

---

**Modulbezeichnung:** **Projekt Biomedical Network Science (BIONETS)** **10 ECTS**  
 (Project Biomedical Network Science)

Modulverantwortliche/r: David B. Blumenthal  
 Lehrende: und Mitarbeiter/innen, David B. Blumenthal

---

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

Erstablingung: WS 2021/2022, 1. Wdh.: SS 2022

1. Prüfer: David B. Blumenthal (100970)

---

**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.