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**Modulbezeichnung:** **Algorithmic Game Theory (AGT)** **5 ECTS**  
 (Algorithmic Game Theory)

Modulverantwortliche/r: Yiannis Giannakopoulos

Lehrende: Yiannis Giannakopoulos

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|-----------------------------|------------------------|-----------------------|
| Startsemester: WS 2021/2022 | Dauer: 1 Semester      | Turnus: jährlich (WS) |
| Präsenzzeit: 45 Std.        | Eigenstudium: 105 Std. | Sprache:              |

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**Lehrveranstaltungen:**

- Algorithmic Game Theory (Optimization in Industry and Economy) (WS 2021/2022, Vorlesung, 2 SWS, Yiannis Giannakopoulos)
- Übung Algorithmic Game Theory (WS 2021/2022, Übung, 1 SWS, Yiannis Giannakopoulos)
- Algorithmic Game Theory (Optimization in Industry and Economy) (WS 2021/2022, Vorlesung, 2 SWS, Yiannis Giannakopoulos)
- Algorithmic Game Theory (Optimization in Industry and Economy) (WS 2021/2022, Vorlesung, 2 SWS, Yiannis Giannakopoulos)

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**Inhalt:**

[https://www.studon.fau.de/studon/goto.php?target=univis\\_2021w.Lecture.41307648](https://www.studon.fau.de/studon/goto.php?target=univis_2021w.Lecture.41307648)

**Lernziele und Kompetenzen:**

Learning Objectives Upon successful completion of this module, students have a comprehensive understanding of the foundations of algorithmic game theory and algorithmic mechanism design. In particular, they can:

- design and analyse efficient mechanisms for various settings involving rational selfish players, most notably Bayesian revenue-maximizing auctions
- quantify the loss in performance of a system due to selfish behaviour (price of anarchy), most notably in traffic routing
- understand the concept of differentiating between various equilibria outcomes and selecting the desired ones (potentials and equilibrium refinement)
- understand the concept of learning dynamics in game-playing, such as best-responses

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**Verwendbarkeit des Moduls / Einpassung in den Musterstudienplan:**

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

**[1] Data Science (Master of Science)**

(Po-Vers. 2021w | Gesamtkonto | Studienrichtung Databased optimization | Algorithmic Game Theory)

Dieses Modul ist daneben auch in den Studienfächern "Computational and Applied Mathematics (Master of Science)", "Wirtschaftsmathematik (Master of Science)" verwendbar.

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**Studien-/Prüfungsleistungen:**

Algorithmic Game Theory (Prüfungsnummer: 50821)  
 Prüfungsleistung, mündliche Prüfung, Dauer (in Minuten): 15  
 Anteil an der Berechnung der Modulnote: 100%

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

1. Prüfer: Yiannis Giannakopoulos

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