EMNERAPPORT – INSTITUTT FOR BIOMEDISIN

ANNUAL EVALUATION REPORT – DEPARTMENT OF BIOMEDICINE

Emnekode: *COURSE CODE:*	**BMED360**	Semester / år: SEMESTER / YEAR:	**Spring semester 2020**
Emnenavn: *COURSE NAME:*	*In Vivo Imaging and Physiological Modelling*		
Emneansvarlig: *COURSE COORDINATOR:*	**Arvid Lundervold**	Godkjent: *APPROVED:* (admin.)	Studieleder IBM 26.08.2020
Rapporteringsdato: *DATE OF REPORT:*	16-Aug-2020		

INNLEDNING / *INTRODUCTION*:

Kort beskrivelse av emnet, inkl. studieprogramtilhørighet. Kommentarer om evt. oppfølging av tidligere evalueringer.

SHORT COURSE DESCRIPTION, INCLUDING WHICH STUDENTS/CANDIDATES MAY ATTEND. COMMENTS TO CHANGES BASED ON PRIOR EVALUATIONS.

In Vivo Imaging and Physiological Modelling (10 ECTS) is a course mainly offered to students with a background in physics, computer science, mathematics or statistics, on bachelor level. The course is also among courses that have been offered for PhD candidates attending the Norwegian Research School in Medical Imaging, http://www.ntnu.edu/medicalimaging

The goal of the course is that the participants shall obtain theoretical and practical knowledge on functional and quantitative in vivo imaging in man and animal using magnetic resonance imaging (MRI) and computer-based image analysis.

7 students made an heterogenous group registered for examination this semester;

- 1 Master student in Biomedical Sciences (MAMD-MEDBI),
- 1 Master student in Global Health (MAMD-GLOB),
- 1 PhD candidate (PHDMD),
- 2 visiting students with a one-year study right (1 ÅRMO and 1 INTL-MED) at The Faculty of Medicine, as well as
- 1 Master student in Chemistry (MAMN-KJEM), and
- 1 Master student in Agriculture and Seafood (MAMN-HAVSJ) at The Faculty of Mathematics and Natural Sciences.

For course descriptions, visit http://uib.no/course/BMED360 (and https://github.com/computational-medicine/BMED360-2020)

For previous evaluation reports, please visit https://kvalitetsbasen.app.uib.no/popup.php?kode=BMED360

Changes due to the outbreak of global COVID-19 (coronavirus disease) spring semester 2020:

- The teaching period for this course was week 17 (April 21) to week 23 (June 5). The spread of SARS-CoV-2 virus made Norway to go for "lockdown" the 12th March, this included closing the university's campuses and facilities for teaching and examination. At that time, none of the teaching in BMED360 had started.

- Teaching consisted of lectures (8) and labs (7) on Zoom. Altogether ten Zoom meetings with motivation lectures and Jupyter notebook presentations were organized, plus one Zoom meeting for the MCQ/Quiz as part of the exam, and a final Zoom meeting for the oral exam / project presentation. This year we also included a short ad hoc curriculum on COVID-19 and "outbreak science" supported by Jupyter notebooks in Python (e.g https://github.com/computational-medicine/BMED360-2020/blob/master/outbreak-science/epi/simulitis-outbreak.ipynb)
- This semester all material in the course were fully digital and openly and publicly available on GitHub as https://github.com/computational-medicine/BMED360-2020 (this is an important milestone for the course). Links for Zoom meetings and other student-specific information were available on a private repository (https://github.com/arvidl/BMED360-2020-students), thus the load on UiB Canvas (i.e. https://mitt.uib.no/courses/22178) was minimal.
- The extensive use of GitHub was a very successful and accessible solution for this type of (dry-lab) course.
- Grading of students this semester was «Pass / Fail» (not «A-F» as in previous years) - decided by "Programutvalg for biomedisin".
- The evaluation procedures, however, were very similar (50 items MCQ/Quiz with a 60 min time-limitation, and next day 20 min presentation of personal project with the presence of the external sensor, the instructor and peer students, followed by 10 min discussions with the sensor – all on Zoom.
- Initially, 8 students signed up for the course, 1 student never showed up and 3 more students had too high teaching load in other courses and could not fulfill the midterm assignment. They considered participation next year.

STATISTIKK / *STATISTICS* (admin.)**:**

Antall vurderingsmeldte studenter: *NUMBER OF CANDIDATES REGISTERED FOR EXAMINATION:*	**7**	Antall studenter møtt til eksamen: *NUMBER OF CANDIDATES ATTENDED EXAMINATION:*	**4**

Karakter-skala *GRADING SCALE*	*«Bestått/Ikke bestått»* *«PASS/FAIL»*	**Bestått / *PASS*:**	4	**Ikke bestått / *FAIL*:**	-

KOMMENTARER TIL KARAKTERFORDELINGEN / *COMMENTS TO THE STATISTICS*:

Emnerapporten utarbeides når sensuren etter ordinær eksamen i emnet er klar. For muntlige eksamener er da resultatfordelingen endelig, men for skriftlige eksamener kan endelig resultatfordeling avvike noe om evt. klagebehandling ikke er fullført.

THIS REPORT IS PREPARED AFTER ORDINARY EXAMINATION. FOR ORAL EXAMS, THE RESULTS ARE FINAL, FOR WRITTEN EXAMS, THE FINAL GRADING DISTRIBUTION MAY DIFFER SLIGHTLY IF CANDIDATE COMPLAINTS/APPEALS HAVE NOT BEEN PROCESSED.

The final grade is based upon an oral presentation of a personal project (80%) in combination with a MCQ / Quiz test (20%). In order to pass, the students also have to get approved a midterm assignment "The kiwifruit segmentation challenge".

FS580.001 Resultatfordeling

Eksamen: BMED360 0 M10 2020 VÅR
In vivo avbildning og fysiologisk modellering - Muntlig 10,0sp
Karakterregel: Beste: Bestått, Bestått: Bestått, Dårligste: Bestått
-

	Totalt	
Antall kandidater (oppmeldt):	7	
Antall møtt til eksamen:	4	
Antall bestått (B):	4	
Antall stryk (S):	0	0%
Antall avbrutt (A):	0	
Gjennomsnittskarakter:	,00	
Antall med legeattest (L):	0	
Antall trekk før eksamen (T):	0	

SAMMENDRAG AV STUDENTENE SINE TILBAKEMELDINGER */ SUMMARY OF EVALUATIONS GIVEN BY THE STUDENTS*

Spørreundersøkelse via Mitt UiB, annen evaluering, tilbakemelding fra tillitsvalgte og/eller andre.

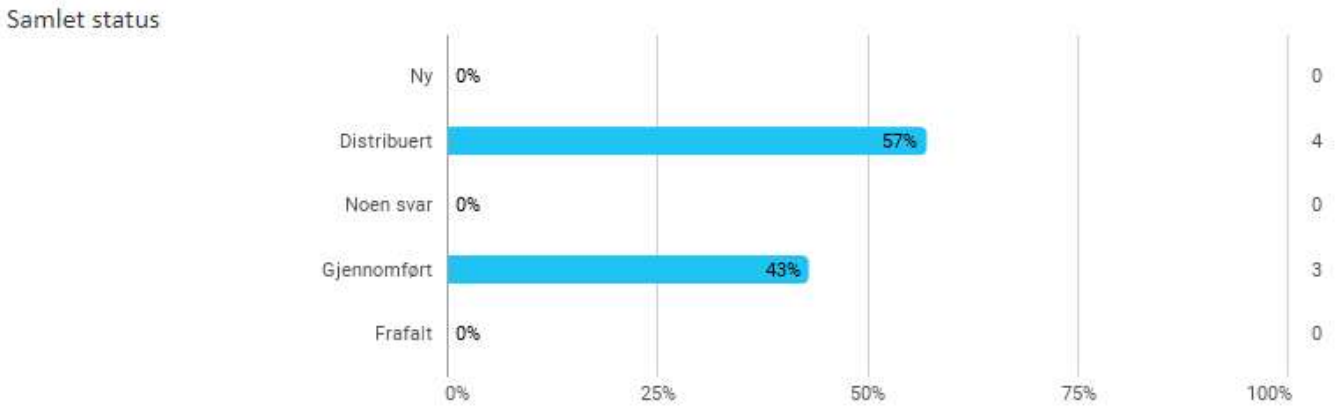
COURSE EVALUATION ON MITT UIB, OTHER EVALUATIONS, RESPONSES FROM THE STUDENT REPRESENTATIVES AND/OR OTHERS.

First semester using SurveyXact as the digital evaluation system. Some of the questions were Multiple Choice Questions (MCQ), while others opened up for the students to give their own opinion as written text.

The survey was set up as an anonym survey, and distributed to the students by use of their E mail addresses at UiB. The Survey was distributed the 11th of May to the students registered for the exam. Reminders was sent the 25th May and 6th Juna to those that hadn't responded before.

The attendees were asked if they have had previous courses in this subject, about the academic content, the organization and the educational level of the teaching, and asked to evaluate the total workload of the course. They were asked to give their responses about the lectures and practical exercises, the course material, and what they appreciate – or found disappointing – about the course, as well as the exam and learning outcomes.

When the survey closed the 12th June, responses from 3 students (43%) was registered.



RESULTS:

In general, the course was very well received and rated by the students. A few comments for improvements:

- Perhaps some demonstration lectures on the usage of imaging software would be nice! Not a disappointment, but I think this would be a very interesting inclusion.
- As the exercises aren't mandatory it's hard to evaluate them in detail. Some were very helpful to the course, others served more as further reading and exploration of the field.
- An excellent introduction into the biomedical imaging field. An excellent transition for me from a bachelor's to master's studies. Self-learning and learning by doing is a new skill I have learnt in this course, and it will benefit me greatly in my studies.

EMNEANSVARLIG SIN EVALUERING OG VURDERING / *EVALUATION AND COMMENTS BY COURSE COORDINATOR:*

Faglæreres vurderinger av emnet. *TEACHER COMMENTS.*

Eksempel: Kommentarer om praktisk gjennomføring, undervisnings- og vurderingsformer, evt. endringer underveis, studieinformasjon på nett og Mitt UiB, litteraturtilgang, samt lokaler og utstyr.

EXAMPLE: COMMENTS ABOUT PRACTICAL IMPLEMENTATION, TEACHING AND ASSESSMENT METHODS, IF NECESSARY. FUTURE CHANGES/CHANGES IN PROGRESS, STUDY INFORMATION ON THE INTERNET AND MITT UIB, LITERATURE ACCESS, LOCALES AND EQUIPMENT.

Ideally, the BMED360 course should be a blend of physical interactions with the students (motivation lectures, problem solving sessions - probably less hours than in previous years) and fully digital learning resources according to the mantra – "learning by doing".

The BMED360 course is now fully and openly available with all teaching material in English (lectures, data, code, links to open access articles, etc.) on GitHub. This makes it very flexible and suitable for wider distribution and for re-use of components in other courses, inside and outside UiB (e.g. Open Educational Resources in Computational Biomedicine and the NordBioMedNet virtual Seili-2020 Summer School - https://github.com/oercompbiomed/Seili-2020, where part of the protected teaching material and student-specific information were on Canvas at the Karolinska Institutet).

MÅL FOR NESTE UNDERVISNINGSPERIODE – FORBEDRINGSTILTAK / *PLANNED CHANGES FOR THE NEXT TEACHING PERIOD – HOW TO BE BETTER:*

Only minor adjustments in the GitHub course material will be considered for the Spring 2021 version of the course, e.g. more exercises in the notebooks, and with walk-throughs by the instructor. Also, some updates on MittUiB (https://mitt.uib.no/courses/22178) should be performed, and some links on the course description page (https://www.uib.no/en/course/BMED360) should be corrected (e.g. linking to GitHub rather than http://sites.google.com/site/bmed360 or http://sites.google.com/view/bmed360). We should also consider a reduction in physical teaching hours next time the course is given.