

## MyoRobot vLab

### Transforming a Master Course Prac Class into a virtual Lab Software

The Institute of Medical Biotechnology offers Life-Science-Engineering students the opportunity to gain experience and expertise within a prac class within a Master course focusing on muscle biomechanics. This course introduces students to muscle mechanics and contractile function, involving chemical control over biopolymer activation. In that course, students learn the theory behind skeletal muscle biopolymers and apply this knowledge to design (chemical) testing protocols with our versatile *MyoRobot* biomechanics platform. Participants experience how-to setup different buffered solutions and how to operate the *MyoWizard* software to control the *MyoRobot* first-hand.

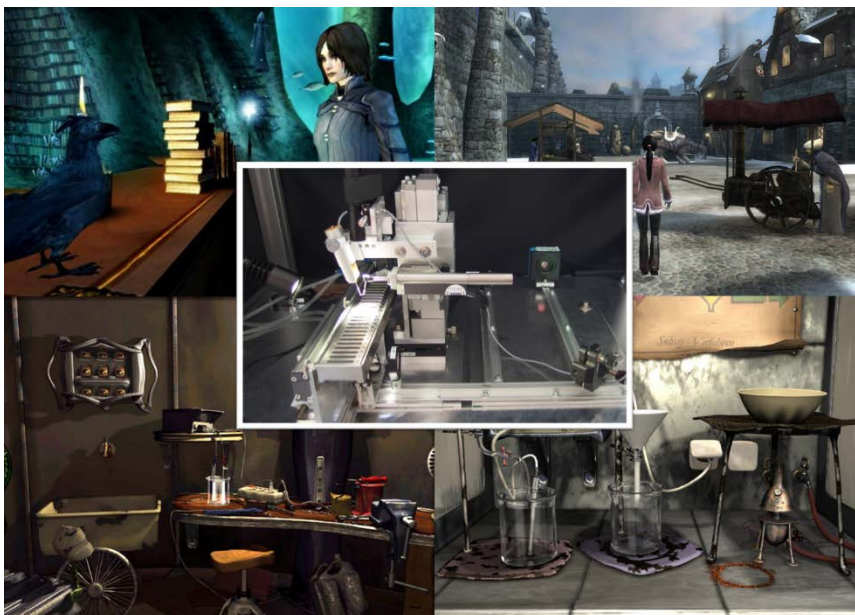
However, students often feel anxious about hands-on classes due to the risk of damaging expensive equipment or being reluctant to engage. This limits their learning progress within the course and impacts on focus and outcome. Therefore, we aim to create a virtual laboratory as an online pre-course that provides a safe-space, allowing for mistakes and self-guided pace, and allows to experience wrong answers without any consequences to better prepare students for a more engaged real-lab course experience.

In this setting, we offer **two positions as student workers** (HiWi) to design and **develop an 'Role play Game'-like educational software** that covers some of the basic aspects of this prac class. This offer addresses students with interest in game-like learning software, IT, 2D/3D modelling and animation and/or 'gaming'. It will involve **designing 3D models of lab equipment, animating short video sequences and implementing user interaction with the game environment** that enables an engaging, *info-taining* 'game-play-learning' that introduces the concepts of muscle biomechanics and its associated laboratory work-flow. The conceptual design of the virtual laboratory (vLab) could be inspired by learning software such as '**Chemicus**' and/or point-and-click-classics as '**The Longest Journey**'; however, is of course not restricted to these examples. A small but open-world design to freely move around and interact with objects of interest shall provide an engaging and interactive experience, although this can still be discussed in detail. Ideally, some experience and/or a strong interest in '**Unity**' or '**blender**' as developing software are desired; other development platforms can also be discussed. Any detailed biological knowledge is NOT required.

The ideal applicant shall be interested/have experience in:

- blender and/or Unity (other software development platforms are also possible)
- Designing 3D objects and models
- Animating short video sequences
- Designing RPG-like learning software
- Video games in general
- Any **biological** or **medical** related **knowledge** will be provided and is **NOT required**

The student worker contract is linked to an FAU-funded QuiS project and will be from April 1<sup>st</sup> until Sept 31<sup>st</sup> covering 6-7 hrs/week of payment. If you feel interested and/or challenged, please contact Prof. Oliver Friedrich ([oliver.friedrich@fau.de](mailto:oliver.friedrich@fau.de)), Barbara Reischl ([barbara.reischl@fau.de](mailto:barbara.reischl@fau.de)) or Michael Haug ([michael.haug@fau.de](mailto:michael.haug@fau.de))



*Figure 1. Aspiring the MyoRobot to a vLab platform resembling an RPG-like tuition software. The Master course MBT muscle biomechanics prac class around our versatile MyoRobot platform shall be transformed into a learning software. As examples and graphics and design inspirations, screenshots of 'Chemicus' and 'The Longest Journey' are displayed in the background.*