Module description: Operating Systems

Module Code	t.BA.IT.BSY.19HS
ECTS Credits	4
Language of Instruction/Examination	German
Organizational Unit	InIT
Module Coordinator	Thomas Michael Bohnert
Legal Framework	The module description is part of the legal basis in addition to the general academic regulations. It is binding. During the first week of the semester a written and communicated supplement can specify the module description in more detail.
Module Characteristic	Type 3a 2 lecture lessons per semester week and class+ 2 lab bi-weekly lessons per semester and half-class
Module Description	(max. 300 characters. Text is displayed in module box in the Internet)
Module Content	- General OS basics - Modern concepts, mechanisms, architecture and services using the example of the Linux operating system **System start (MBR/bootloader, UEFI) Processes, process scheduling, system calls, services, service model, systemd Process scheduling Process resource management using cgroups Memory management concepts, virtual memory, page tables, MMU, swapping, paging, Peripherals, interrupt, device and driver models Kernel and driver programming, architecture, driver template, DKMS (Dynamic Kernel Module Support), File system concepts, files, directories, reliability, performance, RAM and TMP file systems, overlay file systems, partitions/volumes, Logical Volume Manager (LVM), Proc file system Networking provided by the OS Virtualization, emulation, KVM, QUEMU, Libvirt** - Lab
Prerequisite Knowledge	Systemnahe Programmierung (SNP)

Learning Objectives (Competences)

Students...	Competencies	Taxonomies
You can program core modules and create a customized core.	M, F	K3
You understand the origins, fundamentals and concepts of modern operating systems.	M, F	K2
You understand and master the services and mechanisms that are available in the kernel for various virtualization concepts.	M, F	K2, K3
You understand the architecture, service model and device model, as well as the existing mechanisms of the Linux operating system.	M, F	K2, K3

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Performance Assessment	End-of-module exam	Assessment	Length (min.)	Weighting	Form
	written exam	Grade	90	100	acc. to module agreement

	Performance assessment during the semester	Assessment	Length (min.)	Weighting	Form
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Classroom Attendance Requirement	None
Learning material	• Tanenbaum Moderne Betriebssysteme. Aktuell Edition. ISBN 11110000.
Comments	