

# 3-year course evaluation

**Course: MOL222**

**Semester and year for completed course evaluation: autumn 2025**

**Name of course coordinator: Evgeny Onishchenko**

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## Content

### **1. Describe and justify pedagogical choices in the course, reflect on the students' learning as a result of these choices**

MOL222 is an advanced practical course in molecular biology in the 4th (spring) semester of MOL Bachelor program. The course capacity is around 40 students. It is run by two permanent staff teachers, one course engineer and four TAs. Syllabus includes 3 lectures, 2 QA sessions (90 min each), 2 scientific writing assignments with a written feedback form from the teachers. The practical part consists of two modules that in total comprise 2 days of computer-based exercises and 5 days of lab practice. Course also includes a training quiz on the molecular and cell biology techniques.

The course builds upon learning outcomes from both theoretical subjects (MOL100, KJEM100, MOL200) and practical subjects (MOL102) in MOL Bachelor program related to molecular biology. Specifically, building on MOL102, MOL222 further develops practical competences in molecular biology that are necessary to qualify for further studies, e.g., at the master's level.

The course provides theoretical and practical training in common molecular biology techniques including bioinformatic and practical aspects of designing a molecular cloning project, DNA gel-electrophoresis, spectrophotometry, PCR, sanger DNA sequencing, plasmid propagation in bacteria, plasmid purification, restriction digestion, overexpression of genes in mammalian cells, immunolabelling, microscopy and basic image analysis.

As learning outcomes, students gain hands-on experience from modern bioinformatics tools: molecular cloning environment Benchling, NCBI sequence alignment, image analysis with Fiji; citation management with EndNote. Second pillar is training in scientific communication including documentation of experimental procedures and results, explaining the background of a research project and summarizing study outcomes in a standard IMRaD format. Third, is training in collaborative work practices through group work on the IMRaD lab report guided by the teachers written feedback.

Course assessment includes an individual 3-hour school exam with ~ 30 MCQ focused on testing understanding the molecular biology techniques and terminology + a portfolio assessment the form of IMRaD lab report developed throughout the course. Students get an overall grade with an exam/ report weighting of 40%/60%.

### **2. Follow-up of previous evaluations.**

Compared to the previous evaluation period the course has slightly shifted focus towards reinforcing understanding the practical aspects of molecular biology techniques and terminology and in better evaluating the individual understanding of the subject. This is implemented by training in solving practical and theoretical problems in molecular and cell biology through an

online quiz accessible throughout the course and through QA sessions. In the last 2 years the course also implements MCQ based individual school exam as an additional form of assessment. The new grading scheme with exam/report weighting of 40%/60% aims to more fairly evaluate the individual subject knowledge.

**3. Student evaluation and other evaluations that are relevant to the course.**

Response rate to surveys was stable around 40% within last 3 years. The course workload was considered fair by almost 100% students. All practical aspects of the course are generally well appreciated (~90% god eller svært god). An exception was a cloning workshop, but it has greatly improved hitting ~60% svært god by 2025. The theoretical parts are generally less appreciated but also showed a positive dynamic in 2022-2025 (~ 60%, 70% and 80% god eller svært god, respectively). Of note the latter category has not received grade less than “verken eller” in 2025.

As a form for teaching communication two new forms were implemented including online training quiz and QA communication via mitt discussions. Both new forms were well received (~ 100 and 90% god eller svært god/nyttig) which is better than the traditional forms - physical QA sessions and written report feedbacks (~60% and 75% god eller svært god/nyttig, respectively). The use of new forms can therefore be extended in the next years

From the assessment perspective, the exam is a new form in this course, and it is generally less liked by the students than the portfolio assessment (~ 40% found exam too difficult/unnecessary). In a few written comments there is an opinion that this form is excessive, and the exam questions have room for improvement. However, this seen to positively affect the overall grades and positively impacts the learning outcomes. In the next iterations the exam scope shall be brought in a better sync with the quiz materials and lectures.

**4. Experiences from others who contribute to the teaching of the course, both students and staff.**

According to personal communication with TAs the course is intense but is well-organized.

**5. The percentage of failure in the course.**

Report in Tableau: [https://rapport-dv.uhad.no/#/views/SVP3Emnegjennomfring\\_1/Emnegjennomfringslister?iid=2](https://rapport-dv.uhad.no/#/views/SVP3Emnegjennomfring_1/Emnegjennomfringslister?iid=2)

## Velg emne her:

MOL222 Eksperimentell molekylærbiologi II

Strykprosent i perioden:

1.0%

Karaktersnitt i perioden:

3.4

Snittkarakter kan kun beregnes for emner med karakterskala. Skalaen A-F er konvertert til tallverdier hvor A=5, B=4, C=3, D=2, E=1, 0 er stryk

### Emnegjennomføring oversikt pr år

ARSTALL	Antall kandidater	Antall kandidater be..	Bestått kandidater	Antall kandidater st..	Strykprosent kandidater	Snittkarakter
2015	32.00	31.00	30.00	1.00	3.2%	3.53
2016	28.00	26.00	24.00	2.00	7.7%	3.92
2017	39.00	39.00	39.00	0.00	0.0%	3.54
2018	29.00	29.00	29.00	0.00	0.0%	3.41
2019	34.00	33.00	33.00	0.00	0.0%	3.42
2020	41.00	41.00	40.00	1.00	2.4%	3.43
2021	35.00	34.00	34.00	0.00	0.0%	3.38
2022	48.00	45.00	45.00	0.00	0.0%	3.24
2023	46.00	46.00	46.00	0.00	0.0%	3.24
2024	39.00	39.00	39.00	0.00	0.0%	3.51
2025	40.00	40.00	40.00	0.00	0.0%	3.55

ARSTALL

(All)

TERMINKODE

(All)

VURDTIDKODE

(All)

VURDKOMBKODE

(All)

FAKULTET\_emne

(All)

INSTITUTT\_emne

60 Institutt for biovite...

### Emnegjennomføring oversikt fordelt på studentens studieprogram

STUDIEPROGRAM	Antall kandidater	Antall kandidate..	Bestått kandidat..	Antall kandidate..	Strykprosent kan..	Snittkarakter
BAMN-MOL Bachelorprog..	372.0	364.0	361.0	3.0	0.8%	3.5
BAMN-BIO Bachelorprogr..	17.0	17.0	17.0	0.0	0.0%	3.1
MAMN-BIO Masterprogra..	12.0	12.0	12.0	0.0	0.0%	3.1
BAMN-NANO Bachelorpro..	4.0	4.0	4.0	0.0	0.0%	4.0
ÅRMN Realfag (årsenhet)	3.0	3.0	2.0	1.0	33.3%	3.5
MAMN-MOL Masterprogr..	1.0	1.0	1.0	0.0	0.0%	4.0
ZBAMNFAK Gjestestuden..	1.0	1.0	1.0	0.0	0.0%	2.0
ZMAMNFAK Gjestestuden..	1.0	1.0	1.0	0.0	0.0%	4.0

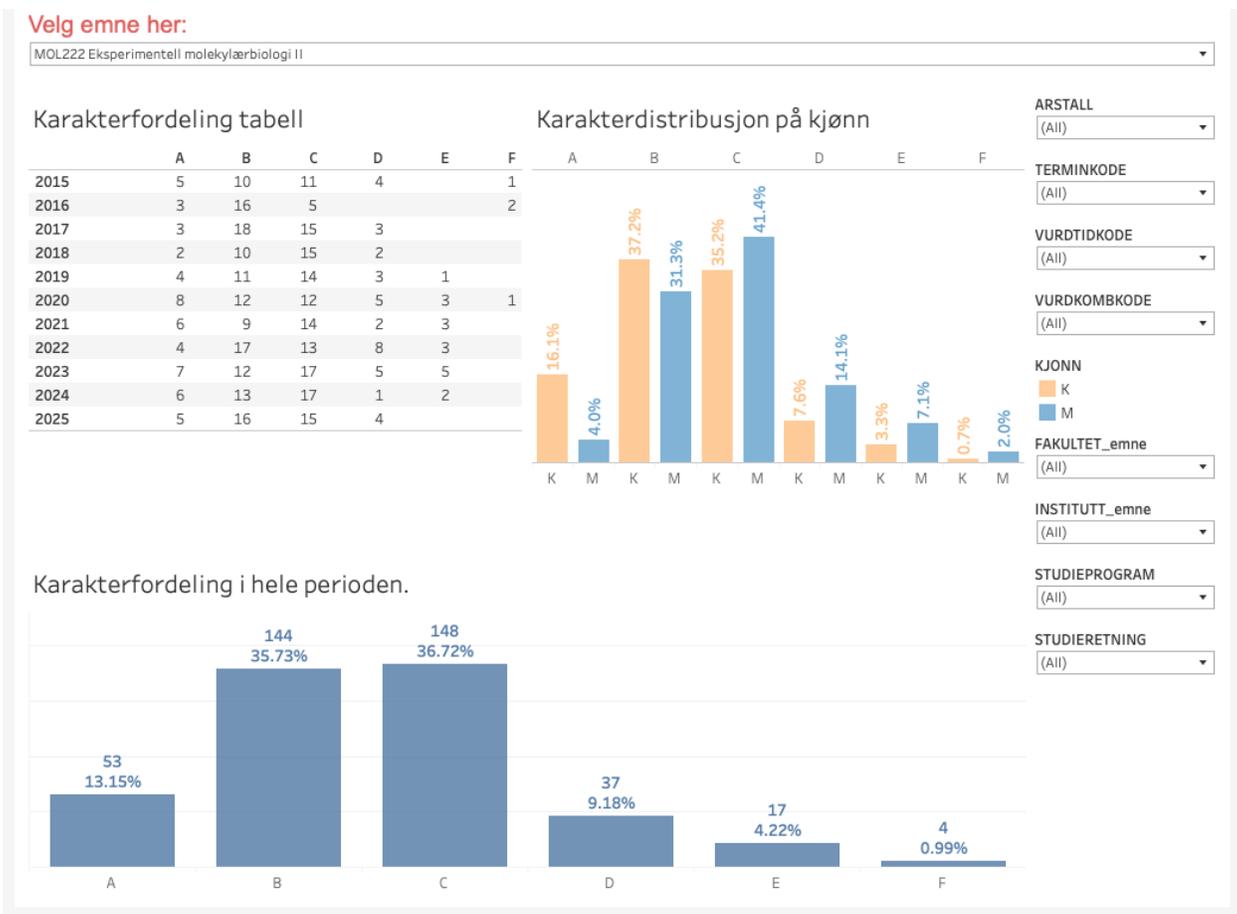
STUDIEPROGRAM

(All)

STUDIERETNING

(All)

During last 3 years (from the last assessment in 2022) the course dropout rate was 0% out of total 125 participants.



The grade dynamics in the last 3 years was positive, and the mean grade grew by 0.3 from 3.24 to 3.55.

## 6. Possible peer review.

MOL222 has not been peer-reviewed since 2022

## 7. Assessment of correspondence between the course's learning outcome description and teaching, learning and assessment methods.

To better reflect the learning outcomes the formal course description shall be slightly changed to:

- remove western blots/protein work from the scope (it is now taken care of I believe in MOL102/MOL300)
- remove multiple mentions of lab safety routines (once is enough)
- to knowledge: add basic familiarity with bioinformatic tools used for molecular cloning and microscopy image analysis; add thermology used in experimental molecular biology
- to skills: add principles and steps in designing a molecular cloning project; collaborative work; written communication of research project outcomes according to IMRaD standard.

**8. Assessment of whether the progress and structure of the course is in accordance with the established goals for the course and program.**

The course is placed in the 4th semester of MOL Bs program. The placement is generally well aligned specifically within the Bachelor MOL program. It requires as perquisites some theoretical background in molecular and cell biology (MOL100) and basic molecular biology lab skills (MOL102). It is equipping students with essential practical laboratory skills, basic undertraining of molecular biology methods and initial scientific writing skills to proceed with the master's degree. The course placement may benefit from better theoretical background in molecular and cell biology e.g. that MOL201 has been completed before.

**9. In those cases where there is associated practice or work relevance in the course, it must be evaluated whether the scheme works satisfactorily.**

N/A