

# Multi-Institutional Graduate Programme for Virtual Physiological Human Scientists (VPH-MIP)

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## Introduction

Currently there is no formal VPH-specific training in Europe [1]. Some Masters programmes in related areas partially address this challenge, but none focuses on the essential characteristics of the discipline, such as heterogeneous data fusion, multi-scale and multi-physics modelling of physiopathology, and simulation of complex clinical work-flows. The VPH-MIP project addresses this deficiency by developing a framework for VPH graduate programmes. Fig. 1 explains the trans-disciplinary approach that has been adopted in VPH-MIP.

In a multi-disciplinary field such as the VPH [2], it is essential that students have a solid scientific grounding. The curriculum envisaged, will be tailored to VPH needs, but will be founded in relevant, and successful, pre-existing programmes at partner institutions. Novel VPH-specific modules (termed VPH Core in Fig. 1) covering core topics will be developed for use in all participating institutions and delivered through intensive use of ICT technologies, facilitating cultural and language adaptations. In addition, mobility between institutions, facilitated by ERASMUS exchange agreements, will be encouraged enabling students to complement training provided by their primary institution by undertaking selected specialist modules at a second institution. In the longer term, joint or double awards are envisaged.

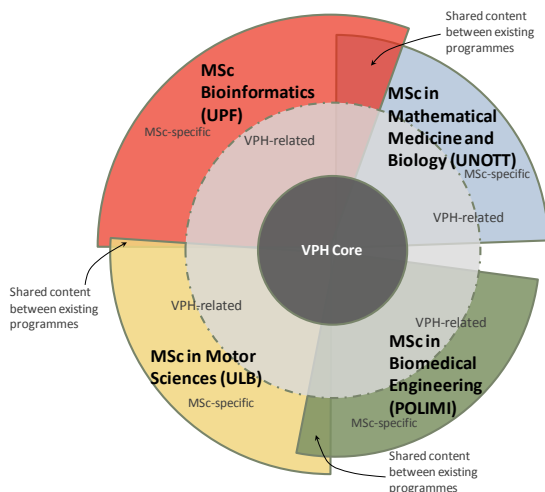


Figure 1. Trans-disciplinary approach

## General objectives

The general main objectives of this project are to:

- Identify VPH-relevant modules offered in graduate programmes within participating institutions, and develop alignments to enable students at one institution to take related but complementary modules at a second institution.
- Design extensibility principles by which additional institutions could participate in this programme in the future, considering complementarily to partners, and ensuring mobility of students and staff.
- Identify gaps in current provision and develop exemplar VPH Core Modules as on-line resources that can be followed by all students participating in the programme, and which will become the backbone of training in this field.
- Do so in a manner that is compatible with educational systems throughout the EU.
- Address legal, administrative, and political issues required to materialise a multi-institutional programme such as this and to facilitate mobility.

## Preliminary results

VPH-MIP will enable students to be trained in a new and far-reaching discipline, one that is currently receiving significant attention from the EC, and which is experiencing a high level of demand from academic, industrial and clinical sectors.

A student enrolling in a Master programme in biomedical engineering, motor sciences, bio-informatics, or mathematical medicine will be able to obtain what is envisaged as the VPH-related research “label” for his Masters degree by choosing specialisation modules in VPH-related research, and will thus be trained to join the exciting research effort around the Virtual Physiological Human.

Although the details are still being finalised, the VPH-related research label will be awarded through the validation of 30 ECTS in VPH-related training modules. Of these, a minimum of 10 ECTS should be obtained from VPH Core modules and a minimum of 10 ECTS from background in the initial curriculum with a relation to VPH. Moreover, the research project carried out for the Master thesis will need to be related to the VPH.

## Conclusion

Students registered in one of the participating programmes (4 at present) will have access to a series of online course modules. A first outline of these modules, each of which is currently being developed, can be seen in Fig. 2.

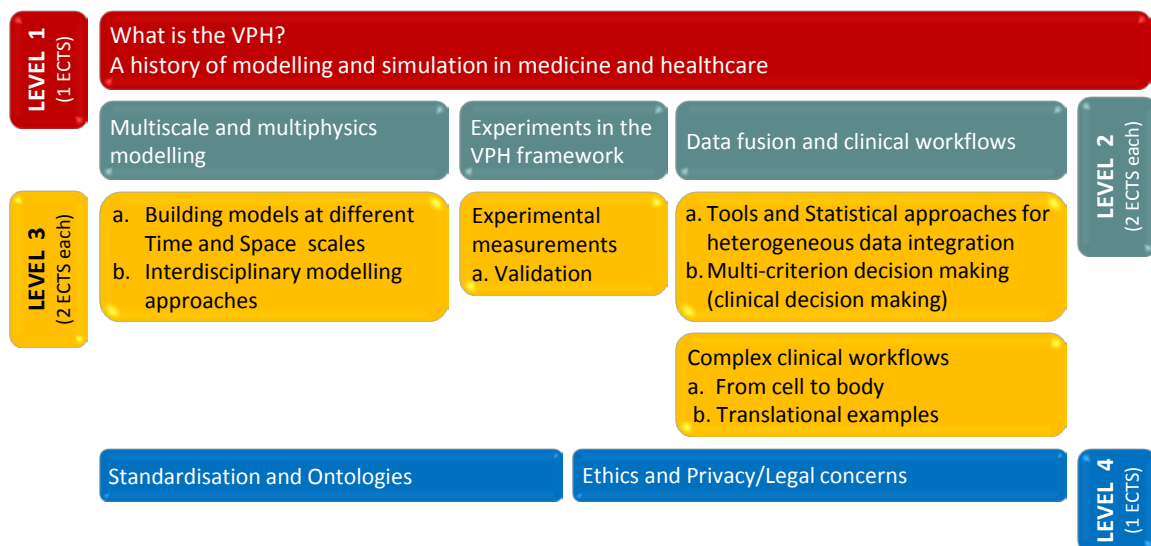


Figure 2. Proposed structure of VPH-MIP core modules.

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