

Lehrveranstaltung		LV-Kurzbezeichnung
Advanced App Development		****
Verantwortliche/r	Fakultät	
	Informatik und Mathematik	
Lehrende/r / Dozierende/r	Angebotsfrequenz	
David Drohan	keine Angabe erforderlich	
Lehrform		
Seminaristischer Unterricht		

Studiensemester gemäß Studienplan	Lehrumfang [SWS oder UE]	Lehrsprache	Arbeitsaufwand [ECTS-Credits]
6. / 7. Semester	4 SWS	Englisch	5

Zeitaufwand:

Präsenzstudium	Eigenstudium
60 h	90 h

Examination
Single Project (Development of Android App)
Zugelassene Hilfsmittel für Leistungsnachweis
Keine

Inhalte und Qualifikationsziele
<p>The module assumes an intermediate computer programming competence and the student has completed the Android Programming with Kotlin (KAPT) module, or equivalent.</p> <p>The module itself will consist of a mix of lectures and guided practical labs. The labs will apply the principles introduced in the lectures via the construction of a small number of interesting Android application case studies. These applications will further develop aspects of the material covered in the lectures.</p> <p>The following topics will be explored:</p> <ul style="list-style-type: none"> <li>- Navigation</li> <li>- Design Patterns</li> <li>- API Access</li> <li>- Networking</li> <li>- Location Services</li> <li>- Authentication</li> <li>- BaaS (Backend-as-a-Service) tools (eg. Firebase)</li> </ul> <p>Students will be equipped with the skills to design, implement and deploy a mobile application coupled with a modern back-end service.</p>

<b>Lernziele: Fachkompetenz</b>
<p>After successful completion of the module, students will be able to:</p> <ul style="list-style-type: none"> <li>– Select the appropriate design patterns and tools in the development of complex mobile apps.</li> <li>– Demonstrate an in-depth knowledge of the chosen mobile app framework and the underlying hardware components.</li> <li>– Design and develop complex multi-screen mobile apps from concept through to completion using best practices and guidelines.</li> <li>– Utilize a remote service API within an application, perhaps based on REST principles, to deliver aspects of its core features set. For example: Maps/GIS (Geographic Information Systems), Media Sharing, Social Networking.</li> <li>– Explore the interaction of an application with BaaS tools, including some of the following where appropriate: authentication, database, file storage.</li> </ul>
<b>Lernziele: Persönliche Kompetenz</b>
<p>After successful completion of the module, students will be able to:</p> <ul style="list-style-type: none"> <li>– Develop a relatively complex Android application with and advanced UI/UX</li> <li>– Implement recommended Design Patterns to maintain scalability within the app</li> <li>– Interact with BaaS tools to support authentication, database and file storage within the app</li> </ul> <p>The following technologies will be explored:</p> <ul style="list-style-type: none"> <li>– AndroidX components to support Navigation and Data Binding</li> <li>– Google Location Services</li> <li>– Retrofit and API access</li> <li>– Firebase Authentication including Google Auth</li> <li>– Firebase Database</li> <li>– Firebase Storage</li> </ul>
<b>Teaching Materials</b>
<ul style="list-style-type: none"> <li>▪ PowerPoint-/PDF Presentations supported with pre-recorded videos</li> <li>▪ Case Study + practical labs</li> </ul>
<b>Teaching Media</b>
<ul style="list-style-type: none"> <li>▪ PowerPoint-/PDF Presentations supported with pre-recorded videos</li> <li>▪ Detailed Practical Labs</li> <li>▪ Use of a Case Study to build features covered in the material</li> <li>▪ Delivered virtually, online, via TutorStack software</li> </ul>
<b>Literature</b>
<ul style="list-style-type: none"> <li>▪ Learn Kotlin for Android Development</li> <li>▪ The Next Generation Language for Modern Android Apps Programming, Peter Späth, 2019</li> <li>▪ Android mit Kotlin – kurz &amp; gut, Jörg Staudemeyer, 2018</li> <li>▪ Kotlin for Android developers : Learn Kotlin the easy way while developing an Android App, Antonio Leiva, 2018</li> </ul>

Please indicate the levels to be achieved as a numerical value in parentheses in the learning objectives.

Levels: 1 - know, 2 - can, 3 - understand and apply