Modulbezeichnung:	**Projekt Biomedical Network Science (BIONETS)** (Project Biomedical Network Science)	**10 ECTS**
Modulverantwortliche/r:	David B. Blumenthal	
Lehrende:	David B. Blumenthal, und Mitarbeiter/innen	

Startsemester: WS 2021/2022	Dauer: 1 Semester	Turnus: halbjährlich (WS+SS)
Präsenzzeit: 60 Std.	Eigenstudium: 240 Std.	Sprache: Englisch

Lehrveranstaltungen:

Project Biomedical Network Science (WS 2021/2022, Projektseminar, 4 SWS, David B. Blumenthal et al.)

Empfohlene Voraussetzungen:

Strong programming skills in any programming language.

Inhalt:

The Biomedical Network Science (BIONETS) lab investigates molecular disease mechanisms using techniques from combinatorial optimization, network science, and artificial intelligence. We also develop privacy-preserving decentralized biomedical AI solutions, which enable cross-institutional studies on sensitive data. Students will work on individual research topics within these field and develop prototypes of software tools to solve the addressed problems.

Lernziele und Kompetenzen:

Students will

- develop and implement an algorithm for a problem within the field of biomedical networks science which, in certain respects, improves upon the state-of-the-art,
- acquire hands-on experience in an emerging research field,
- learn best practices in software development and documentation,
- gain first experience in academic writing.

Literatur:

All relevant research literature will be made available in StudOn (https://www.studon.fau.de/crs3922964.html).

Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:

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

[1] **Artificial Intelligence (Master of Science)**
(Po-Vers. 2021s | TechFak | Artificial Intelligence (Master of Science) | Gesamtkonto | Nebenfach | Nebenfach Artificial Intelligence in Biomedical Engineering | Projekt Biomedical Network Science)

[2] **Informatik (Master of Science)**
(Po-Vers. 2010 | TechFak | Informatik (Master of Science) | Gesamtkonto | Nebenfach | Nebenfach Artificial Intelligence in Biomedical Engineering | Projekt Biomedical Network Science)

[3] **Informatik (Master of Science)**
(Po-Vers. 2010 | TechFak | Informatik (Master of Science) | Gesamtkonto | Hauptseminar, Projekt, Masterarbeit | Projekt Modul | Projekt Biomedical Network Science)

[4] **Medizintechnik (Master of Science)**
(Po-Vers. 2018w | TechFak | Medizintechnik (Master of Science) | M6 Medizintechnische Praxismodule | Projekt Biomedical Network Science)

[5] **Medizintechnik (Master of Science)**
(Po-Vers. 2019w | TechFak | Medizintechnik (Master of Science) | Modulgruppe M6 - Medizintechnische Praxismodule | Medizintechnische Praxismodule / Medical Engineering Practical Modules | Projekt Biomedical Network Science)

Studien-/Prüfungsleistungen:

Projekt Biomedical Network Science (Prüfungsnummer: 76761)
(englische Bezeichnung: Project Biomedical Network Science)

Prüfungsleistung, mehrteilige Prüfung
Anteil an der Berechnung der Modulnote: 100%
weitere Erläuterungen:
Working prototype of a software tool (40% of grade), 20 min demonstration with the lecturers (20% of grade), a short scientific paper which describing the developed methodologies (40% of grade, 4 pages ACM style excluding references).
Prüfungssprache: Englisch

Erstablegung: WS 2021/2022, 1. Wdh.: SS 2022
1. Prüfer: David B. Blumenthal

Organisatorisches:

Topics will be assigned in a first kick-off meeting, where students can either select from a list of proposed projects or propose their own ideas. Subsequently, students will have individual meetings with the lecturers on a weekly or bi-weekly basis.