential master's thesis topics by specialization:

Climate and energy	Marine	Global societal challenges
Gaia versus Government: Sustainability and scientific uncertainty in the Norwegian climate lawsuit (Klimasøksmålet)	Involvement of local communities in Northern Hordaland in transitions towards sustainable fisheries	Covid-19 vaccine trials in Sub-Saharan Africa: who takes the risks, and who benefits?
Energy transitions and land use: should we protect local biotopes and recreation areas or global climate?	Cleaning up Store Lungegårds-vann: planning, sustainability science and citizen involvement	Waiting for 'Europe' to act: the mental health of refugees in Lesbos, Greece
Landscapes, wildlife and people: how to prevent that there are losers?	Sustainable labelling? Shrimp farming in Vietnam meets the GlobalGAP certification scheme	Localizing SDG interactions: pathways between poverty and food security

Vedleggsliste

Vedlegg til krav til studietilbudet: <small>Marker med «Ikke relevant» dersom et vedlegg ikke er aktuelt for studiet</small>	Vedlegg nr.
Studieplan	1
Tabell med oversikt over studiets oppbygning og innhold	2
Emnebeskrivelser	3
Avtaler om internasjonalisering	4 ²
Avtaler om studentutveksling (juridisk bindende)	4 ¹
Signert(e) praksisavtale(r)	4 ¹
<i>For nettstudier (kun nettstudium eller i kombinasjon med stedbasert studium) kommer i tillegg:</i>	
Studieplan for nettstudiet (hvis relevant)	Ikke relevant
Prosedyre for opplæring i nettstudier for studenter og lærere	Ikke relevant
Dokumentasjon av læringsplattform for nettstudentene	Ikke relevant
Dokumentasjon av nett-/faglærernes rutiner for oppfølging av nettstudenter (som responstid osv.)	Ikke relevant

² Due to time constraints these agreements have not been sufficiently developed. In Appendix 4 we provide examples of existing and relevant contacts. Yet, these should not be too numerous, and quality of collaboration should be prioritized over quantity. They are, therefore, starting points for elaboration of agreements, to be developed in the next of developing this program.

3. Krav til fagmiljø

Administratively and academically, the program will be located at the **Centre for the study of the sciences and humanities (SVT)**. There are several reasons for this choice: the SVT is a cross-faculty unit, serving all parts of the University of Bergen. It has been involved in efforts towards similar interdisciplinary programs in the past, and so has a profound knowledge of, and experience with, the challenges facing cross-faculty and interdisciplinary collaborations. This experience will be actively used to promote and run the master's program. Academically, the SVT has a broad and internationally recognized research and teaching portfolio into areas of sustainability, complexity science, governance and interdisciplinarity. The Centre is already involved in key SDG activities such as Bærekraftskollegiet, and presently hosts the secretariat of the UNESCO Global Independent Expert Group on the Universities and the 2030 Agenda (EGU2030). For 10 years SVT has been running the cross-faculty program Dannelsesemner (bachelor level), which can be used as inspiration, for synergies across bachelor – master's and PhD levels, and for student recruitment. It has a professional and well-functioning administration, which will make sure that the program runs smoothly. A main challenge for academic leadership will be to provide efficient and well-balanced supervision to students having to select courses and topics from different academic environments, and to provide consistent assessments across the various specializations. This requires positions specifically dedicated to the master's program, together with sufficient allocation of administrative resources. Supervision will be carried out jointly in collaboration with teachers in specialization courses. In addition, the SVT will be responsible for the Introductory and Ways of Knowing courses.

The program will join together academic environments from across the University of Bergen, and teaching and program board activities will be contributed by the following environments:

The **Department of Geography** will be main responsible for teaching the systems thinking and modeling course. The System Dynamics Group holds the expertise and experience necessary for providing students with enhanced decision-making tools, stakeholder involvement and interdisciplinary procedures for making sense of complex problems.

The **Faculty of Law** and the **Centre for Law and Social Transformation** will contribute teaching on the role on international law, and how sustainability issues are anchored and dynamically play out at different legal-regulatory levels (global, regional, national, local).

The **HEMIL Centre** (Faculty of Psychology) has a track record of successful interdisciplinary and trans-faculty teaching at the UiB. It will contribute to the Introductory course and will be responsible for the Global Development specialization.

The **Geophysical Institute**, a main contributor to the Bjerknes Centre for Climate Research and hosting the Bergen Offshore Wind Center, will be responsible for the specialization in climate change and energy, and also contribute expertise on multi-criteria analysis and integrated assessment modelling.

The **Department of Biological Sciences** has indicated that they may take the lead on the Marine research specialization³.

All of these environments possess the necessary pedagogical (including digital) competencies and carry out research activities that can support and feed into the courses. They enjoy a broad range of international networks and collaborations, locally and internationally, that will be used for supporting teaching activities. This includes international exchange, but also extends to access for students to practitioners and sites for carrying out work on the master's thesis. In all of the three areas of specialization, international lecturers will be brought in, virtually and physically, to provide students with global, local and regional cases and perspectives from 'elsewhere in the world'. Whereas this dimension is not fully elaborated in the present application, in Appendix 4 we provide a list of potential partners, based in existing collaborations.

In a next stage of preparations, a program board will be named, consisting of representatives of the above academic environments. The program board shall be led by the program coordinator, the SVT. The board shall carry out the tasks listed in the Guidelines for Cross-Faculty study programs⁴, and in addition consider and evaluate the overall task and performance of the program.

At present that program has guarantees of 20 study places, of which 10 are newly allocated places from the Ministry of Education, and 10 will be assembled from across faculties. In principle, this translates into 4 positions, to be allocated between the above partners according to work-load and level of overall responsibility. An agreement shall be signed amongst all participating partners, for allocation and distribution of credits. Budgeting responsibility resides with the faculty responsible for a given course, and the faculty is to be credited with the production of ECTS. Where more partners from separate faculties contribute, the agreement shall specify the allocation of credits based on work-load (administrative and academic).

³ This commitment is based in a generally positive attitude towards the program, but subject to funding commitments from the Central administration. This type of decision has been lifted from the present application, and shall be discussed separately in *Utdanningsutvalget*, October 22.

⁴ Universitetet i Bergen: Retningslinjer for utarbeiding og drift av tverrfakultære program. Vedtekte av utdanningsutvalet 9.5.2012. Lagt fram i universitetsstyret 27.9.2012

Appendix

Tabell 1: Studenter og ansatte

Tabellen skal gi informasjon om studiets størrelse i forhold til fakultetets øvrige studietilbud. Oppgi tall fra siste mulige tellingstidspunkt ("X") og sett dette inn i tabelloverskriftsraden (dvs. erstatt X'ene med årstall).

Enheter og program	Registrerte studenter 2020	Opptatte studenter i 2020	Kandidater i 2019	Vitenenskapelige årsverk 2020
Ved fakultetet totalt	18500 / 3500	2140 / 660	3225 / 410	4500 / 450
Ved instituttet for det omsøkte studiet				
Ved det omsøkte studiet				

Kommentar: Since this is an interfaculty program administratively located at the Faculty of Humanities, we provide number *s* for both the University of Bergen overall, and for the Faculty of Humanities. We have not included the total number of students amongst the participating partners.

Numbers are according to:

Samordna Opptak: <https://www.samordnaopptak.no/info/>

Humanistisk Fakultet: <https://www.uib.no/hf/97312/tall-og-fakta>

Norsk Samfunnsvitenskapelige Datatjeneste:

<https://dbh.nsd.uib.no/statistikk/rapport.action?visningId=124>

Tabell 2: Forventet antall studenter ved studiet

Tabellen skal gi informasjon om forventet studenttall og rekrutteringsgrunnlag for studiet.

Antall studenter ved det omsøkte studiet	Studenter totalt første studieår	Studenter totalt ved full drift
Antall fulltidsstudenter	20	25
Antall deltidsstudenter	0	0
Antall nettstudenter	0	0

Kommentar: The above number is based on study places granted by the University of Bergen. The program is allocated 10 study places from the Ministry of Education, and the University of Bergen will generate 10 more study places from the involved faculties. We have set the expected number of students at 20, but this is a random estimate, as the eventual size of the program is beyond the scope of this application.

Tabell 3: Oversikt over fagmiljøet

Tabellen skal gi en kvantitativ oversikt over fagmiljøet studiet er forankret i. Innsatsen til de ansatte oppgis i undervisningsprosent, ved oppstart og ved full drift.

Samlet oversikt over planlagt dimensjonering av undervisningsressurser for studieprogrammet					
1	2	3	4	5	6
Stillingskategori første studieår	Samlet antall første studieår	Samlet undervisningsprosent per stillingskategori første studieår	Stillingskategori ved full drift	Samlet antall ved full drift	Samlet undervisningsprosent per stillingskategori ved full drift
Professor	1		Professor	1-2	
Førsteamanuensis	2		Førsteamanuensis	2-3	
Post doc			Post doc	1	
Stipendiat	1		Stipendiat	1	
Universitetslektor			Universitetslektor		
..					

Instituttleder skal gi en samlet vurdering av faglig robusthet og tilgjengelige undervisningsressurser i studiet

The above is indicative. Due to the tight time pressure for completing this application, the question of resource allocation has been lifted out from this application and transferred to the University Board. This has been established by the intervention in the process by the vice Rector, Oddrun Samdal.

We propose the following articulation (in Norwegian) for an internal agreement, based on the recommendations of this application:

Vi erklærer oss villige til å utføre oppgaver som beskrevet for (Fakultet / Senter / Institutt) i Studieplanen og i søknad om opprettelse av studiet. Dette bidraget vil stå i forhold til tilgjengelige ressurser, til andre undervisningsmiljøes bidrag, og en fordeling av studiepoeng mellom de involverte undervisningsmiljø. Disse forholdene skal nedfelles i en kontrakt om fordeling som skal utarbeides for programmet. I tillegg til dette erklærer jeg også vår enhets generelle vilje til å bidra inn mot master i bærekraft, som et ledd i arbeidet for å styrke bærekraft ved Universitetet i Bergen.

Namn nynorsk	<i>Master i Bærekraft</i>
Navn bokmål	<i>Master i Bærekraft</i>
Name English	<i>Master's Programme in Sustainability</i>
Name of qualification	<i>M.Phil</i>
ECTS credits	120 ECTS
Full-time/part-time	Full-time
Language of instruction	
Semester	Autumn
Objectives and content	<p>Sustainable development for the 21st century requires knowledges, institutions and forms of action that go beyond the fragmented perspectives analysed by single academic disciplines. The purpose of the master's in sustainability is to provide the students with the knowledge, skills and competencies required for understanding, analysing and shaping solutions to wicked problems in ways that are societally, ecologically and economically sustainable.</p> <p>Using systems thinking and modelling approaches, the program will teach methods for analysing and interacting with complex systems. The program will provide an introduction to the evolution and contents of the United Nations Sustainable Development Goals (SDGs), and how these are embedded in legal and regulatory frameworks at local, national and international levels. It will highlight differences and similarities in the ways in which different knowledge forms (such as law, science and politics) analyse and deal with complex problems, and introduce students to real-life decision making processes involving conflicting interests, and demands and mechanisms for improved democratic participation.</p>

The study program consists of mandatory and specialization courses, leading up to the work on the master's thesis. The specialisations will take place within one of the following thematic fields:

- Global societal challenges
- Climate and energy transitions
- Marine research
- Combinations of the above

The objective of the specialisation is to give the student expertise in interdisciplinary approaches to dealing with Climate and Energy transition, Marine, and Global societal challenges, or a combination of these. The general approach of all aspects of the specialisation is to provide the students with in-depth knowledge of a specific sustainability topic, which uses the knowledge provided in the mandatory courses. 'The program is designed so that students continuously bridge between the generic course topics and the specialisation: during the introductory (compulsory) courses, students should start to identify a topic of specialisation, and be guided ('scaffolding') towards appropriate supervision and elective courses. The specialization begins in the second semester and continues in the 3rd and 4th semesters. The Introductory topics are reiterated in seminars together with other students working on different specialisations'. The specialisation includes a 10 ECTS course on Methods (either quantitative or qualitative) appropriate for Global Societal Challenges and two 10 ECTS electives from the list of appropriate electives. In addition, the specialisation results in a 60 ECTS thesis researching a subject related to the specialisations, or 30 ECTS internship plus 30 ECTS thesis on a Global Societal Challenges topic. One model (60 ECTS) will be research-oriented, whereas the other (30 + 30 ECTS) will be practice-oriented. The workload will be similar within the two models, and is estimated to be 1600 hours for the entire program. Both models include a seminar series reiterating main topics from the mandatory courses and applying them to the thesis specialisation of each student.

<p>Required learning outcomes</p>	<p>On completion of the programme the candidate should have the following learning outcomes defined in terms of knowledge, skills and general competence</p> <p><i>Knowledge</i></p> <p>1. The candidate has in-depth knowledge of:</p> <ul style="list-style-type: none"> • a. Main concepts and institutions involved in sustainability science, legal and governance frameworks, including their historical emergence • b. Different forms of interdisciplinary collaboration and partnerships • c. Co-productions of sustainability science with democracy, rights and justice frameworks • d. Systems thinking and analysis, including multi-criteria and modelling for policy • e. Core concepts relating to climate change, marine life and global development <p><i>Skills</i></p> <p>2. The candidate:</p> <ul style="list-style-type: none"> • a. Can deal critically with knowledge from different sources, and place them in relation to sustainability issues • b. Can account for main scientific, policy and legal developments in the areas of climate change, marine life and global societal challenges • c. Is capable of working in interdisciplinary teams • d. Is capable of applying systems thinking, modelling, scenarios and storylines to complex policy problems, including relations and trade-offs between different SDGs • e. Is capable of recognizing and situating risk, uncertainty and ignorance in scientific and applied settings, and in own prior knowledge • f. Formulate a research problem and an appropriate research design, and carry it out
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	<p><i>Competencies</i></p> <p>3. The candidate can:</p> <ul style="list-style-type: none"> • a. Critically reflect upon the role of different knowledge forms for the development of more sustainable societies • b. Solve real-life problems in interdisciplinary teams • c. Discuss, deliberate and communicate complex issues, including their legal, regulatory and scientific dimensions • d. Integrate terms and concepts from multiple disciplines to solve complex problems • e. Communicate complex ideas both orally and in writing • f. Carry out an independent research project following appropriate research methodologies and in accordance with applicable norms for research
<p>Admission requirements</p>	<p>Prospective students for the Master's Programme in Sustainability must have obtained an undergraduate degree or Bachelor's degree of at least three years' duration at a recognised institution. The applicants must document special competence equalling one and a half years of study (80 ECTS) in a field or specialisation relevant for the programme.</p> <p>Applicants will be ranked according to their academic results, based on the grades in the specialisation in their Bachelor's degrees.</p> <p>Language requirements: Non-native English speakers must document their English language proficiency according to the university regulations. https://www.uib.no/en/education/49142/english-language-requirements-masters-programmes</p> <p>Applicants from outside the EU/EEA. https://www.uib.no/en/education/110783/application-procedure-applicants-outside-</p>

	<p>eu</p> <p>Applicants from the EU/EEA/Swiss https://www.uib.no/en/education/110785/application-procedure-eueeeaswiss-applicants</p> <p>Application procedure for Nordic citizens and applicants residing in Norway https://www.uib.no/en/education/49448/application-procedure-nordic-citizens-and-applicants-residing-norway</p>
Recommended previous knowledge	
Introductory courses	
Compulsory units	<p>Introduction course: Interdisciplinary approaches to sustainability (15 ECTs)</p> <p>Ways of Knowing (5 ECTs)</p> <p>Systems thinking for sustainability (10 ECTs)</p>
Specialisation	<p><i>Either</i></p> <p>Climate change and energy transition</p> <p><i>Or</i></p> <p>Marine Life</p> <p><i>Or</i></p> <p>Global Societal Challenges</p>
Recommended electives	<p><i>A selection of appropriate electives</i></p> <p><i>Applicable to all specialisations:</i></p> <p>GEO324 Geographies of the Green Economy (Spring)</p> <p>GEO330 Theories of Sustainable Land Use (Autumn)</p> <p>GEO337 Critical perspectives on Environmental Governance (Spring)</p> <p>GEO222 Sustainability in an Urbanising World (Spring)</p> <p>SDG110 Perspectives on Sustainable Development (Autumn)</p> <p>BIO341 Biodiversity (Autumn)</p>

	<p>ECON316A Environmental Economics (Autumn / Spring) SDG215 UN Sustainable Development Goal 15: Life on land (Spring)</p> <p><i>Climate change and energy transition:</i> MNF344 Causes and consequences of climate change (Spring / Autumn) ENERGI230 Environment and Energy (Spring) SDG213 Causes of climate change (Autumn) SDG207 Energy transition (Autumn) CET201 Sustainable Innovation (Spring) ENERGI200 Energy Resources and Use (Autumn) JUS271-2-C International and Comparative Energy and Climate Law (Spring)</p> <p><i>Marine Life:</i> BIO382 Aquatic food production (Autumn) BIO208 Environmental Impact of Aquaculture (Spring) SDG214 UN Sustainable Development Goal 14: Life below water (Spring) JUS293-2-A Law of the Sea and its Uses (Spring)</p> <p><i>Global Societal Challenges:</i> INTH 344 Migration and Health (Spring) GLODE 305 Gender in Development (Spring) JUS276-2-C Human Rights and Welfare Policies (Autumn) JUS250-2-C Health and human rights in the welfare state (Spring) HEFR 342 Resource approaches to health and wellbeing (Spring) SDG303 Global Health - Challenges and Responses (Autumn)</p> <p><i>Specialist methods courses in all faculties¹</i></p>
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¹ This list is indicative only; the question of methods courses should be settled between the student and the student's supervisors.

	<p>GEO306 Methods in Human Geography (Spring) GEO316 Practical Skills in Remote Sensing and Spatial analysis (Spring) SOS303 Quantitative methods (Spring) SOS304 Qualitative methods (Autumn) SAMPOL305 Multivariat data analysis (Spring) SAMPOL307 Forskingsdesign og kvalitative metodar (Spring) AORG321AKvantitativ metode (Spring) AORG323AKvalitativ metode (Autumn) ECON342 Cost-benefit Analysis (Spring, Autumn) GEO-SD304 System Dynamics Modeling Process (fall, block course, 6 weeks) GEO-SD321 Model-based Socioeconomic Planning (spring, block course, 4 weeks) STAT200 Applied statistics (Spring) STAT 202 Biostatistics (Spring) GEOF210 Dataanalytics in meterology and oceoneagraphy (Autumn) OF211 Numerical modelling (Spring)</p>
<p>Sequential requirements, courses</p>	<p>First semester Introduction course: Interdisciplinary approaches to sustainability (15 ECTs) Ways of Knowing (5 ECTs) Systems thinking and modelling for sustainability (10 ECTs)</p> <p>Second semester 3 x 10 ECTs electives from list above that include one specialist methods course, and two electives relevant to specialisation</p> <p>Either Third and fourth semester Master's thesis (60 ECTs)</p> <p>OR Third semester Internship</p>

	<p>Fourth semester 30ECTs thesis</p>
Study period abroad	In connection with the internship and master's thesis courses, students have the opportunity, and are encouraged, to work abroad.
Teaching and learning methods	<p>The programme combines different forms of teaching and educational tools, including lectures, seminars, and workshops; student active methods include problem based learning (PBL), colloquiums and student-led lectures. Digital teaching methods are also employed and enable guest lectures from experts around the world – in a sustainable way. Emphasis is placed on developing students' ability to read critically their own and others' work, and on developing their academic writing and presentation skills, and on solving real-life problems in interdisciplinary teams.</p> <p>Through <i>lectures</i> the program will provide insights into main sustainability concepts, their interrelations with rights, democracy and justice, and their manifestation in each thematic area (SDG 310). The lectures will also be central to convey understanding about the knowledge dimensions of sustainability, including systems thinking (SDG 312) and the relations between different fields and disciplines (esp. SDG 311).</p> <p><i>Seminars and workshops</i> will be utilized to teach systems thinking and its application to practical problems, to interdisciplinarity in practice and theory, and for learning to integrate concepts from different knowledge and practice fields.</p> <p><i>Student active learning</i> will be deployed in combination with lectures and seminars / workshops to create capacity to formulate research problems and carry them out, and to discuss, communicate and deliberate complex sustainability issues. This will be combined with both digital and physical arenas for learning to which the students themselves contribute, for instance by making a video on a given topic, or co-organising a lecture or public debate.</p>

Assessment methods	Students will experience different forms of assessment, both <i>individually</i> such as portfolio writing assignments, reflection papers, oral presentation, take-home exam, and the master's thesis and <i>in groups</i> such as PBL presentations. In addition, students will give feedback to their peers and receive feedback from their peers. These assessment forms will be combined into both formative and summative assessments. Formative assessments will encompass feedbacks from teachers ('for learning') and from fellow students (assessments 'as learning'). Summative assessments (grades) will be provided for each single course, and for the student's overall performance throughout the program.
Reading list	<i>See the course descriptions of the specific courses..</i>
Grading scale	Two grading scales are used: 1) A-F 2) Pass/fail See the course descriptions of the specific courses.
Diploma and Diploma Supplement	The Diploma and the Diploma Supplement will be issued when the degree is completed.
Access to further studies	A Master's degree in Sustainability may qualify the student for further studies at PhD level.
Employability	A master's degree in sustainability gives the candidate broad competence in interdisciplinary problem-solving and qualifications for employment in a broad spectrum of local, regional, nation and international organisations and agencies, and in different parts of national and local public administration. All students who complete the programme satisfactorily will be qualified for public and private positions that require entry-level skills in sustainability programme planning, implementation and evaluation, related to their specialisation in either climate change and energy transition; marine life or global societal challenges.

	<p>Graduates of the programme will have demonstrated skills in interdisciplinary teamwork and will know how to build, participate in and manage teams with members from different professional backgrounds, and from community organisations. Graduates will also be qualified to work as research assistants both in industry and in the public sector. Students with superior performance in the programme may be qualified for further academic work, including doctoral study.</p>
Evaluation	<p>The course will be evaluated in accordance with the Faculty of routines for participatory evaluation and the University of Bergen's Quality Assurance System.</p>
Suitability and authorisation	
Programme committee	<p>The program board has the main responsibility for academic contents, the structure and design of the program and for the quality of the study program (including on-going assessments of goals, teaching methods and assessment forms)</p>
Administrativt ansvarleg Administrative responsibility	<p>The Center for the study of the sciences and humanities (Senter for vitenskapstori, SVT) is administratively responsible for the program</p>
Kontaktinformasjon Contact information	<p><u>Studierettleiar@xx-uib.no</u> Tlf 55 58 xx xx</p>

Mal for forside til studieplanar ved UiB:

Studieplan for (Namn på studieprogrammet, nynorsk)

..... (Navn på studieprogrammet, bokmål)

..... (Name of the programme of study, English)

Godkjenning:

Studieplanen er godkjend av:

Universitetsstyret:(dd.mm.år)

Programstyret:(dd.mm.år)

..... fakultet:(dd.mm.år)

Studieplanen vart justert:(dd.mm.år)

Evaluering:

Studieprogrammet vart sist evaluert:(dd.mm.år)

Neste planlagde evaluering:(dd.mm.år)

Course code	SDG 310
Course title	Interdisciplinary Approaches to Sustainable Development
ECTS credits	15 ECTS
Level of study	Master's
Full-time/part time	Full-time
Language of instruction	
Semester of instruction	Autumn
Objectives and content	<p>The main aim of this course is to develop broad knowledge of the context, core concepts and processes in sustainable development across disciplines. The course will familiarise the student with the historical <i>context</i> of sustainable development and encourage critical reflection on how the interaction of the SDGs can create both benefits and trade-offs. The course will deepen understanding of the role of institutions and how governance structures shape outcomes at local, regional and global levels. The course will give the student broad knowledge of <i>core concepts</i> related to global societal challenges; climate change and energy transition; and marine resources and protection. Knowledge and understanding of the <i>processes</i> of sustainable development will be gained through interdisciplinary engagement with concrete problems.</p>
Learning outcomes	<p>The student should have the following learning outcomes defined in terms of knowledge, skills and general competence:</p> <p><i>Knowledge</i></p> <p>The student has in-depth knowledge of:</p> <ul style="list-style-type: none"> • (1a, c & e) Sustainable development and the path to the SDGs • (1a, c) Relevant legal and governance frameworks at local, regional and global scale • (1a, c) Rights, social justice and equity issues • (1b, c) Interdisciplinary processes in the promotion of sustainable development such as partnerships, social movements, etc. • (1c) Interaction between the environment and society and the co-production of outcomes • (1a, e) Core concepts of global societal challenges (including health, migration and inequalities) • (1a, e) Core concepts of climate change (including causes, impacts and responses) and energy transition (including energy production, consumption and technological solutions) • (1a, e) Core concepts of marine life (including marine resources, ecosystem services and protection) <p><i>Skills</i></p> <p>The student:</p> <ul style="list-style-type: none"> • (2a, b, d & e) Can deal critically with various sources of information on sustainable development issues and apply them to structure and formulate independent scholarly arguments • (2c) Can collaborate in interdisciplinary groups to solve complex sustainable development challenges • (2a, d & e) Can analyse challenging sustainable development issues through applying interdisciplinary perspectives

	<ul style="list-style-type: none"> • (2a, d & e) Can analyse the synergy and trade-offs between SDGs using “sustainability thinking” • (2a) Can critically analyse and extract the essence of written texts <p><i>General competence</i> The student:</p> <ul style="list-style-type: none"> • (3c & e) Can coherently communicate ideas concerning sustainable development both in written work and in oral presentations • (3a, c) Can critically assess theories and methods from different disciplines, and select and apply those which are appropriate for responses to global challenges
Required previous knowledge	
Teaching methods and extent of organized teaching	Teaching methods will comprise lectures, seminars, workshops, student-led learning and a problem-based learning component, as well as individual feedback on one writing assignment.
Compulsory assignments and attendance	<ul style="list-style-type: none"> • Short individual oral presentation of a self-selected sustainable development related topic. • Participation in the problem-based learning (PBL) groups and in the presentation of the PBL task. • Participation in guided, self-directed workshops and student-led lecture on interaction between two sustainable development issues <p>All activities and assignments must be completed and approved before the student’s portfolio will be assessed.</p>
Forms of assessment	Portfolio assessment with portfolio consisting of three products: 1) Benefits and trade-offs of using an interdisciplinary approach to solving a particular sustainable development issue (750 words) [written feedback] 2) Reflection Paper on synergy and antagonism in interdisciplinary processes during PBL (250 words) 3) Course paper (2500 words) related to the learning outcomes of the course.
Grading scale	A-F
Assessment semester	Autumn
Reading list	Will be available June 1 st .

Course code	SDG 311
Course title	Ways of knowing
ECTS credits	5 ECTS
Level of study	Master's
Full-time/part time	Full-time
Language of instruction	
Semester of instruction	Autumn
Objectives and content	<p>The objective of the course is that students learn how different sciences make up different ways of knowing, and how these relate to each other in interdisciplinary settings. They should learn that different practices, such as law, politics and science approach and define sustainability problems in different ways, and how different problem frames operate together, independently, and in conflict.</p> <p>The course is closely connected to the PBL activities of the Introductory and Systems Thinking and Modelling courses, and introduces topics relating to 'knowledge of knowledge' (in Norwegian: Vitskapsteori). It specifically addresses the following:</p> <ul style="list-style-type: none"> • Different ways of knowing • Scientific risk, uncertainty, complexity and ignorance • Legal problem articulation and reasoning • Disciplinarity, interdisciplinarity and transdisciplinarity.
Learning outcomes	<p>The candidate should have the following learning outcomes defined in terms of knowledge, skills and general competence:</p> <p><i>Knowledge</i> The student has in-depth knowledge of:</p> <ul style="list-style-type: none"> • (1a, b, c) different forms of knowledge and their interrelations in practice, including legal, qualitative and system dynamic perspectives • (1b, c, d) differences between disciplinary, multi-disciplinary, interdisciplinary and transdisciplinary approaches • (1c, d) concepts of uncertainty, risk, ambiguity and ignorance <p><i>Skills</i> The student:</p> <ul style="list-style-type: none"> • (2a, b) can critically assess the merits and implications of different theoretical perspectives and central concepts presented in the course • (2d, e) Is capable of recognizing differing degrees of uncertainty, including in the student's own work <p><i>General Competencies</i> The student:</p> <ul style="list-style-type: none"> • (3a, d) is able to critically assess and use data, scientific facts and evidence as produced and used within and across domains, and using various technologies and media

	<ul style="list-style-type: none"> (3b, d) can participate in interdisciplinary collaborations, situating and using the student's own knowledge in relation to other ways of knowing.
Required previous knowledge	
Teaching methods and extent of organized teaching	Systematically structured and supervised ('scaffolded') student-active learning, including: lectures, case-studies, oral and written presentations, student peer review.
Compulsory assignments and attendance	Participation in lectures and PBL groups, written 'reflection notes' applying the course literature to process and outcome of groupwork, oral presentation with feedback from student peers.
Forms of assessment	<i>Portfolio-based assessment of:</i> Course paper (4000 words) related to the learning outcomes of the course; Reflection note on process and outcome of project work; Oral presentation of main course concepts adapted to project work.
Grading scale	A-F
Assessment semester	Autumn
Reading list	Will be available June 1 st .

Course code	SDG 312
Course title	Systems thinking and modeling as a framework for sustainability analysis and action
ECTS credits	10 ECTS
Level of study	Master's
Full-time/part time	Full-time
Language of instruction	
Semester of instruction	Fall
Objectives and content	<p>Systems thinking refers to the ability to collectively analyze the inner fabric and dynamics of complex systems across different domains (society, environment, economy, etc.) and across different scales (local to global). Such understanding is a prerequisite for identifying intervention points, anticipating future trajectories and facilitating transition processes. The ability to analyze complex systems includes comprehending, empirically verifying, and articulating their structure, key components, and dynamics using methods and methodologies such as qualitative and quantitative modelling.</p> <p>This course introduces the theory, tools and techniques for systems thinking and modelling as a way of analyzing sustainability problems and deriving actionable insights to overcome them. It does so by working with organizations outside the University of Bergen (case owners) who furnish students with an applied context and specific sustainability challenges they are currently dealing with (case study). Students will use systems thinking and modelling to address these challenges.</p> <p>The process of systems thinking and modeling facilitates better understanding of system complexity and how our decisions affect system behaviour through abstractions and simplifications of the real world.</p>
Learning outcomes	<p>The student should have the following competencies defined in terms of knowledge, skills and general learning outcomes:</p> <p><i>Knowledge</i> Students have in-depth knowledge of:</p> <ul style="list-style-type: none"> • (1d) systems thinking tools; • (1b, d) methods for scenario and storyline development; • (1b, d) the use of multiple criteria decision analysis methods for elicitation and analysis of analysing value preferences; • (1a, b, d) the system dynamics modelling process from problem definition to policy analysis. <p><i>Skills</i> Students can:</p> <ul style="list-style-type: none"> • (2a, d, e) critically assess various systems thinking and modelling approaches; • (2d) use different scenario and storyline frameworks for describing existing as well as possible future system configurations and outcomes;

	<ul style="list-style-type: none"> • (2d, e) use multiple criteria decision analysis in the context of sustainable development challenges. <p><i>General competence</i> Students can:</p> <ul style="list-style-type: none"> • (3a, c & d) Use systems thinking and modelling to deal with sustainability problems • (3b) Can solve (authentic) problems in interdisciplinary groups;
Required previous knowledge	
Teaching methods and extent of organized teaching	Teaching methods will comprise lectures, games, seminars, project work, problem-based as well as student-led learning.
Compulsory assignments and attendance	<ul style="list-style-type: none"> • Participation in the problem-based learning (PBL) groups and in the presentation of the PBL tasks. • Participation in group work on selected aspects of case study. <p>All activities and assignments must be completed and approved before the student's portfolio will be assessed</p>
Forms of assessment	Portfolio assessment with portfolio consisting of three products: 1) PBL lecture. 2) Project report documenting the process and outcome of project work. 3) Presentation of main project findings and implications in the form of a simple 3-minute video clip.
Grading scale	A-F
Assessment semester	Fall
Reading list	Will be available Jan 1 st .

Course code	SDG 350
Course title	Master's thesis
ECTS credits	60 ECTS 60. The students can chose between a theoretical thesis (60 ECTS) and internship combined with a written report (30 ECTS). Both versions will run in parallel and intersect (i.e. in bi-weekly seminar) in the 3. and 4. semesters.
Level of study	Master's
Full-time/part time	Full-time
Language of instruction	
Semester of instruction	Autumn / Spring
Objectives and content	<p>The objective of the Master's thesis is for the student to develop knowledge of and first-hand experience with interdisciplinary research on a specific problem related to sustainability. The other parts of the course shall lead up to the master thesis, providing the tools and insights needed for the student to independently and critically develop a research design.</p> <p>The research problem shall fall within the scope of one of the three specializations of the program and make active use of mandatory and elective course topics and methods. The research design shall be developed by the student, under supervision from course instructors. Work on the thesis shall be accompanied by a 10 credits course that reiterates key learnings from the core course modules, and helps the student to apply it to the student's own project.</p>
Learning outcomes	<p>The candidate should have the following learning outcomes defined in terms of knowledge, skills and general competence:</p> <p><i>Knowledge</i> The student has in-depth knowledge of:</p> <ul style="list-style-type: none"> • (1a, b, c, d & e) a select sustainability subject, and provide written (thesis) and oral accounts of this subject. • (1a & e) main topics of the relevant sustainability literature, in oral and written form <p><i>Skills</i> The student can:</p> <ul style="list-style-type: none"> • (2a, d , f) Develop a research question on a subject relating to sustainability and interdisciplinarity • (2f) Plan, design and carry out a research project, and provide a written account thereof (as academic thesis or practical report) • (2a, d, e) Discuss other approaches to the subject, and reflect on the advantages and limitations of the students chosen approach • (2b) Discuss and reflect on the institutional and societal dimensions of the thesis subject

	<p><i>General Competencies</i></p> <p>The student can:</p> <ul style="list-style-type: none"> • (3f) Carry out an independent research project following appropriate research methodologies and in accordance with applicable norms for research • (3c, e) Communicate the problems dealt with in the thesis in an understandable form to specialist and general audiences.
Required previous knowledge	The compulsory and elective courses must be completed.
Teaching methods and extent of organized teaching	<p>Supervision from members of the teaching staff, covering both mandatory and specialization topics.</p> <p>Group supervision and student peer review during mandatory seminars</p>
Compulsory assignments and attendance	Attendance and participation at Master's seminar. Participation entails: presentation of own thesis and student peer review of works of others. The seminar is bi-weekly and has the following components: 1) project description taking into account topics from mandatory and elective courses; 2) fieldwork preparations; 3) after the fieldwork.
Forms of assessment	60 ECTS model: Master's thesis: 60 – 110 pages, requirements may vary depending on field of specialisation. 30 + 30 ECTS model: 30 – 60 pages report, requirements may vary depending on field of specialisation.
Grading scale	A-F
Assessment semester	Autumn
Reading list	Will be available June 1 st .

Annex 2: Table showing structure and content of the program

Autumn 2021	Mandatory courses	ECTS
	SDG 310 Introductory module	15
	SDG 311 Ways of Knowing	5
	SDG 312 Methods	10
Spring 2022	Elective courses	ECTS
All specialisations		
	GEO324 Geographies of the Green Economy	10
	GEO330 Theories of Sustainable Land Use (Autumn)	10
	GEO222 Sustainability in an Urbanising World	10
	SDG110 Perspectives on Sustainable Development (Autumn)	10
	GEO337 Critical perspectives on Environmental Governance	10
	BIO341 Biodiversity	5
	ECON316A Environmental Economics (Autumn / Spring)	5
	SDG215 UN Sustainable Development Goal 15: Life on land	10
	CET201 Sustainable Innovation	10
Climate		
	MNF344 Causes and consequences of climate change	5
	ENERGI230 Environment and Energy	10
	SDG213 Causes of climate change (Autumn)	10
	JUS271-2-C International and Comparative Energy and Climate	20
	ENERGI200 Energy Resources and Use (Autumn)	10
Marine		
	BIO382 Aquatic food production (Autumn)	10
	BIO208 Environmental impacts of Aquaculture	10
	SDG214 UN Sustainable Development Goal 14: Life below water	10
	JUS293-2-A Law of the Sea and its Uses	10
Global		
	INTH 344 Migration and Health	3
	GLODE 305 Gender in Development	10
	JUS250-2-C Health and human rights in the welfare state	10

	HEFR 342 Resource approaches to health and wellbeing	10
	JUS276-2-C Human Rights and Welfare Policies (Autumn)	10
	SDG303 Global Health - Challenges and Responses (Autumn)	15
Specialist methods		
	GEO306 Methods in Human Geography	10
	GEO316 Practical Skills in Remote Sensing and Spatial analysis	10
	SOS303 Quantitative methods	10
	SOS304 Qualitative methods (Autumn)	10
	SAMPOL305 Multivariate data analysis	15
	SAMPOL307 Forskningsdesign og kvalitative metoder	10
	AORG321 Kvantitativ metode	10
	AORG323A Kvalitativ metode (Autumn)	10
	ECON342 Cost-benefit Analysis (Spring, Autumn)	10
	GEO-SD304 System Dynamics Modeling Process (fall, block course, 6 weeks)	10
	GEO-SD321 Model-based Socioeconomic Planning (spring, block course, 4 weeks)	10
	STAT200 Applied statistics	10
	STAT 202 Biostatistics	10
	GEOF210 Dataanalytics in meteorology and oceanography (Autumn)	10
	GEOF211 Numerical modelling	10
Autumn 2022	SDG 350 Master's thesis	
Spring 2022	SDG 350 Master's thesis	

Annex 4: Internationalisation, student exchange and internships

The below tables are examples of existing relations and are not exhaustive. At this stage they are included to illustrate the broad base of potential collaborative partners, as the short time span has not allowed for systematic discussion of these topics. A 'definite' list will include quality of partner institutions and the working relations with UiB partners, similarity and complementarity of other programs, and geographic representativity. As such, the below list can be transformed into a living document, with updates being undertaken as the program evolves.

4a. Agreements on internationalisation, examples based in existing collaborations

Area of specialisation	UiB partner	International partner
Climate, Marine, Global Challenges	Senter for vitenskapsteori	UNESCO Global Independent Expert Group on the Universities
Climate, Marine, Global Challenges	Senter for vitenskapsteori	2030 Agenda
Climate, Marine, Global Challenges	Senter for vitenskapsteori	European Commission Joint Research Center
Climate, Marine, Global Challenges	System Dynamics Group	United Nations Environment Programme UNEP
Climate, Marine, Global Challenges	System Dynamics Group	Millennium Institute

4b. Student exchange agreements, potential partners

Area of specialisation	UiB partner	International partner
Climate, Marine	Senter for vitenskapsteori	Institute for environmental science and technology (ICTA), Autonomous University Barcelona
Climate, Marine	Senter for vitenskapsteori	STEPS (Social, Technological and Environmental Pathways to Sustainability) Centre, Sussex

Climate, Marine	Senter for vitenskapsteori	COPERNICUS Centre for sustainable Development, Utrecht University
Global Challenges	Senter for vitenskapsteori	Shanghai State University
Climate, Marine	Geophysical Institute	Bangor University
Climate, Marine	Geophysical Institute	Free University of Berlin
Climate, Marine	Geophysical Institute	Ludwig-Maximilians-University of Munich
Climate, Marine	Geophysical Institute	University of Innsbruck
Climate, Marine	Geophysical Institute	University of Toulon
Climate, Marine	Geophysical Institute	Utrecht University
All specialisation		Nova University, Lisboa, Portugal
All specialisation		Radboud School of Management, Nijmegen, The Netherlands
All specialisation		Università della Svizzera italiana, Lugano, Switzerland
All specialisation		Riga Technical University, Riga, Latvia
All specialisation		Bogazici University, Istanbul, Turkey
All specialisation		Università degli studi di Palermo, Palermo, Italy
All specialisation		Universidad Nacional de Colombia, Medellin, Colombia
All specialisation		Université Paris Sorbonne, Paris, France

dato_fra	dato_til	Nr. Incom ing	Nr. Outgo ing	In (2015-2020)	Out (2015-2020)	Institution Name	Institution Country
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17.03.2015	01.09.2021	4	1	2	0	Coventry University	United Kingdom
26.01.2016	30.08.2021	5	5	5	1	University of Manchester	United Kingdom
15.08.2018	31.08.2021	1	2	1	2	University of St. Andrews	United Kingdom
01.01.2001	01.09.2021	19	1	11	1	Radboud University	Netherlands
01.01.2001	30.08.2021	9	3	8	0	Utrecht University	Netherlands
03.07.2017	31.08.2021	0	0	0	0	University of Luxembourg	Luxembourg
18.12.2018	31.08.2021	0	0	0	0	Örebro University	Sweden
01.01.2001	01.09.2021	0	0	0	0	Stockholm University	Sweden
01.01.2001	30.08.2021	15	4	14	2	Aberystwyth University	United Kingdom
01.01.2001	01.09.2021	7	4	7	2	University of Glasgow	United Kingdom
01.01.2001	01.09.2021	31	0	23	0	University of Bonn	Germany
01.01.2001	01.09.2021	29	0	19	0	Friedrich Alexander University of Erlangen-Nuremberg	Germany
19.10.2015	01.09.2021	5	3	5	1	Free University of Berlin	Germany
01.01.2001	01.09.2021	11	2	7	0	University of Innsbruck	Austria
01.01.2001	30.08.2021	12	0	8	0	TU Dortmund	Germany
01.08.2013	01.09.2021	9	1	8	0	Bavarian Julius-Maximilians University of Würzburg	Germany
01.01.2014	01.09.2021	0	1	0	1	University of Salamanca	Spain
01.01.2001	01.09.2021	3	0	2	0	University of Santiago de Compostela	Spain

01.01. 2001	01.09.2 021	5	0	5	0	University of Picardie Jules Verne (Amiens)	France
01.08. 2013	01.09.2 021	6	2	6	2	University of Lyon II	France
01.08. 2004	30.08.2 021	7	2	5	1	University of Nantes	France
01.09. 2005	01.09.2 021	15	0	8	0	Philipps-University of Marburg	Germany
01.01. 2001	01.09.2 021	23	6	15	2	University of Reading	United Kingdom
01.08. 2012	01.09.2 021	3	0	3	0	University of Debrecen	Hungary
01.08. 2012	01.09.2 021	5	0	4	0	University of Greifswald	Germany
10.03. 2014	01.09.2 021	9	2	7	1	University of Hamburg	Germany
01.01. 2001	01.09.2 021	9	2	8	2	University of Heidelberg	Germany
01.01. 2001	01.09.2 021	18	0	13	0	Carl von Ossietzky University Oldenburg	Germany
01.01. 2001	01.09.2 021	10	0	9	0	University of Potsdam	Germany
01.01. 2001	01.09.2 021	1	0	1	0	University of Trier	Germany
01.01. 2001	01.09.2 021	2	3	0	2	Autonomous University of Barcelona	Spain
01.08. 2012	01.09.2 021	7	3	6	0	Bangor University	United Kingdom
01.08. 2013	01.09.2 021	5	0	2	0	Adam Mickiewicz University in Poznan	Poland
01.01. 2004	01.09.2 021	7	3	3	2	Charles University, Prague	Czech Republic
30.04. 2014	01.09.2 021	0	2	0	1	University of Gothenburg	Sweden
01.08. 2012	01.09.2 021	4	0	2	0	University of Vechta	Germany

11.04. 2014	01.09.2 021	2	8	1	5	University of Iceland	Iceland
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4c. Eksempler på partnere for praksisavtale(r)

Area of specialisation	UiB partner	Partner
Global societal challenges	Senter for vitenskapsteori	Bærekraftig Liv Landås
Climate, Marine	Senter for vitenskapsteori	Local municipalities, Northern Hordaland (through UNESCO chair)
Climate, Marine	Senter for vitenskapsteori	Bergen Kommune, miljøavdelingen
Climate, Marine	Senter for vitenskapsteori	Naturvernforbundet
Climate, Marine	Senter for vitenskapsteori	Bergenshalvøens Kommunale Kraftselskap (BKK)