Medical Physics Education Across Continents

The Umass Lowell and Heidelberg University Coordination Effort

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Introduction

Why is Such Coordination Needed?

- Research collaboration between institutions
  - Research practicum for students abroad
- Opportunity for students to take courses locally
  - Both didactic courses and clinical training
- Avoid duplication of requirements
  - Will the home university accept the courses from the host institution?
  - Will the accreditation agency accept these courses?
  - Will regulators accept the diploma?
- Allow graduates to practice in either country

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Elements of Coordination

Memorandum of Understanding - MOU

- General agreement between institutions at the Chancellor/Provost level for academic and research collaboration
- Agreement on student exchange terms, including funding, number of students, language requirements, degrees, time lines, etc
- Particulars to Med Phys may be an addendum
- Legal document – may take months to prepare

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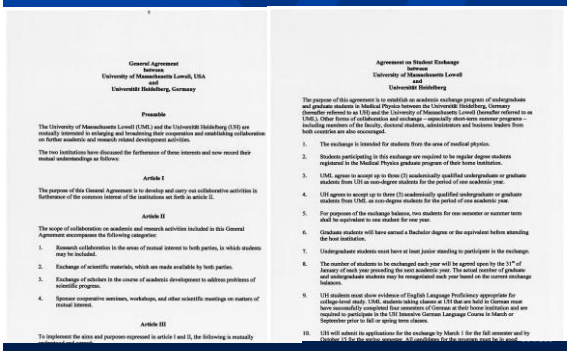
MOU



General Agreement
between
University of Massachusetts Lowell, USA
and
Universität Heidelberg, Germany

Preamble

The University of Massachusetts Lowell (UML) and the Universität Heidelberg (UH) are mutually interested in enlarging and broadening their cooperation and establishing collaboration on further academic and research related development activities.

The two institutions have discussed the furtherance of these interests and now record their mutual understandings as follows:

Article I

The purpose of this General Agreement is to develop and carry out collaborative activities in furtherance of the common interest of the institutions set forth in article II.

Article II

The scope of collaboration on academic and research activities included in this General Agreement encompasses the following categories:

1. Research collaboration in the areas of mutual interest to both parties, in which students may be included.
2. Exchange of scientific materials, which are made available by both parties.
3. Exchange of scholars in the course of academic development to address problems of scientific progress.
4. Sponsor cooperative seminars, workshops, and other scientific meetings on matters of mutual interest.

Article III

To implement the aims and purposes expressed in article I and II, the following is mutually

Agreement on Student Exchange
between
University of Massachusetts Lowell
and
Universität Heidelberg

The purpose of this agreement is to establish an academic exchange program of undergraduate and graduate students in Medical Physics between the Universität Heidelberg, Germany (hereafter referred to as UH) and the University of Massachusetts Lowell (hereafter referred to as UML). Other forms of collaboration and exchange – especially short-term summer programs – including members of the faculty, doctoral students, administrators and business leaders from both countries are also encouraged.

1. The exchange is intended for students from the area of medical physics.
2. Students participating in this exchange are required to be regular degree students registered in the Medical Physics graduate program of their home institution.
3. UML agrees to accept up to three (3) academically qualified undergraduate or graduate students from UH as non-degree students for the period of one academic year.
4. UH agrees to accept up to three (3) academically qualified undergraduate or graduate students from UML as non-degree students for the period of one academic year.
5. For purposes of the exchange balance, two students for one semester or summer term shall be equivalent to one student for one year.
6. Graduate students will have earned a Bachelor degree or the equivalent before attending the host institution.
7. Undergraduate students must have at least junior standing to participate in the exchange.
8. The number of students to be exchanged each year will be agreed upon by the 31st of January of each year preceding the next academic year. The actual number of graduate and undergraduate students may be renegotiated each year based on the current exchange balances.
9. UH students must show evidence of English Language Proficiency appropriate for college-level study. UML students taking classes at UH that are held in German must have successfully completed four semesters of German at their home institution and are required to participate in the UH Intensive German Language Course in March or September prior to fall or spring term classes.
10. UH will submit its applications for the exchange by March 1 for the fall semester and by October 15 for the spring semester. All applications for the program must be in good

Elements of Coordination

Medical Physics course comparisons

- Establish course equivalences
  - Equivalent versus complementary coverage
  - May be several overlapping courses
    - One 3-credit course vs three 1-credit courses
    - Partial versus full coverages
- Identify CAMPEP-required topical coverages
  - Which courses provide the required coverage
- List of CAMPEP core versus elective courses
  - "Safe list"

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Course Comparison

Cross-comparison of courses offered by Heidelberg University and the University of Massachusetts Lowell in their degree programs leading to MS or PhD in Medical Physics

Table 1. Courses and modules that have substantially similar or overlapping content

Heidelberg Course or Module (Credits)	UMass Lowell Course (Credits)
1.1 Biophysics (1) 1.2 Genetics (1) 3.5 Radiobiology (1) 4.1 Basic Cellular Biology/Radiobiology (1)	**98.562 Radiation Biology (3)**
1.2 Engineering/Mathematics (3.5)	98.581 Math Methods in Rad Sci (3) 95.605 Math Methods in Physics-I (3)
1.4 Basic Medical Sciences (Anatomy and Physiology) (2)	34.651 Sectional Human Anatomy (3) HS 575 Quantitative Physiology (3)
2.1 Radiation Protection (1)	**98.501 Radiation Safety and Control (3)**
2.2 Rad Physics & Instrumentation (3)	**98.565 Radiation Therapy Physics (3)** **98.506 Nuclear Instrumentation (3)** **98.605 Radiation Transport (3)**
3.1 Physics of Imaging Systems (3)	**98.598 Intro Medical Imaging (3)**
3.2a Med Devices & Imaging Sys (4)	**98.599 Advanced Medical Imaging (3)**
3.1b MRT Basics (advanced) (2)	HS 510 Principles of MRI/Imaging (3)
3.1c X-ray Diagnostics & Sonography (advanced) (2)	**98.599 Advanced Medical Imaging (3)**
3.2 Radiotherapy/Treatment Planning/ Dosimetry (4.5)	**98.665 Advanced Rad Therapy Physics (3)** **98.533 Ext Dosimetry and Shielding (3)** **98.506 Nuclear Instrumentation (3)**
3.3 Special Radiotherapy Techniques (3)	**98.665 Advanced Rad Therapy Physics (3)** **98.676 Grad Medical Physics Internship (3)** **98.686 Advanced Med Phys Internship (3)**

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CAMPEP accreditation

- Extend accreditation to equivalent courses at Heidelberg
  - Handle as though they are taught at UML
- Establish ABR acceptance of courses

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Conclusions

- Painstaking but rewarding process
- Cross-equivalency
  - Relatively easy to establish at the University level
  - Difficult to establish at CAMPEP level
  - (Hopefully) automatic at ABR level
- Elements and steps that are similar across all such cooperation
  - MOU
  - CAMPEP acceptance criteria
- Course equivalencies are unique to each university

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