Minutes of the inter-university meeting UGent/VUB Master of Science in Biomedical Engineering – September 22nd 2016


Present: Patrick Segers, Johan Stiens, Mathias Polfliet, Charlotte Debbaut, Andre Skirtach, Maaike Op De Beeck (via Skype), Herbert De Smet (via Skype), Silke Roegiers (BEAM), Vincent Van Eeghem, Irene Raadschelders, Luc Fockedey (SJM), Mathias Verhelst (Siemens), Herbert De Breuck (Luxilon)

Location: VUB (campus Etterbeek), Building K, 2nd floor, Room K.2.Auditorium 4

1. Formal approval of the minutes of the meeting of March 16, 2016

The study programme committee of the Master of Science in Biomedical engineering (SPCmaBME) formally approves the minutes of the previous meeting of March 16, 2016.

2. Composition of SPCmaBME 2016-2017

Members ZAP:
UGent: Patrick Segers (FEA, voorzitter), Stefaan Vandenberghe (FEA), Pascal Verdonck (FEA), Pieter Rombouts (FEA), Carlos De Wagter (FG), Peter Dubruel (WE), Klaus Bacher (FG), Roel Van Holen (FEA)
VUB: Johan Stiens (IR, vice-voorzitter), Aldo Scafoglieri (GF), Erik Cattrysse (LK), Dirk Verellen (GF), Michel Sonck (IR), Jef Vandemeulebroecke (IR), Nico Buls (UZ/GF), Iris De Graeve (IR)

Members AAP/OAP: NN (UGent), Mathias Polfliet (VUB)

Students: NN, NN, NN, NN, NN, NN, NN.

Advisory members: ZAP/AAP/OAP involved in MSc Biomedical Engineering

External advisory board: Maarten De Vleeschouwer (Materialise), Peter Dierickx (AZ Maria Middelares), Luc Fockedey (St-Jude Medical), An Fremout (Federaal Agentschap voor Nucleaire Controle), Carl Van Himbeeck (Cochlear), Herbert De Breuck (Luxilon Industries NV), Toon Van de Ven (Siemens Healthcare).

Note:
- The SPCmaBME formally approves to remove Falk Berten (Sensotec), Dirk Debusscher (AGFA Healthcare) and Filip Vanhavere (SCK*CEN) from the external advisory board. They have not responded to any emails or attended any meetings in 2 years.
- OAP at UGent: OAP representation is put forward by OAP; applicants should apply via candidacy @ Zephyr

3. Announcements/communications

3.1. Registration of new students

- @UGent: dd. 22/9: in regular MSc: 16 students (3 registered in Dutch MSc) + 7 incoming via international MSc. Only 2 international students (China) in regular program.
- @VUB: dd 23/9: In regular MSc: 2 + 5 international students.

It is noted by Patrick Segers, that a large discrepancy exists between the number of applications for international students at VUB and UGent, with VUB receiving the larger part of these applications. It is suggested this is caused by better PR, higher visibility of Brussels in an international context or administrative issues at UGent.

3.2. Lecturers/switches

- Dirk Verellen has become department head of Medical Physics Radiotherapy at University of Antwerp, what has become his principal address. He remains in function as Professor of Biomedical Physics within the Faculty of Medicine and Pharmacy of VUB, and there is no change in his commitments to the MSc program.

- Abigail Swillens will leave UGent (move to Barco). She was responsible lecturer for “From Medical Image to Computer Model” with Patrick Segers as co-lecturer. Patrick Segers will become responsible lecturer, with collaboration from Charlotte Debbaut.

3.3. Calendar - planning

To allow for a better planning, we aim to schedule OCs and important events well in advance to allow people to attend.

<table>
<thead>
<tr>
<th>OC meetings</th>
<th>Events</th>
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<tbody>
<tr>
<td>OC meeting I</td>
<td>Biomedical Industry Day</td>
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<td>OC meeting II</td>
<td>National Day on Biomedical Engineering</td>
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<tr>
<td>OC meeting III</td>
<td>MEDICA</td>
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<tr>
<td>OC meeting IV</td>
<td>Thesis defense</td>
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<td>Deliberation July @ UGent</td>
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It is noted by Johan Stiens that students from both universities in a double-degree inter-university program, should be proclaimed at each university. That would also increase the visibility. Additionally, lecturers are encouraged to attend the proclamation ceremony to further increase visibility.

The dates for the biomedical industry day (responsible: Charlotte Debaut) and MEDICA (responsible: Jef Vandemeulebroucke and Ewout Vansteenkiste) should be set by next OC meeting.

3.4. Erasmus

Erasmus: 4 outgoing students in 2016-2017
- Simon Verdonck (UGent): 1 year, Politecnico di Milano
- Astrid De Cloet (UGent): 1 semester, Politecnico di Milano
- Alexandra Stefanescova (UGent): 1 semester, Politecnico di Milano
- Marco Testaguzza (VUB): 1 semester, Groningen
- David Van Assche (VUB): 1 semester, Lund

We need to take a formal position with respect to Erasmus exchange for students who do not pass all courses. Until now, this has never been an issue with any students in practice, but we did have several students this year who did not pass all courses at the moment that they applied for Erasmus.

Suggestion: maintain current strategy without any formal requirement that students have passed all courses before they can go on Erasmus. It is the student’s own responsibility to judge whether or not he/she should leave, risking difficulties with passing remaining courses.

The SPCmaBME approves the suggestion put forth by the Patrick Segers for UGent. At VUB, this is determined at faculty level and not needed.

3.5. Company visits

It is noted that these company visits can take place once every two years. However, this increases the planning difficulty and complicates the linking to courses.

- Cochlear (Design and Technology of Artificial Organs) (Ma2): Wed 07/12
- Barco (via BEAM; linked to Neuro-Imaging)
- IBA (via BEAM; linked to Medical Physics ?)
- ORSI (Medical Equipment) -> to be confirmed
- Luxilon is willing to organize a company visit.
- NERF is also willing to organize a visit to their lab at imec.
- Siemens would be willing to organize a visit to their CT plant in Nuremberg, Germany.

The BEAM delegate has noted all suggested company visits and plans to contact them in the future.
3.6. Question from CKO - UGent

a) The re-organization of the bachelor programs at UGent has had an impact on the weight of mathematical/mathematically oriented courses in the curriculum. The plan was that each master would compensate for this in the master curriculum, with the introduction of a master-specific mathematical course. This is not a trivial task for the MSc in Biomedical Engineering, which is an inter-university program without a preparatory bachelor program and a tight program.

Options:

- Ensure mathematical course elements in suitable courses (e.g. biomechanics, medical imaging, ...)
- A dedicated mathematical course that could be compulsory for students entering the program with a bachelor in biomedical engineering or via a preparatory program. The course could be elective for other students.
- Herbert De Smet suggest to introduce a new elective course ‘Mathematical modeling in biomedical engineering’.

The SPCmaBME decides to go with the first suggestion and plans to ensure mathematics to be involved in the, already present, courses.

b) Attention for aspects of internationalization

The SPCmaBME decides no further actions are needed, given the already high attendance of international students in their master.

c) Attention for the development of academic language skills

It is suggested that ‘Academic English’ might be introduced as an elective course into the master program. Currently, the development of academic language is achieved in the master thesis, course projects and general use of English in lectures.

4. BEAM (new fixed item on agenda)

The delegate from BEAM present the current agenda of events for the students.

Mathias Polfliet will transfer the email addresses from current VUB students to the delegate from BEAM. Eowyn van Wittenberghe (Eowyn.Van.Wittenberghe@vub.ac.be) can play an intermediate transfer role to inform the VUB-students.

5. Individual student affairs

None

6. Program changes – status + follow-up

We are preparing the last step in the “make-over” of our program, that should step into action on 2017-2018. The motivation for these program changes is a better and sharper profile of the program, with a better visibility of two major tracks: medical device/design and health care. We also wish to resolve the systemic negative feedback and reviews from students on the former course “Medical Informatics” which still persist in “Health care organization and Informatics”. There was also the
desire to introduce a compulsory internship component in the program and to introduce a practice-oriented biostatistics course. Consulting rounds during the summer months have led to the following proposal:

**Replace** Health care organization and Informatics (6 credits) by

- > Hospital information systems (3 credits)
- > Leadership in health care (3 credits)

**Reduce in credits**

*Human and environment, safety and regulations:* from 6 to 4 credits
*Medical equipment:* from 6 to 5 credits

**Stop** Seminars (3 credits)

**New course:** Clinical study design and biostatistics (3 credits)

**New compulsory course:** Multidisciplinary biomedical project + change name into Hospital project

<table>
<thead>
<tr>
<th>Basic Life Science</th>
<th>Sem</th>
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<tbody>
<tr>
<td>Quantitative cell biology</td>
<td>3 1</td>
</tr>
<tr>
<td>From genome to organism</td>
<td>6 1</td>
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<tr>
<td>Modelling of Physiological Systems</td>
<td>6 1</td>
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<thead>
<tr>
<th>Biomedical Engineering</th>
<th>Sem</th>
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<tr>
<td>Biomedical Imaging</td>
<td>3 1</td>
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<tr>
<td>Bio-electronics</td>
<td>3 1</td>
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<tr>
<td>Biomaterials</td>
<td>6 1</td>
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<tr>
<td>Biomechanics</td>
<td>6 2</td>
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<tr>
<td>Neuromodulation and Imaging</td>
<td>3 2</td>
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<td>Medical Physics</td>
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<tr>
<th>Medical Device Design</th>
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<tr>
<td>Biomedical Product Development</td>
<td>6 1-2</td>
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<tr>
<td>Medical Equipment</td>
<td>5 2</td>
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<tr>
<td>Human and environment, Safety and Regulations</td>
<td>4 2</td>
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<tr>
<td>Technology and Design of Artificial Organs</td>
<td>6 3</td>
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<tr>
<th>Health Care</th>
<th>Sem</th>
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<td>Leadership in health care</td>
<td>3 4</td>
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<tr>
<td>Hospital project</td>
<td>3 4</td>
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<tr>
<td>Clinical study design and biostatistics</td>
<td>3 3</td>
</tr>
<tr>
<td>Hospital information systems</td>
<td>3 4</td>
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*Internship:* strongly advised elective course

Module coordinators will ensure a systematic follow-up and actualization of the contents of the modules and courses:
### Compulsory courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Teachers</th>
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<tbody>
<tr>
<td>Basic Life Science</td>
<td>Patrick Segers/Johan Stiens</td>
</tr>
<tr>
<td>Biomedical Engineering</td>
<td>Patrick Segers/Johan Stiens</td>
</tr>
<tr>
<td>Medical Device Design</td>
<td>Pascal Verdonck/Jef Vandemeulebroucke</td>
</tr>
<tr>
<td>Health Care</td>
<td>Pascal Verdonck/Jef Vandemeulebroucke</td>
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### Elective clusters

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<thead>
<tr>
<th>Cluster</th>
<th>Teachers</th>
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<tbody>
<tr>
<td>Advanced design methods</td>
<td>Patrick Segers</td>
</tr>
<tr>
<td>Assistive Technologies</td>
<td>Johan Stiens/Bart Jansen</td>
</tr>
<tr>
<td>Micro- and Nano Devices</td>
<td>Johan Stiens/Maaike Op De Beeck</td>
</tr>
<tr>
<td>Personalized Medicine</td>
<td>Peter Dubruei/Christian Vanhove</td>
</tr>
<tr>
<td>Neuro-engineering</td>
<td>Stefaan Vandenberghe/Guy Naegels</td>
</tr>
<tr>
<td>Engineering in Oncology</td>
<td>Klaus Bacher/Dirk Verellen</td>
</tr>
</tbody>
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**Timing: confirm and formalize these changes at next OC in October**

-> note that a course description will be needed for the 3 new courses!
7. Accreditation – visitation – quality control

- The CTI will provide a new accreditation for the MSc in Biomedical Engineering. The following preliminary feedback was received:

Panel Opinion:

- The creation of the Steering Committee in order to develop the strategic vision is positive
- The formal and thorough analysis of the soft skills developed during the Master 2 project is to be outlined
- The objective to go for a mandatory internship soon is to be encouraged
- The visibility of the Biomed programme needs to be improved:
  - The creation of a dedicated track at the Bachelor level currently discussed within the Steering Committee would for sure contribute
  - Students initiatives towards High Schools deserve support
  - Initiatives to get more visibility within industry, to better understand Industry needs, have to be strengthened
  - Programme courses have been adapting swiftly over the years since its creation less than 10 years ago; the strategic vision shall delineate the programme signature to be sold to the different stakeholders (hospitals, companies, students, …) in the future
- International visibility (beyond the International Master partners) and foreign recruitment deserve to be improved in the frame of a FEA reinforced policy in that direction

- This might have been the last visitation for quite some time; from now on internal quality control procedures, with a.o. a system of peer visitation, will replace the external visitations.
- Program portfolio has been filled out to a very large extent. The scope is to keep these portfolios actual and up to date. What is still missing is the table with a link between leaning outcomes at program level and course competences and a strategy with respect to evaluation and assessment.
- A meeting will be planned with the module coordinators (and anyone else who might be interested) as an introduction into the portfolios and the procedure.

8. Internal working program board

The tasks of the chairman of the program board have always been diverse, but, over the past few years, have become quite extended (see appendix). That also complicates transfer of know-how and might scare people from taking up some responsibility in the practical organization and management of the board. Not all tasks are easily outsourced, as many require access to platforms and close communication with the faculty administrations.

It would, nonetheless, be extremely helpful if one or more people from UGent and VUB would be willing to more actively support the chairmen at UGent and VUB in one or more of the following tasks:

- PR and communication activities (web-site, info-brochure, communication with alumni, representation, social media, …).
- contents of the program -> a larger responsibility and input from module coordinators
- exam and evaluations -> we will need to install a “toetscommissie” which should follow-up on contents of exams, modalities, type of examination, does the exam aim to test envisioned competences, etc.

9. Role of Strategic Advisory Board - Industrial Advisory Board

Our industrial advisory board (IAB) has played an important role in the development of the program, and we have received great support from some of our members in terms of internships, company visits, biomedical industry day, participation to courses, etc... At the same time, there is the feeling that participation to OC meetings is not the ideal way to involve the IAB. Most meetings are largely administrative, and there is very little time for reflection.

At the same time, there is the strategic advisory board (SAB), composed of the deans of the faculties of engineering and medicine and the directors of the UZ Gent and Brussels (+ chairmen UGent/VUB, Pascal Verdonck and Jan Cornelis).

We propose to merge the IAB and SAB. If the OC agrees, this will be proposed to the SAB during its next meeting. Until then, the IAB members will be invited to participate to the OC-meetings (which will remain open to them). It is suggested that these meetings take place on the biomedical industry day.

10. Tuition Fees

- From 2016-2017: no reduced fees for students from developing countries (-> 890 euro)
- From 2017-2018: increased fees for non-EU students.

@UGent: policy to be determined by faculties. The minimal cost will become 1730 euro (890 fixed + 840 for packet of 60 credits). As an inter-university program, we need to take an inter-university position. This will be discussed at the next strategic advisory board meeting.

11. Time Tables

There are some optimizations to be made in the current time tables, which could lead to less VUB<->UGent mobility (and expenses!) for the students.

First semester:
- Biomaterials: co-lectured by VUB & UGent, currently on Thursday and Friday
  Now: A total of 9 trips with the ratio of VUB/UGent unknown.
  Proposed solution: Move ‘Biomaterials entirely to Thursday. This would lead to a total of 6 trips with the ratio of VUB/UGent unknown.

Second semester:
- Medical Physics: co-lectured by VUB & UGent
- Medical Equipment: lectured at UGent
- Neuromodulation and imaging: lectured at UGent
  A total of 3 trips for UGent students and 23 trips for VUB students
- Measurement Techniques in Nuclear Science: VUB
- Nuclear Physics: VUB
- Radio Protection: VUB
  A total of 15 trips for UGent students
Proposed solution:
- Group ‘Measurement Techniques’ and VUB part of ‘Medical Physics’. ‘Nuclear Physics’ and ‘Radio Protection’ already grouped on Friday.
  - A total of 15 trips for UGent students
- Group ‘Medical equipment’ on one day
  - A total of 6 trips for VUB students
- Group UGent part of ‘Medical Physics’ and ‘Neuromodulation and Imaging’
  - A total of 7 trips for VUB students

Third & Fourth semester:
Currently undergoing changes and mostly elective courses, might require changes once the program has been reformed.

The proposed changes would reduce the total amount of trips from 35 (50, including electives for radiation physicist) to 24 (34). Rearranging these timetables requires some commitment from the affected lecturers. However, the gain in student comfort and reduction in costs should greatly outweigh this commitment.

12. Varia

- We received funding from “Alliantiefonds” to fund travel expenses from our students
- We received a budget of 650 € from CKO UGent to support PR and communication (printing posters Biomedical Industry Day, printing brochures)
- There has been a call for proposals for interfaculty Honours programs for bachelor students. Proposals by 1st of January, 2017. Work load seems doable; eg program in Life Sciences consists of 15 credits (on top of the original 180 credits), with 4 credits courses (and self-study), a lab project of 8 credits and writing a paper (3 credits). This might increase the visibility of biomedical engineering.
- This will be the last meeting for Irene Raadschelders. We thank Irene for her great commitment to the biomedical engineering programs and wish her the very best in realizing her future plans.

Temporal semester change due to unavailability of ULB-professor (Last minute information).

In a meeting on 21/09/2016 between VUB (Prof. J.P. Baeyens, Dr. C.R. Guerrero, Prof. J. Stiens) and ULB (Prof. B. Innocenti) professors for the fine tuning of the organization and the content of the course of Biomechanics (Englis version only), Prof. B. Innocenti announces that he won’t be able in 2016-2017 to contribute to the course lectures of biomechanics (English version only) in semester 2 of master year 1.

Remedy for 2016-2017:
The course Biomechanics (6 ECTS, English version only), a compulsory course of the inter-university master in biomedical engineering between Ugent and VUB will be for the first time lectured by a Brussels teaching team in Brussels for the VUB-students – titular: Prof.dr. Jean-Pierre Baeyens (faculty, Lichamelijke Opvoeding en Kinesitherapie, biomechanics department) as a full year course:
- Partim 1 (50%) in semester 1 by Prof. B. Innocenti (ULB)
- Partim 2 (50%) in semester 2 by Prof. J.P. Baeyens (VUB-HILOK) and dr. Carlos Rodriguez Guerrero (MECH-IR)

Due to the transfer of 3 ECTS credits of the course biomechanics of semester 2 ➔ semester 1, it is necessary to transfer 3 other ECTS credits from semester 1 ➔ semester 2. An agreement has been made with Prof. J. Stiens (ETRO-IR) that he is teaching the course BIOELECTRONICS in semester 2.

We follow up with the teaching team of Biomechanics how the course will be organized in the academic year 2017-2018.
Appendix

Taken opgenomen door OC-voorzitters

- Strategische invulling van programma
- Programma en programmawijzigingen
- Voorbereiden OC-vergaderingen en vergadering strategische adviesraad
- Contacten met onderwijsdirectie UGent/VUB en vergaderingen
- Faculteitsraad
- Individuele studentendossiers
- Invulling overgangsprogramma’s, individuele curricula
- Opvolging inkomende en uitgaande Erasmusstudenten
- Opvolging punten/conversie inkomende/uitgaande Erasmus en CEMACUBE studenten
- Deliberatie
- Opvolging CEMACUBE - selectievergaderingen
- Adviezen dossiers inkomende studenten
- Visitatie – kwaliteitszorg
  o Opmaak visitatierapporten
  o Coördinatie visitatie
  o Opvolging opleidingsportfolio
  o Peerleerbezoeken
  o Toetscommissie ...
- Financiën – aanvragen alliantiefonds
- PR-activiteiten
  o Opmaak info-brochure
  o Opvolging web-site
  o SID-ins
  o Infomomenten: infomoment studenten 3e bachelor, infodagen
- Alumni
  o Opvolging Linked-in
- Lesroosters
- Algemeen aanspreekpunt studenten
- Evaluatie gelijkwaardigheid buitenlandse diploma’s
- Curricula opvolgen en goedkeuren
- FACIR – internationalisering en uitwisseling
- FOWC @ VUB