Modulbezeichnung:	**Introduction to simulation, network and data analysis in Medical Systems Biology (IntSysMed_f_Eng)** (Introduction to simulation, network and data analysis in Medical Systems Biology)	**2.5 ECTS**
Modulverantwortliche/r:	Julio Vera-Gonzalez	
Lehrende:	Julio Vera-Gonzalez	

Startsemester: WS 2020/2021	Dauer: 1 Semester	Turnus: jährlich (WS)
Präsenzzeit: 30 Std.	Eigenstudium: 45 Std.	Sprache: Englisch

Lehrveranstaltungen:

Introduction to simulation, network and data analysis in Medical Systems Biology (WS 2020/2021, Vorlesung, 2 SWS, Julio Vera-Gonzalez et al.)

Inhalt:

Systems Biology is a novel approach, in which quantitative biomedical data are investigated using advanced computational tools for data analysis, modeling and simulation. The ultimate aim is to elucidate the structure and regulation of biochemical networks, giving support in the construction of hypotheses and the design of experiments to biomedical researchers, but also in the interpretation of high throughput patient biomedical data. The targeted audience are master students, PhD students and young post-docs in the area of Medical Engineering, Bioinformatics, Computational Biology and Bioengineering. Course Sections: 1. Introduction to the Systems Biology approach 2. Biological and biomedical highthroughput data processing and analysis 3. Biochemical network reconstruction and analysis 4. Mathematical modeling and simulation of biochemical systems

Lernziele und Kompetenzen:

Aims: In this course the basic concepts and tools for data analysis, network reconstruction and modeling used in systems biology will be introduced, discussed and practiced. These concepts will be illustrated with real case studies from biomedicine.

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

Das Modul ist im Kontext der folgenden Studienfächer/Vertiefungsrichtungen verwendbar:

[1] **Medizintechnik (Master of Science)**
(Po-Vers. 2019w | TechFak | Medizintechnik (Master of Science) | Modulgruppen spezifisch nach Studienrichtungen | Studienrichtung Medizinische Bild- und Datenverarbeitung | M1 Medizinische Vertiefungsmodule | Introduction to simulation, network and data analysis in Medical Systems Biology)

[2] **Medizintechnik (Master of Science)**
(Po-Vers. 2019w | TechFak | Medizintechnik (Master of Science) | Modulgruppen spezifisch nach Studienrichtungen | Studienrichtung Medizinelektronik | M1 Medizinische Vertiefungsmodule | Introduction to simulation, network and data analysis in Medical Systems Biology)

[3] **Medizintechnik (Master of Science)**
(Po-Vers. 2019w | TechFak | Medizintechnik (Master of Science) | Modulgruppen spezifisch nach Studienrichtungen | Studienrichtung Medizinische Produktionstechnik, Gerätetechnik und Prothetik | M1 Medizinische Vertiefungsmodule | Introduction to simulation, network and data analysis in Medical Systems Biology)

[4] **Medizintechnik (Master of Science)**
(Po-Vers. 2019w | TechFak | Medizintechnik (Master of Science) | Modulgruppen spezifisch nach Studienrichtungen | Study Field Health and Medical Data Analytics | M1 Medical specialisation modules (HMDA) | Introduction to simulation, network and data analysis in Medical Systems Biology)

Studien-/Prüfungsleistungen:

Introduction to simulation, network and data analysis in Medical Systems Biology (Prüfungsnummer: 165919)
(englische Bezeichnung: Introduction to simulation, network and data analysis in Medical Systems Biology)

Prüfungsleistung, mündliche Prüfung, Dauer (in Minuten): 30
Anteil an der Berechnung der Modulnote: 100%

Erstablegung: WS 2020/2021, 1. Wdh.: SS 2021
1. Prüfer: Julio Vera-Gonzalez

Introduction to simulation, network and data analysis in Medical Systems Biology (Prüfungsnummer: 775039)
(englische Bezeichnung: Introduction to simulation, network and data analysis in Medical Systems Biology)
Prüfungsleistung, , Dauer (in Minuten): 30
Anteil an der Berechnung der Modulnote: 0%

Erstablegung: WS 2020/2021, 1. Wdh.: SS 2021
1. Prüfer: Julio Vera-Gonzalez

Organisatorisches:

For more information and registration please contact Prof. Dr. Julio Vera-Gonzalez: julio.vera-gonzalez@uk-erlangen.de

Bemerkungen:

Systems Biology is a novel approach, in which quantitative biomedical data are investigated using advanced computational tools for data analysis, modeling and simulation. The ultimate aim is to elucidate the structure and regulation of biochemical networks, giving support in the construction of hypotheses and the design of experiments to biomedical researchers, but also in the interpretation of high throughput patient biomedical data.