

BK119 - Navigationssysteme

BK119 - Global Navigation Satellite Systems

General information	
Module Code	BK119
Unique Identifier	
Module Leader(s)	Prof. Dr. Jetzek, Ulrich (ulrich.jetzek@haw-kiel.de)
Lecturer(s)	Prof. Dr. Jetzek, Ulrich (ulrich.jetzek@haw-kiel.de)
Offered in Semester	Sommersemester 2019
Module duration	1 Semester
Occurrence frequency	Regular
Module occurrence	In der Regel im Sommersemester
Language	Englisch
Recommended for international students	No
Can be attended with different study programme	No

Curricular relevance (according to examination regulations)
Study Subject: B.Eng. - E - Elektrotechnik (PO 2017, V3) Study Specialization: Technische Informatik Module type: Wahlmodul Semester: 6
Study Subject: B.Eng. - E - Elektrotechnik (PO 2017, V3) Study Specialization: Elektrische Energietechnik Module type: Wahlmodul Semester: 6
Study Subject: B.Eng. - E - Elektrotechnik (PO 2017, V3) Study Specialization: Kommunikationstechnik und Embedded Systems Module type: Wahlmodul Semester: 6
Study Subject: B.Eng. - Me (PO 2023) - Mechatronik (PO 2023, V4) Module type: Wahlmodul Semester: 4, 6
Study Subject: B.Eng. - Ming - Medieningenieur/-in (PO 2018, V1 + PO 2021, V2) Module type: Wahlmodul Semester: 4, 6
Study Subject: B.Eng. - Wing - Wirtschaftsingenieurwesen - Elektrotechnik (PO 2017, V1) Study Specialization: Kommunikationstechnik Module type: Wahlmodul Semester: 4, 6
Study Subject: B.Eng. - Wing - Wirtschaftsingenieurwesen - Elektrotechnik (PO 2017, V1) Study Specialization: Digitale Wirtschaft Module type: Wahlmodul Semester: 6
Study Subject: B.Sc. - INI - Informationstechnologie (PO 2017, V1) Study Specialization: Angewandte Informatik Module type: Wahlmodul Semester: 4, 6

Qualification outcome
<i>Areas of Competence: Knowledge and Understanding; Use, application and generation of knowledge; Communication and cooperation; Scientific self-understanding / professionalism.</i>
Students have understood the principles of positioning and navigation by Global Navigation Satellite Systems (GNSS).
They have understood the architecture, the technical structure and the functioning of the Global Positioning System (GPS) as well as of the European Navigation Satellite System GALILEO. Students are capable of solving basic positioning or navigation based problems by applying corresponding mathematical functions.
Students have understood how positioning and Navigation with Satellite Navigation Systems works. They have understood the fundamentals of GPS and GALILEO to such an extent that they are capable to contribute to the further development of Global Navigation Satellite Systems.

Content information	
Content	<ol style="list-style-type: none"> 1. Fundamentals on positioning and Navigation by satellites 2. coordinate Systems 3. Fundamentals of satellite Technology 4. The GPS (Global Positioning System) Technology 5. GLONASS, GALILEO and Compass 6. Determining Position and Speed of an object 7. GPS Extensions: DGPS, SBAS, A-GPS and HSGPS 8. data Formats and Hardware interfaces 9. GPS Receivers 10. GPS applications
Literature	<ol style="list-style-type: none"> 1. Jean-Marie Zogg: „GPS und GNSS: Grundlagen der Ortung und Navigation mit Satelliten“, Oktober 2011, http://zogg-jm.ch/Dateien/Update_Zogg_Deutsche_Version_Jan_09_Version_Z4x.pdf 2. Hans Dodel, Dieter Häupler: „Satellitennavigation“, 2. Auflage, Springer Verlag, 2009 3. Manfred Bauer: „Vermessung und Ortung mit Satelliten: Globales Navigationssatellitensystem (GNSS) und andere satellitengestützte Navigationssysteme“, 6. Auflage, Wichmann Verlag, 2011

Teaching formats of the courses	
Teaching format	SWS
Übung	2
Lehrvortrag	2

Workload	
Number of SWS	4 SWS
Credits	5,00 Credits
Contact hours	48 Hours
Self study	102 Hours

Module Examination	
Examination prerequisites according to exam regulations	None

BK119 - Klausur	Method of Examination: Klausur Duration: 90 Minutes Weighting: 100% wird angerechnet gem. § 11 Absatz 2 PVO: Yes Graded: Yes
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