



PROGRAM EVALUATION FOR MAMN-MOL

2017-2022

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Background

This evaluation was prepared in October-December 2022. The primary sources in use were the Tableau database, earlier evaluation reports of the master's program (2011-2016, published early 2017, input from scientific staff in the form of Teacher's meetings, reviews performed by the Program board, as well as reports from individual courses relevant for the master's program in Molecular Biology.

Data has been visualized as graphs and tables, using source materials derived from Tableau. The templates and text of both the MAMN-GEOV and BAMN-MOL have been used in preparing the work. From 1st of January 2018, the Department of Molecular Biology and the Department of Biology were merged to form the new Department of Biological Sciences. In the time-interval 2016-2020, the academic environment underwent large and unprecedented changes in staffing. More than half the permanent scientific staff, as well as a sizable portion of administrative and technical staff were lost. Only part of the staff was eventually replaced.

Department of Biological Sciences

Bergen, 10th of December 2022

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1 UiB's requirements for quality assurance in education programs

The master's program in molecular biology comprises a total of 120 ECTS, subdivided into a master's project (60 ECTS), compulsory courses (30 ECTS), and optional courses (30 ECTS).

1.1 Admission requirements and admission numbers

The Master's Program had 20 study places up to 2020 and got 5 extra seats during the corona pandemic. These five seats will be withdrawn in total by 2025. For the last two years we have not filled the seats in our Program (Table1).

Applicants to the Master Program in Molecular Biology need a bachelor's degree in Molecular Biology or equivalent. Other degrees may also qualify, subject to review by academic staff on a case-to-case basis. Qualifying degrees must hold a minimum of 100 ECTS in relevant courses, including 70 ECTS in topics such as molecular biology, metabolism, signal pathways, biochemistry, molecular cell biology, bioinformatics, and gene- structure and function. At least 10 ECTS of these must be practical laboratory work experience relevant for molecular biology. Moreover, the qualifying degree must contain 20 ECTS of chemistry, including 10 ECTS of organic

chemistry.

The Master Program is taught in English and Norwegian. Applicants must document proficiency in either language, or qualify for [exemption](#). Documentation of English proficiency can be done in several ways, including taking the IELTS academic (minimum score 6.5), the TOEFL (minimum score of 90), or the PTE academic (minimum score of 62). Finally, the qualified applicant must have grade-point average of at least C.

Until 2021, the program had its main admission in fall, and supplementary admission in spring. Spring semester admission was performed if not all available spots were filled in the fall admission. International students outside European Union/EEA/EFTA could also apply to the Program, and a total of up to 5 seats were offered international students (from more than 100 international applicants) Since 2021 we have not offered international admissions for students outside European Union/EEA/EFTA. This is since the master's admission system at UiB is not set up for handling such a large number of applicants, and the administrative workload becomes prohibitive when very large number of students from a large number of institutions must be compared and assessed fairly. We still offer admission to international students from within the European Union/EEA/EFTA.

The lack of a master's admission uptake coordinated at the national level makes the master's uptake inefficient. Candidates apply and get offers from several Universities in Norway, and often accept offers from several, making it very difficult to estimate how many students that plan to start even if they have accepted an offer from us. The nature of our studies makes it difficult and risky to overbook to a great extent, since laboratory classes cannot be easily scaled to student numbers beyond a certain point.

The Program board has discussed different approaches to address the challenge of filling up our study places while at the same time avoiding dangerous overbooking. Excessive overbooking is risky in the sense that molecular biology is a laboratory discipline; overshooting the places available in the advanced laboratory course at the start of the degree (MOL300), and it becomes exceedingly difficult to offer all students an equivalent, safe, and meaningful laboratory education. From Autumn 2022 we have made changes to our laboratory course that will make it possible to double capacity, if needed, due to overbooking in the admissions. We are also currently discussing the possibility of opening for international admissions again. In conclusion, we are now in a position where we can overbook more “aggressively”.

Table 1. Overview of applicant and admission numbers as well as study places at BIO (MAMN-MOL, H2018-V2022, Tableau).

| | Semester | 2018 | 2019 | 2020 | 2021 | 2022 |
|------------------------|----------|------|------|------|------|------|
| 1. Priority applicants | Fall | 178 | 155 | 160 | 53 | 47 |
| | Spring | 11 | 10 | 19 | 11 | |
| Offers to students | Fall | 47 | 43 | 33 | 38 | 40 |
| | Spring | 7 | 7 | 10 | 3 | |
| Accepted | Fall | 18 | 24 | 21 | 16 | 20 |
| | Spring | 6 | 6 | 9 | 3 | |
| Registered | Fall | 15 | 18 | 17 | 15 | 13 |
| | Spring | 4 | 4 | 8 | 4 | |
| active | Fall | 13 | 17 | 17 | 14 | 13 |
| | Spring | 4 | 3 | 8 | 3 | |
| Number of Study Places | | 22 | 20 | 25 | 25 | 25 |

The master Program in Molecular Biology has a gender imbalance in favor of female students (Figure1). The department has recently adopted an action plan for gender balance work at the Department, and as part of this

there will be an evaluation regarding student gender balance and study environment. Depending on the outcome of this, we will investigate and implement action aimed at recruitment and gender balance.

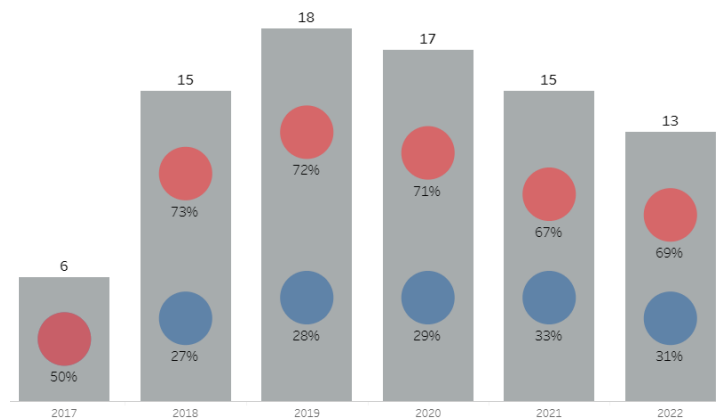


Figure 1 Overview of the number of registered candidates and gender balance. Blue represents male active students; red represents number of female active students started each year. and the number of study places (Tableau, MAMN-MOL, 2017-2022)

1.2 Degree completion, dropout rates and candidate production

The Master Program in Molecular Biology has a low drop-out rate of active students, and approximately 85% of the students starting the Program will end up with a degree. Although some students become delayed, only extraordinary circumstances occasionally result in degree termination (Figure2 and 3).

Andel studenter som fullfører en grad

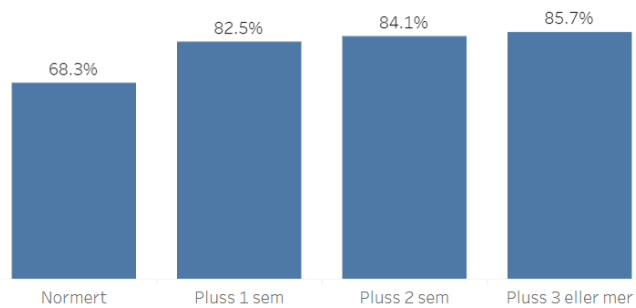


Figure 2 Percentage of finished degrees relative to registered starting students for a given semester in the period 2016-2020.

Table 2 Overview of degree completion and accumulative candidate production for different start semesters (from tableau)

Gjennomstrømming

| Startår | Studieprogram | | Grand T.. | Semesternummer | | | | | | | | |
|-----------|---|-----------------------------|-----------|----------------|-------|-------|--------|--------|--------|--------|----|--|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | |
| 2016 HØST | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 6 | | | | | | | | | |
| | | Akkumulerte Kvalifikasjoner | 5 | 0 | 0 | 0 | 4 | 5 | 5 | 5 | | |
| | | Andel_kvalifikasjoner | 83.33% | 0.00% | 0.00% | 0.00% | 66.67% | 83.33% | | | | |
| 2017 VÅR | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 4 | 4 | 3 | 2 | 2 | | | | | |
| | | Akkumulerte Kvalifikasjoner | 2 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | |
| | | Andel_kvalifikasjoner | 50.00% | 0.00% | 0.00% | 0.00% | 50.00% | | | | | |
| 2017 HØST | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 8 | 6 | 8 | 7 | 6 | 3 | | | | |
| | | Akkumulerte Kvalifikasjoner | 6 | 0 | 0 | 0 | 3 | 6 | 6 | 6 | 6 | |
| | | Andel_kvalifikasjoner | 75.00% | 0.00% | 0.00% | 0.00% | 37.50% | 75.00% | | | | |
| 2018 VÅR | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 4 | 4 | 3 | 3 | 3 | 1 | | | | |
| | | Akkumulerte Kvalifikasjoner | 3 | 0 | 0 | 0 | 2 | 3 | 3 | 3 | 3 | |
| | | Andel_kvalifikasjoner | 75.00% | 0.00% | 0.00% | 0.00% | 50.00% | 75.00% | | | | |
| 2018 HØST | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 15 | 14 | 14 | 13 | 14 | 5 | 2 | 1 | | |
| | | Akkumulerte Kvalifikasjoner | 14 | 0 | 0 | 0 | 9 | 12 | 13 | 14 | 14 | |
| | | Andel_kvalifikasjoner | 93.33% | 0.00% | 0.00% | 0.00% | 60.00% | 80.00% | 86.67% | 93.33% | | |
| 2019 VÅR | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 4 | 3 | 4 | 4 | 3 | 3 | | | | |
| | | Akkumulerte Kvalifikasjoner | 3 | 0 | 0 | 0 | 1 | 3 | 3 | 3 | 3 | |
| | | Andel_kvalifikasjoner | 75.00% | 0.00% | 0.00% | 0.00% | 25.00% | 75.00% | | | | |
| 2019 HØST | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 17 | 17 | 15 | 14 | 14 | | | | | |
| | | Akkumulerte Kvalifikasjoner | 14 | 0 | 0 | 0 | 14 | 14 | 14 | 14 | 14 | |
| | | Andel_kvalifikasjoner | 82.35% | 0.00% | 0.00% | 0.00% | 82.35% | | | | | |
| 2020 VÅR | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 9 | 8 | 8 | 8 | 7 | | | | | |
| | | Akkumulerte Kvalifikasjoner | 6 | 0 | 0 | 0 | 6 | 6 | 6 | 6 | 6 | |
| | | Andel_kvalifikasjoner | 66.67% | 0.00% | 0.00% | 0.00% | 66.67% | | | | | |
| 2020 HØST | MAMN-MOL Masterprogram i molekylærbiologi | Aktive | 17 | 17 | 17 | 17 | 17 | 3 | | | | |
| | | Akkumulerte Kvalifikasjoner | 15 | 0 | 0 | 0 | 13 | 15 | 15 | 15 | 15 | |
| | | Andel_kvalifikasjoner | 88.24% | 0.00% | 0.00% | 0.00% | 76.47% | 88.24% | | | | |

The students in this Program are closely followed up by the Student Administration. The students attend a welcome meeting and a master's project information meeting the first semester. The students are well informed of the expectations they will meet as master students at this Program. The Program has a dedicated advisor that is situated close to the students' study hall, and there is an open-door policy to contact the study administration if questions arise. The close contact between study administration and students is key in the work to avoid student dropouts during the first year of studies. Students at the master program get to choose amongst several master projects the first semester, and by the end of first semester every master student are provided with a project and an affiliation with the research group where they will do their thesis work during their 3rd and 4th semesters. We believe this early connection to the research environment is also part of low drop-out rate at our Program. In the assessment period, our program has produced between 13 and 25 candidates (median 17 students, see Table 1).

1.3 Assessment of learning environment

The Student Barometer (“Studiebarometeret”) for the period 2019-2021 suggests that the overall satisfaction among students are high (scores from 3.5 to 4.4 out of 5.0 possible), although we have to take into account that the number of respondents are very low.

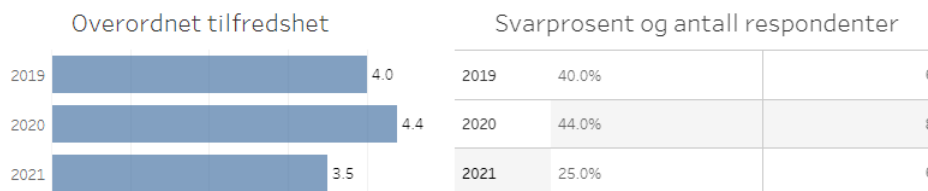


Figure 3 Overall student satisfaction from Studiebarometeret

When reviewing markers of student satisfaction individually for some indicators (Figure 3), it appears that student engagement has increased for six out of ten of these parameters in the last year. The exceptions are the professional and social learning environment, the physical learning environment and infrastructure. These criteria are expected to suffer during lockdown and corona measurements. Therefore, no measures will be implemented until we have tracked these indicators during more normal times. We will continue our work towards getting students back to campus. All master students are offered a seat in our study hall and all students attend a mandatory laboratory course during the first semester that makes them acquainted with their co-students and scientific staff at the MOL unit (“faggruppe”).

We see a drop in the index “organization” over the two last years. These questions relate to the administrative and academic organization of the study Program. We also see a drop in the index regarding academic expectations placed on the students by academic staff.

There is some evidence for a dip in student satisfaction indicators, centered around 2019. This makes sense in the light of the staff changes, staff reductions, reorganizations and other reforms that put pressure on remaining staff. During the corona pandemic the department prioritized running (pandemic-adapted) laboratory courses and keeping open research labs for master students as far as possible. This seems to have made a positive impact on our teaching and learning environment indexes. There is reason to believe that as the pressure of the Corona pandemic subsides, the experience of the newly hired staff increases, the new Department structure and economy consolidates, this dip will be reversed. Systematic work, as described above, can then commence to improve the overall satisfaction indicators.

The master’s students have an excellent social and student democracy mechanic through Helix, as well as BioCeed, Biologisk Fagutvalg and STIM. It is believed that these, especially Helix, contribute significantly to raising student satisfaction levels over time. In times without pandemic-related restrictions, the students have access to shared office spaces, some of them in the general staff and laboratory area of the molecular biology environment. While students report high levels of satisfaction with the student environment, the migration of some students after their first year to the Haukeland University Hospital or The Institute of Marine Research environment splits the student community as they perform their thesis work. However, as long as students choose to take their master project in these external locations, this will remain a challenge.

2 Requirements in the Study Supervision Regulations

2.1 Quality assurance system

UiB's quality system was revised since the previous program evaluation was carried out, and the master's program in molecular biology now follows the new quality system from 2020. In accordance with the system description of the new quality system, a separate program board for the master's program in molecular biology was established in 2021, an external peer was appointed in March 2021, and a plan for 3-year subject evaluations for all MOL subjects are implemented (Appendix 1). Self-assessment of courses and programs carried out in line with the new system description, and institute management prepares a study quality report to the faculty each year based on the program boards' self-assessments. The study administration sends out student evaluations in all MOL courses the semester they are though and follows up the annual cycle (Appendix 2) together with the course managers. All evaluations and reports are uploaded to the Study Quality Database at UiB.

2.1.1 Quality assurance

The program board and program board chairman are responsible for implementing the systematic quality work for the master's program in molecular biology. The program board has several meetings annually where study quality is discussed, and measures adopted. In the February and September meetings, review of self-assessment and 3-year course evaluations from the previous semester are fixed items on the agenda. These are then reviewed, and any study program changes and changes at course level are implemented to address needs for improvements. These actions are also fixed agenda items.

The Student Administration, together with the Chair of the program board, is responsible for following decisions from the program board, and these participate together with the "faggruppe" leader for the molecular biology group in regular weekly meetings where cases from the program board are followed up. For matters that need follow-up at a higher level, the program board leader raises these matters to the head of education at the institute for possible discussion in the institute's program council. Some matters also go via "faggruppe"-leader to the leader group at the Department at weekly meetings.

The teachers in the molecular biology "faggruppe" also meets regularly to discuss and follow up and solve challenges related to teaching, and in some cases, they have also been given the responsibility of following up on matters that have been raised in the course evaluations.

The previous evaluation of the Master Program in Molecular Biology was done in 2017. At the time, this Program was a part of the previous Department of Molecular Biology. Overall, there was a positive evaluation of the Master Program based on student feedback, student numbers, completed degrees, grades etc. However, two main challenges were stressed: (i) Lack of recruitment to the Master Program for the local research groups and (ii) too narrow selection of courses.

Regarding recruitment, in the period 2011-2016, 8-26 students (13-14-26-22-18-8, average: 16.8) were taken up in the Program. It was suggested that one could make efforts to improve the local integration of the MOL Bachelor students in order to make them apply for the MOL Master Program, and also to increase the visibility of the Department (now: Section of Molecular Biology), or even increase the number of accepted students to the Program. The merger of the Department of Molecular Biology with Department of Biology has likely made it challenging to effectively implement such measures. In the period 2018-2022, the number of registered active

students was 17-20-25-17-13 (average: 18.4) (Table 1). Annual fluctuations are too large to determine whether there is a trend in these numbers. Also, the obligatory practical course MOL300 has a certain capacity which has limited the overall student numbers at the Master Program in Molecular Biology. From 2022 we have made changes to this laboratory course so that it should no longer be the limiting factor for overbooking in the admission process. The Program board has also made some changes to the application requirements with effect from 2023 so students from more diverse backgrounds should be able to apply ([Molekylærbiologi, master, 2 år | Universitetet i Bergen \(uib.no\)](https://www.uib.no/en/education/master/molekylarbiologi)). We hope to see a positive effect from these changes in the number of applicants next year.

Molecular Biology students can choose to do their thesis work at external research groups in the region, but in the Program evaluation from 2017 there was a concern that too many students chose external environments for their thesis work. Hence, for the last few years we have implemented actions to increase interest in choosing local research projects. For example, we advertise internal seminars for students, and internal groups present their research and research groups at the master's project information meeting the first semester. We can see a change in students electing more internal projects in the last couple of years (Table3).

Table 3: Student's choice of internal or external projects for their master thesis.

| | 2018 | 2019 | 2020 | 2021 | 2022 Autumn |
|--|------|------|------|------|-------------|
| # Master exams with internal supervisors | 3 | 2 | 9 | 11 | 10 |
| Total number of master exams | 8 | 8 | 17 | 23 | 15 |
| Fraction of master exams with internal supervisors | 38 % | 25 % | 53 % | 48 % | 67 % |

Regarding the narrow selection of courses for molecular biology master students, this has not improved with regards to MOL-courses. The course portfolio has been changed since 2017 because the permanent staff at MOL has been reduced since last assessment period. The new courses have primarily been taught by Adjunct (II) professor positions when available. Since the Department of Molecular Biology and the Department of Biology became Department of Biological Sciences in 2018 there is an ongoing process of integrating BIO- and MOL-courses to a greater extent, and but gains from these efforts are slow to come into effect for several reasons (colliding schedules, limited capacity, specialized required background) results. This will be an important focus for the next period, to trigger synergy effects of the merger for the department's course portfolio.

One important component of the master is MOL300, a 20 ECTS laboratory course. The course is considered heavy both by those involved in running the course, administering the course, and the students who take it. However, its size, scope and content are likely unique within the Norwegian teaching landscape. The course offers students intensive training in relatively advanced methods in molecular biology. The course is well regarded in the molecular life sciences, and students who complete it have attained attractive qualifications. This being stated, the course could be revised with an aim at increasing efficiency, especially regarding how the students are assessed. The six lab-journals that are individually commented and graded represent a very significant effort, both by teaching assistants, course leader, and students. Also, the final exam is six hours long, and currently consists of essay-type written answers that are time-consuming to grade. While both journal assessment and essay-type exam questions have merit in developing students, there is a large scope for striking a better balance between effort and expediency. The course, currently rated as 20 ECTS, may be closer to 30 ECTS, and this has to be assessed

and either acknowledged or balanced to reflect the reality of the workload. The Program Board will work with these questions and implement changes in the coming period.

2.1.2 Student involvement

Two representatives from the student organization in molecular biology, Helix, are members of the program board. They actively participate in the program board meetings where they convey comments and opinions from the students about existing issues and come with suggestion for improvements in the courses, study hall etc. For the development of new electives, Helix carried out a survey among students in 2020 (Appendix 3). There was great interest in the subjects of innovation biotechnology and immunology. As a result, MOL232 (Innovation in Industrial Biotechnology) was created as a new course. An introduction to immunology and vaccinology has been implemented in MOL103 (Gene structure, function, and application) The other important channel for student participation is feedback on the courses via the course evaluations (see 2.1.1).

2.2 Associated regulations

Not relevant for MAMN-MOL.

2.3 Study plan

The M.Sc. in Molecular Biology comprises a total of 120 ECTS spanning 4 semesters. The first semester, students will gain extensive laboratory experience in the compulsory practical course MOL300 (20 ECTS) plus one elective 10 ECTS lecture course (Table 4). In the second semester, students will have the compulsory MOL310 (Structural molecular biology) course plus two elective 10 ECTS courses at the MOL200-MOL300 level. In the third and fourth semesters, students will carry out a 60 ECTS master project (MOL399). Students may select both local projects with supervisors at BIO (MOL-section) as well as other molecular biology- oriented projects at other BIO sections, her UiB departments, and at relevant units outside UiB (for example Institute of Marine Research and Haukeland University Hospital).

Table 4. Study plan for MAMN-MOL, MOLXXX represents elective courses on 200- or 300-level

| semester | 10 ECTS | 10 ECTS | 10 ECTS |
|-----------------------------------|-----------------------|---------|---------|
| 1 st semester (autumn) | MOL300 | | MOLXXX |
| 2 nd semester (spring) | MOL310 | MOLXXX | MOLXXX |
| 3 rd semester (autumn) | Master project MOL399 | | |
| 4 th semester (spring) | 60 ECTS | | |

As mentioned, MOL-courses have been taken on and off the schedule since 2017 because of reduced resources and a call for adapting the portfolio to become more efficient (e.g., expedient online evaluation, larger rather than smaller courses). Today, elective MOL-courses still active are MOL204 Applied Bioinformatics (for external master students), MOL210 Lipid Biochemistry: From Chemistry to Diseases, MOL213 Developmental Genetics, MOL217 Applied Bioinformatics II, MOL270 and Bioethics and MOL231 Project in Molecular Biology (bachelor students are prioritized). Only four internal elective MOL-courses are available to the masters-students, but other BIO-courses are available as well (one popular choice is BIO216, Toxicology, another is BIO370 Cell and

Developmental Biology, also see Figure 5).

Molecular Biology students also take the Animal Science Courses (LAS-courses), these are mandatory courses for those who intend to work with research animals during their thesis or later in their careers. It is also possible to apply for visiting study rights at the Medical Faculty, and some students, especially those who take an external project there, take elective courses at the Medical Faculty. Overall, the students at this Program have a good selection of elective courses, even if the molecular section at the department are currently not able to offer a wide selection of elective topics (Figure 5).

Level of learning outcomes

2.4.1 National qualifications framework

The learning outcomes for the Master Program in molecular biology have been revised once since the last evaluation, in accordance with the National qualification's framework. These learning outcomes provide a good foundation for describing the competence of graduates of the Master Program, both internally at UiB, to different schools and universities, and to society in general.

2.4.2 Name

The study program has had the same name (MAMN-MOL, master's program in Molecular Biology) throughout the evaluation period. The name covers the disciplinary content well.

EIP1 Fagvalg i program

| Fag | Emnekode | 60-poen.. | Antall_st.. | Studiep.. | | | | | |
|----------|-----------|-----------|-------------|-----------|------------|-----------|-------|----|-------|
| BIOLOGI | BIO215 | 0.17 | 1 | 10 | MEDISIN | CCBIO904 | 0.07 | 1 | 4 |
| | BIO216 | 1.50 | 9 | 90 | | CCBIO905 | 0.08 | 1 | 5 |
| | BIO271 | 0.17 | 1 | 10 | | CCBIO908 | 0.03 | 1 | 2 |
| | BIO307 | 0.17 | 1 | 10 | | LAS301 | 5.50 | 55 | 330 |
| | BIO370 | 0.33 | 2 | 20 | | LAS302 | 1.80 | 27 | 108 |
| | SDG214 | 0.17 | 1 | 10 | | LAS303 | 1.73 | 26 | 104 |
| ERNÆRING | HUIMM303 | 0.50 | 3 | 30 | MEDISINFAG | HUMGEN302 | 0.05 | 1 | 3 |
| | HUIMM306 | 0.17 | 1 | 10 | MOLBIOL | MOL203 | 1.17 | 7 | 70 |
| KJEMI | KJEM202 | 0.50 | 3 | 30 | | MOL204 | 1.67 | 10 | 100 |
| | KJEM210 | 0.17 | 1 | 10 | | MOL210 | 3.50 | 21 | 210 |
| | KJEM220 | 0.33 | 2 | 20 | | MOL213 | 4.17 | 25 | 250 |
| | KJEM230 | 0.33 | 2 | 20 | | MOL215 | 4.33 | 26 | 260 |
| | KJEM260 | 0.17 | 1 | 10 | | MOL217 | 3.67 | 22 | 220 |
| MEDBIOL | BMED330 | 0.17 | 1 | 10 | | MOL231 | 0.33 | 2 | 20 |
| | BMED331 | 1.00 | 6 | 60 | | MOL270 | 0.50 | 3 | 30 |
| | BMED340 | 0.17 | 1 | 10 | | MOL300 | 26.67 | 80 | 1,600 |
| | HUMGEN301 | 0.33 | 4 | 20 | | MOL310 | 13.33 | 80 | 800 |
| | HUPAT301 | 0.33 | 4 | 20 | | MOL320 | 4.17 | 25 | 250 |
| | | | | | | MOL399 | 80.00 | 80 | 4,800 |
| | | | | | STATISTIKK | STAT200 | 0.33 | 2 | 20 |

Table 5 Overview of courses included in Molecular Biology masters from 2017- 2022 spring

2.5 Learning outcomes and infrastructure

2.5.1 Content and structure

The learning outcomes for the master's program in molecular biology are achieved through the mandatory courses and thesis work included in the study Program. Learning outcomes express the knowledge, skills and general competence the students have achieved in the subjects included in the program in a tidy and informative manner. Elective courses are chosen to optimize the learning outcome for each student according to the topic chosen for the master project (MOL399).

Table 6: Curriculum mapping of courses included in the Master's Program (I; introduce, R; reinforced, M: Master.

| | 1st semester | 2nd semester | 3rd semester | 4th semester |
|--|--------------|--------------|--------------|--------------|
| Knowledge | MOL300 | MOL310 | MOL399 | |
| has advanced level of knowledge within the field of molecular biology - including protein structure and function, and holds specialized knowledge within the subfield connected to the master work | R | M | M | M |
| has advanced knowledge about the theory behind basic molecular biology techniques such as gene technology and protein purification | R | | M | M |
| can collect, analyse and apply new knowledge within the field of molecular biology | I | R | M | M |
| Skills | | | | |
| can apply a wide range of basic molecular biology methods covering gene technology, protein expression and purification, and cell culture work | R | | M | M |
| can plan and carry out biochemical and molecular biology experiments and evaluate critically the results in relation to the hypothesis being tested | R | | R | M |
| is able to carry out an independent research project under guidance of supervision | I | I | R | M |
| will develop good skills to present and discuss quantitative data and to master basic statistical tools | R | R | M | M |

| | | | | |
|---|---|---|---|---|
| can read relevant literature and apply this knowledge in reasoning and in the formulation of new ideas within the field of molecular biology | R | R | R | M |
| General competence | | | | |
| can analyse scientific problems and participate in discussion to solve such problems | R | R | R | M |
| has the skills to present scientific knowledge and research both orally and in written form both to scientists and to the public | R | R | M | M |
| can reflect about key ethical issues and scientific problems in research | I | R | M | M |
| has the skills to demonstrate understanding and respect for scientific values such as transparency and accuracy, and to discriminate between knowledge and opinions | R | R | M | M |

2.5.2 Infrastructure

In the current assessment period, the Faculty of Mathematics and Natural Sciences has developed a learning center with a new library, which benefits all students, including ours. The department is based at Marineholmen and has its own tailor-made teaching laboratory dedicated to molecular biology and its own smaller teaching rooms (seminar rooms), in addition to two auditoriums connected to Marineholmen. Master students get their own private seat in the study hall first semester, close by laboratories and their own lunch corner. Overall, there are good learning areas, both formal and informal meeting places, for the students at the Program. Once students start their master project, they will access the research infrastructure associated with their supervisors and project. This may vary considerably from project to project, but locally we provide good laboratory facilities for performing research in molecular biology. Examples of specialized facilities include but are not limited to: A well-equipped cell laboratory, *Drosophila melanogaster* and *Danio rerio* animal facilities, a protein purification and biophysical laboratory, mass-spectrometry and NMR facilities, facilities for imaging and advanced microscopy, as well as incubators, ultra-centrifuges, autoclaves, as well as other large units of equipment.

The student administration at MOL is composed of approximately 2 positions and provides the MAMN-MOL students with proper guidance and assistance. They are situated close to the student study hall and the MOL teaching and research environment.

2.6 Teaching methods and assessment methods

The master's program in molecular biology makes use of several different teaching and learning methods and forms of assessment to facilitate student learning. Molecular biology is a practical discipline, and the mandatory MOL300 course is a 20 ECTS laboratory course intended to bring the students' practical skills to an advanced level. The students receive a lot of laboratory teaching in the form of practical tasks in the lab and written submissions of lab reports with formative feedback. Many of the elective courses use the traditional lecture as the

main form of teaching, but several subjects introduce student-active forms of learning. For example, MOL213 uses student active learning with flipped classroom, MOL310 involves the students in student-to-student peer review on a written essay that is part of the course. Most of our courses also have some form of compulsory activity as part of the learning outcome. This includes colloquium groups, assignments, group work, oral presentations and of course lab work. MOL270 places a particular emphasis on groupwork, presentation and poster-creation, including subsequent rounds of student and course leader assessments. These activities ensure that students participate actively in the learning process.

The MOL399 master project is mostly laboratory activity, focused on the independent project of the student. However, the student gain significant project experience, as well as theoretical and practical knowledge from supervised work in a research group. It is also common that each student presents their project once or twice during their master on the internal seminar series. They get feedback from students and professors in a way that helps them develop themselves, their project, and help them prepare for the final thesis examination. In the final half of this project, laboratory activity is mixed with reading scientific literature and writing the different parts of the thesis, thus providing a deep learning experience. The final exam of MOL399 is composed of assessment of the written thesis, an oral public presentation, and a closed oral examination.

The most common form of assessment in the MANM-MOL Program is a written digital school exam as a summative form of assessment, but MOL300 combines that with a portfolio assessment, where the students submit lab reports that they work on during the lab course and which they receive feedback on and a final assessment. Portfolio assessment is also implemented in the case of MOL270.

The forms of assessment used in the study are well adapted to the learning outcomes of the Program.

2.7 Academic content

2.7.1 Academically updated study offer

The learning outcomes of the study program have gone through one change during the evaluation period to ensure that the program is relevant. Molecular biology is a rapidly developing field, and the learning outcome and content for our courses are updated annually, as an example new methodology, including Cryo-EM and Alpha-Fold are now part of the MOL310 curriculum.

All our courses have research-based teaching, and we keep focusing on visualizing the social relevance in our subjects. As an example, a new course in innovation MOL232, Innovation in industrial biotechnology, was available for our master student's autumn 2021 and spring 2022. This aim was to offer a better connection between molecular biology and possibilities in industry. This was made possible through the hiring of an adjunct group leader from NORCE as Adjunct (II) Professor. Unfortunately, the course had to be discontinued due to the financial situation of the department. Another course available for masters' students from autumn 2022 and then every spring from 2023 is a Bioethics course (MOL270). The aim is for students to be able to assess bioethical problems and understand the normative aspect of ethical evaluation, and topics such as testing of hereditary traits, gene therapy, cloning, stem cells, assisted reproduction, xenotransplantation, use of animals in research and food production, the precautionary principle and DNA analyzes in investigation and the judiciary are discussed. In this course, the students do peer-review by evaluating each other and they are trained in working in groups and oral presentations.

The corona pandemic has given us all a good example of how important molecular biology methodology,

knowledge and research are, and all these topics are well taken care of in the learning outcome of our Program already from the introductory courses of their bachelor's degree such as MOL100 and MOL103 where the central dogma in molecular biology and molecular methods are main part of the curriculum. The students get hands-on training in molecular methods from the second semester of their bachelor's degree, which are followed up to another practical course (MOL222) prior to their master courses (Section 2.3).

2.7.2 Relevance

With a master's degree in molecular biology, graduates have many and diverse job opportunities such as technical positions, and research-related work. Specific examples include human medicine, fish health, Health-Safety-Environment work, and administration, as well as environmental monitoring and public management. The MAMN-MOL is relevant for careers in academic research by pursuing a PhD.

At UiB, it is Sammen (the student association) that has the main responsibility for careers and occupational guidance of the students. They hold courses and provide individual guidance within these topics.

From spring 2022, the Faculty also organize a career week for all study programs at the Faculty. Helix organizes annual career days for the program students (although not during the corona pandemic). Helix has an ongoing communication with multiple businesses in Bergen, both industrial and research oriented. Examples include the SARS-centre, The Institute of Marine Research, and Vaxxinoa. They, together with other businesses, are invited to career days and business presentations every semester, where they present their connections to society, job opportunities, and how a potential workday for a molecular biologist may look like in their company. The students will have the opportunity to talk to the different companies and many give out their contact information.

Students in the Master Program are invited to participate in the MolBio seminars at the department. Here, they are introduced to research groups both from the Department, but also other research institutes in our region, such as Sars-Center, Institute of Marine Research, and the medical environment at Haukeland University hospital. All are significant employers in the Bergen region. These research institutions also offer the master students enrolled in the MANM-MOL thesis projects as their background is highly relevant for their research activity.

2.7.3 For Master's degree studies

The Program reflects the research of the permanent scientific staff at the molecular biology "faggruppe" at the department. Master's projects offered are on ongoing research projects at BIO and other research institutes in our region, such as Sars-Center, Institute of Marine research and at Haukeland University Hospital.

There is a major focus on molecular methods in the mandatory lab course (MOL300 Practical Biochemistry and Molecular Biology, 20 ECTS), one mandatory theoretical course on structural biology (MOL310, 10 ECTS) and 30 ECTS of elective courses. For elective courses, students choose freely amongst several courses from the Department and from the Department of Chemistry. Many students also take courses at the Medical Faculty. See Table 5 for an overview of elective courses that is in active use by our students.

2.8 Scope of work within degree

UiB assumes that the academic year comprises 1500-1800 hours of work for a full-time student (UiB's regulations, §3-1 fourth paragraph). Translated into hours per week, this means from 37.5 - 45 hours per week. On the Masters's Program, we expect a workload of up to 45 hours per week, all study-related activities are included, both organized and unorganized activities. Ideally, organized activities should not make up more than half the workload for a subject, but this will of course vary from subject to subject and how far the student has progressed.

Figure 4 shows an overview of self-reported time use for the students on the Master's Program in molecular biology (the figures are taken from the Study Barometer), Numbers from 2020 and 2021 are combined.

| | Masterprogram i molekylærbiologi Master, Universitetet i Bergen, Bergen | Gjennomsnitt Av alle Biologiske fag, andre |
|---|---|---|
| Læringsaktiviteter organisert av institusjonen (inkludert all undervisning og veiledning, samt praksis hvis relevant) | 25,1 | 19,8 |
| Egenstudier (lese pensum, gjøre oppgaver, delta i kollokvier og annet gruppearbeid, etc.) | 17,7 | 22,0 |
| Betalt arbeid | 3,8 | 6,2 |

Figure 4: Overview of approximately how many hours per week (on average) are spent on organized learning activities, self-studies, and paid work the first year on the master's Program (numbers for 2020 and 2021 combined in this figure)

From the report we see that the average workload is within the expected range with 42,8 hours per week. We notice that the students have somewhat higher organized learning activities that one might assume at this level, but molecular biology subjects include a lot of laboratory practice, and hence more organized activities than might be expected from other biological topics.

We are currently in a process of evaluating the workload of our two mandatory courses in the Master's Program, especially the workload of MOL300 Practical Biochemistry and Molecular Biology course is of interest as students reports that the workload might be too big for 20 ECTS. The course in charge of MOL300 Practical Biochemistry and Molecular Biology course has prepared a report for the Program board meeting December 2022 regarding workload and ECTS, and this is work that will continue for the next period.

2.9 Link to research

The students are exposed to research and developmental work in several ways. First and foremost, the students will during their one-year project (MOL399) be full members of a research group. This involves research group meetings with presentations of the student's own research data, discussions of own data and data of other group members, discussing published research data from external labs, and so on. Students are encouraged to present their research data at national and international conferences, for instance the annual contact meetings of the Norwegian Biochemical Society. Here they will be extensively exposed to ongoing research activities.

Several courses actively use research findings and recent developments in a field in their curriculum. This also includes inviting external lecturers who present their research.

Students are invited to participate in the MolBio seminars at the department, here they are introduced to research groups both from the department, but also other research institutes in our region, such as Sars Center, The Institute of Marine Research, and the medical environment at Haukeland University Hospital

2.10 Internationalization

Until 2020, students from all over the world could apply for the master's Program in molecular biology. However, since 2021 we have not offered international admissions for students outside European Union/EEA/EFTA. We now offer up to five seats for international students from this category each year.

Some of our courses, and especially the elective courses, but also MOL310, is open for incoming students. The Department receives many exchange students every year, especially from departmental Erasmus+ agreements, but also from Faculty of Mathematics and Natural Sciences, Medical Faculty and UiB agreements. In addition, our research groups often also receive European students visiting on traineeships. Taken together with the fact that our employees are internationally recruited, our students are introduced to a multicultural learning environment.

The study plan for MAMN-MOL does not actively facilitate exchange, and students that would like a stay abroad during their master's usually do that as part of their project work. Even if the study plan does not include an exchange stay, there is possibility for exchange in the second spring semester, given that the students can find courses that can replace MOL310. Several students have taken this opportunity to go abroad for an exchange stay during their Master's.

2.11 Internships ("Praksis")

There are no internships allocated through the Masters's Program in molecular biology. However, the elective course BIO298 Workplace Practice in Biology give the students a possibility for internship, and the courses MOL231 Project in Molecular Biology or BIO299 Research Practice in Biology offers students the chance to be part of a scientific group for a semester and work experimentally on a small project. These courses are often taken at bachelor's level but is also available at master level for those who did not take it earlier. Moreover, there are 20 ECTS worth of mandatory laboratory practice in MOL300, and MOL232 Innovation in Industrial Biotechnology offered contact with the biotechnology industry. Unfortunately, this course must be removed from our teaching portfolio due to cuts in staff.

3 Requirements for the academic environment in the Study Supervision Regulations

3.1 Size of the academic environment

The MOL "faggruppe" has a total of 9 permanent and two Adjunct (II) positions, one affiliated professor (20%). Of the 9 permanent staff there are 6 professors and 3 associate professors. The two adjunct positions will both be discontinued from January 2023 due to the economic situation at the department. Of the permanent positions, five are men and four are women (Table 7). The percentage of female scientific staff at MOL from 2023 is 44.4%, and considering the small total number of staff members, the gender balance is good.

Table 7. Overview of scientific staff at MOL, December 2022

| Scientific staff (in first position) – Molecular Biology Section at Department of Biological Sciences | | | |
|---|-------|------|--------|
| | Total | Male | Female |
| Associate Professor | 3 | 2 | 1 |
| Professor | 6 | 3 | 3 |
| Adjunct (II) positions (will be discontinued from 2023) / 20% positions | 3 | 1 | 2 |

Kommentert [FO1]: minor thing i was thinking about, this should be 5, and one 50% or I miscalculate?

Kommentert [ØH2R1]: For the assessment period, we are 6, I think. The 6th position in question is not settled yet.

MOL has from spring 2023 a total of 14 courses (150 ECTS) (at both bachelor and master level) of which two courses are at 100-level, ten courses at 200-level, two courses at 300-level, and 11 of the courses have a course in charge from the MOL scientific staff. As of today, the academic background of our scientific staff covers the learning outcome of our Program and courses well, but the low number of scientific staff in the MOL group makes the professional environment very vulnerable.

3.2 The academic environment's educational competence

The Department follows to the current guidelines for pedagogic training of teachers. Therefore, all course leaders have, or is in the process achieving, basic pedagogical competence at the University of Bergen. In addition, several teachers at BIO have taken the course MNPED660 Collegial Teaching and Learning in STEM Education.

Since the corona lock-down, The Department has together with bioCEED arranged digital teacher's meetings with an emphasis on sharing experience and increasing competence. bioCEED further offers seminar series that deals with different teaching and learning topics, and they arrange annual teachers retreats at BIO with the aim to promote an active and collegial teaching culture at the department.

The teaching assistants, PhD's, postdocs, and technicians involved in teaching courses at BIO are offered a TA-course held by bioCEED, developed with their particular needs in mind.

3.3 Academic management

At the department, there are four separate program boards and one of these has the overall responsibility for the bachelors' and masters' Program in Molecular Biology.

The scientific staff have regular meetings (1-2 times per semester), where different teaching and learning topics relevant for MOL-courses are up for discussion, and proposals from these meetings are passed on to the Program board.

The program board's tasks, structure and representation follow the UiB's requirements. The program board consists of program board chair (one of the permanent academic employees), "faggruppe" group leader (permanent academic employee), a third member who is also a permanent academic employee, two student representatives, a secretary, and an observer picked from the rest of the MOL staff. The student organization, Helix, appoints the two student representatives.

The program board has two to four meetings a year. Urgent matters outside the meetings are mostly done by circulation on e-mail.

3.4 The academic environment's subject-specific competence

The academic activity is oriented around addressing research questions in fundamental biology. The scientific staff makes use of a wider selection of model organisms (*Drosophila melanogaster*, *Cyclopeterus lumpus*, *Nemostella vectensis*, in addition to the *Danio rerio* and *Saccharomyces cerevisiae*). The group contributes to research on the fundamental biomedical nature of cancers, ageing, neurodegeneration, as well as towards fundamental question regarding marine creatures' development, health, and immunology. We have the methodology, infrastructure, and staffing portfolio to pursue such scientific questions from molecules to organism, or from organism to molecules, and Master projects usually explore a problem along this axis. Researchers at MOL collaborate widely to look at these topics in a societal (in the case of fundamental biomedical research) and ecological (in the case of fundamental biological research) context. In the Figure 5 below, scientific production for the whole department can be compared to other departments at the Faculty of Mathematics and Natural Sciences. Specifically, for MOL, our researchers routinely publish in well-regarded international journals, and occasionally publish in highly regarded, prestigious journals such as *Nature* and *Cell*.

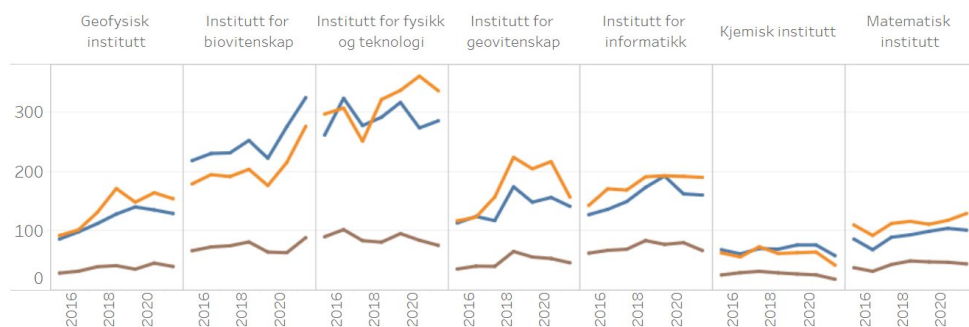


Figure 5. Number of publications (blue), number of publication points (orange), author shares (brown), points per first position (gray), points per UFF person-year (green) at the MN faculty in the period 2017-2021 (Retrieved <https://bibliometri.w.uib.no/det-matematisk-naturvitenskapelige-fakultet/> 24.11.2022)

3.5 International and national cooperation

National and international collaborations that are relevant for the Master Program is maintained through scientific collaborations by the permanent academic staff. Also, such collaborations are usually formed and consolidated in a way that follows grant money. The MOL environment has been reasonably successful in attracting competitive funding and maintaining the collaborations that follows these projects. Also, collaborations can be seen in the publications that are associated with our permanent staff as most of these have multiple national and international authors. Some Master projects are published in such papers. Our external Master thesis examiners are usually well-regarded national capacities in different sub-specializations of molecular biology. As has been emphasized several times, our master students pick projects at The Sars Center, The Haukeland University Hospital, The Department of Biomedicine, and The Institute of Marine Research – entities we seek to maintain good collaborative relationships with.



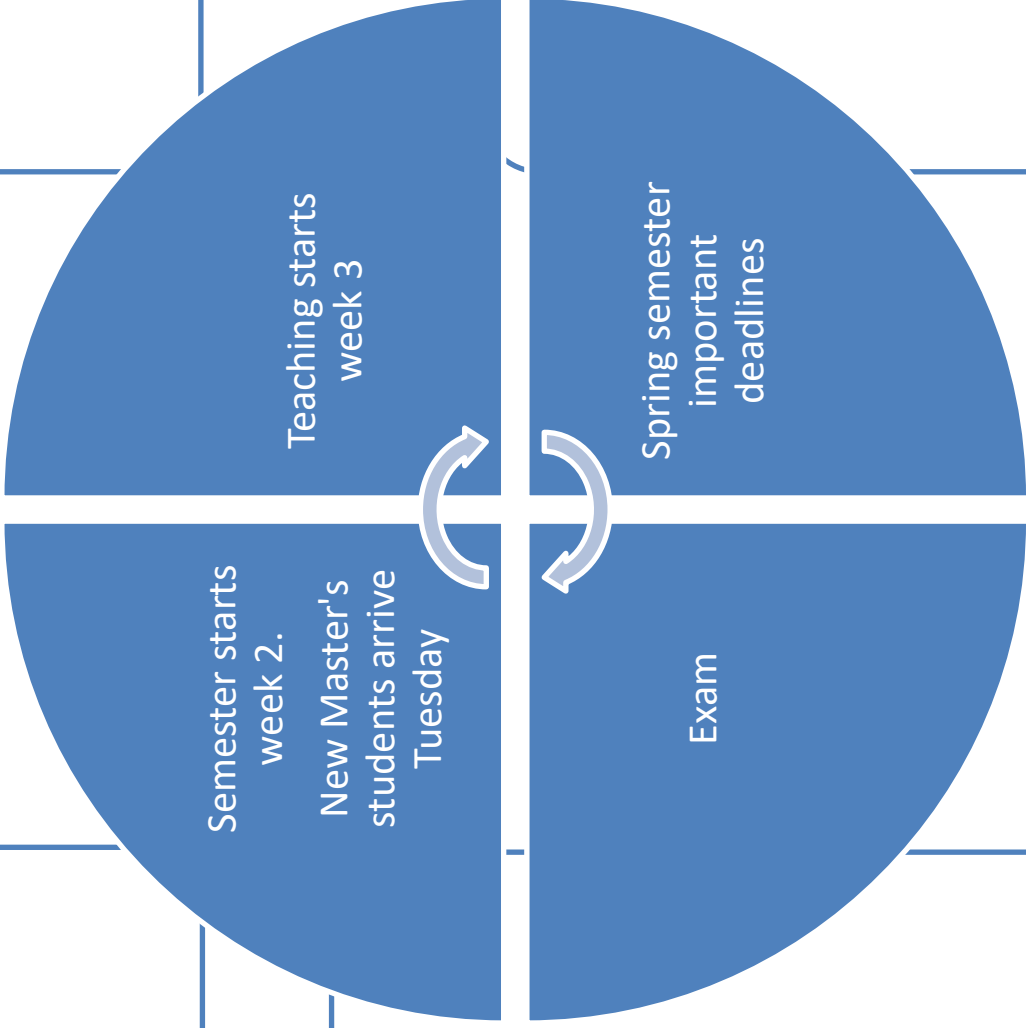
Figure 6: Fraction of publications with international co-authorship (top), and author fractions of publications at Quality Level 2 (bottom).

| Emne | Sist evaluert gammel ordning | Neste planlagte emneevaluering | | | | | |
|--------|------------------------------|--------------------------------|------|--------------------|--|--------------------|------|
| | | 2020/2023/2026 osv | | 2021/2024/2027 osv | | 2022/2025/2028 osv | |
| MOL100 | VÅR 2020 | vår (bytter semester) | | | | | høst |
| MOL103 | nytt | | | | | | |
| MOL200 | HØST 2018 | | høst | | | | |
| MOL201 | VÅR2018 | | | vår | | høst | |
| MOL203 | Høst 2018 (utgåar) | | | | | | |
| MOL204 | Høst 2019 | | | | | | høst |
| MOL210 | Høst 2018 | | høst | | | | |
| MOL213 | Høst 2019 | | | | | | høst |
| MOL215 | Vår 2020 (utgåar) | vår | | | | | |
| MOL217 | Vår 2014 | | | Vår | | | |
| MOL221 | Vår 2018 | | | Vår | | | |
| MOL222 | Vår 2019 | | | | | vår | |
| MOL231 | høst 2013 | | høst | | | | |
| MOL300 | høst 2018 | | | | | høst | |
| MOL310 | Vår 2019 | | | vår | | | |
| MOL320 | Vår 2019 | | | | | vår | |

Spring semester

- Student deadline for register for courses Wednesday week 2

- Canvas (MittUJB) should be updated with Curriculum, groups, Schedule, rules for leave og absence and for "mappe" assesment it should also be stated in detail how this will be done
- Course evaluation from last semester should be finalised and sendt to Study advice and Head of department



Semester starts
week 2.
New Master's
students arrive
Tuesday

Teaching starts
week 3

Exam

Spring semester
important
deadlines

- publish the assessment guidelines (sensorveiledning) on "MittUJB" for each course exam, it has to be published before or at the same time as the students get their grades
- if a student ask for justification of a degree you have a week to reply- notify study administration when reply is given.
- Inpera exams must be finalized three working days before exam date
- Exam assesments deadline are three weeks after exam dates (including holidays), but no later than 10. January for late exams. Let Grethe now when assesment is done so she can publish results
- Oral exams have to have external sensors

- 1. February: Send in any requests for changes in your upcoming course for the fall (Epn).
- 15. February: Inform study adm of needs regarding Autumn like teaching assistants, Guest lectures, exams++
- March: Autumn teaching and exam calendar is planned. Dialog with study administration when needed..
- 2. May: Enter curriculum for autumn semester in Leganto
- 1. June: Publish your Autumn course in Canvas

Autumn semester

- Student deadline for register for courses Wednesday week 33

- Canvas should be updated with Curriculum, groups, Schedule, rules for leave og absence and for "mappe" assesment it should also be stated in detail how this will be done
- Course evaluations from last semester should be finalized end of August

Semester starts
week 33.
New Master's
students arrive
Tuesday

Teaching starts
week 34

- publish the assessment guidelines (sensorveiledning) on "MittUIB" for each course exam, it has to be published before or at the same time as the students get their grades
- If a student ask for justification of a degree you have one week to reply- notify study administration when reply is given.
- Inpera exams must be finalized three working days before exam date
- Exam assessments deadline are three weeks after exam dates (including holidays), but no later than 30 June for late exams. Let Grethe now when assesment is done so she can publish results
- Oral exams have to have external sensors

Exam

Spring semester
important
deadlines

- September: Send in any requests for changes in your upcoming course for the NEXT YEAR (Epn)- BIG CHANGES are reported in Autumn for a year in advance.
- 15. September: Inform study adm of needs regarding Autumn like teaching assistants, Guest lectures, exams++
- September: Spring teaching and exam calendar is planned. Dialog with study administration when needed..
- 1. November: Enter curriculum for autumn semester in Leganto
- 1. December: Publish your Autumn course in Canvas

Nytt MOL-emne

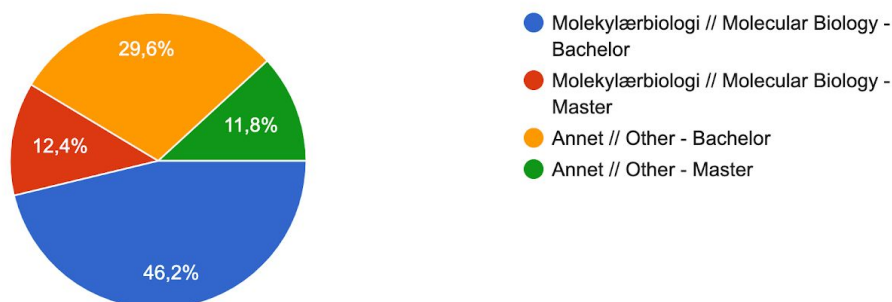
Resultater fra undersøkelsen sendt ut MOL-studenter, og til alle øvrige studenter ved MatNat på MittUiB.

Antall deltakere: 186

Hvem deltok i undersøkelsen

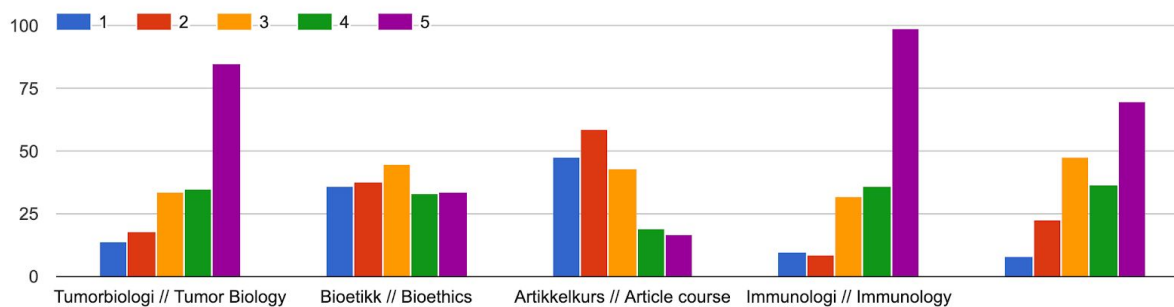
Studie // Study

186 svar



Oversikt over ønske om opprettelsen av følgende nye emner

Fra venstre: tumorbiologi, bioetikk, artikkelkurs, immunologi og innovasjon i bioteknologi.



Figur- og tabellforklaring: 1 = ikke interessert, 5 = veldig interessert

Oppsummering av figur

| Emne | 1 | 2 | 3 | 4 | 5 |
|---------------------------|----|----|----|----|----|
| Tumorbiologi | 14 | 18 | 34 | 35 | 85 |
| Bioetikk | 36 | 38 | 45 | 33 | 34 |
| Artikkelkurs | 48 | 59 | 43 | 19 | 17 |
| Immunologi | 10 | 9 | 32 | 36 | 99 |
| Innovasjon i bioteknologi | 8 | 23 | 48 | 37 | 80 |

Ønsker om andre emner

Flere personer kommenterte følgende (i synkende rekkefølge etter antall):

Nevrologi
Genetikk
Flere labemner/praksis
Virologi
Toksikologi
Epigenetikk

Kun én person som kommenterte:

Molekylær evolusjon
Et emne som krysser mol med andre emner som fysikk, informatikk, siv.ing., og/eller matematikk
Mikrobiologi
Fysiologi
Patologi
Humantoksikologi
Farmakologi
Enzymer (katalysemekekanikk, kinetikk, metalloenzym, biosyntese av enzym/metalloenzym, syntetisk enzym/ kunstig enzymdesign, etc)

Andre kommentarer

1. Lab der det tar seg gjøre
2. Vi trenger flere undervisere, spesielt professorer, da dette kan øke kvaliteten på undervisningen. Per nå er det for mye arbeid på de gjenværende underviserne våre og dette går ut over emnenes kvalitet.
3. Burde også være fokus på å forbedre emnene vi allerede har, spesielt nå når ting er digitalt er mol emnene lite engasjerende
4. Artikkkelkurs og innovasjon kunne kanskje vært to 5stp emner eller blitt slått sammen til ett?
5. Temaer som hadde vært fint å se i...
Innovasjon i bioteknologi: Instrumentering og konkret anvendelse i industri
Immunologi: Autoimmunitet, endokrinologi
6. FARM260: hadde trengt en reel oppgradering av kollokvie-løsningen sin vår2021. Mangler fasit på kollokviene, samt faktisk gjennomføring av kollokvier. Står oppført kollokvie, men er ikke kollokvie da...
7. We must work together to develop healthy food, we are what we eat.
8. Veldig gode forslag!

9. The article course should have a large, indept section on sources. How to find good sources, what sources are good for different elements in writing and how to write sources. This should be better than the library course on sorces. The course should also teach good methods for reading articles, how to extract important information, notetaking and how to use it when writing on your own.

I have previously taken the tumorbiologi course, with Randi Hovland. I thought that was a very good course.

I have also had the bioethics course, with Dag Helland. I think this is a very important course, it adds ethics and differing points of views, that are important to think about. The different lectureres, gave important dept from new angles, to our study. Unfortunately when discussing the subject with my fellow students, they often felt it was unnecesarry to hear some of the views. Particularly the chrisitan opinion, was dismissed, as something with no place in the discussion. I believe a more intentional focus on the role of differing views, why it is important for us as molecular biologist to have them in mind and how to communicate with those that know less about the subject than us, will be beneficial to the course.

10. Mer fokus på analytisk

11. Artikkelkurs hadde vært sykt bra hvis det også var litt opplæring i Latex og noen Latex-pakker. Hva slags pakker bruker ansatte og stipendiater på MOL?

Immunologi høres sykt nice ut

Håper flere er interessert i enzymforslaget mitt