



# Embedded Operating Systems

**Module title:**

Embedded Operating Systems

**Credits:**

6

**Responsible person:**

Heiß, Hans-Ulrich

**Office:**

EN 6

**Contact person:**

No information

**Website:**
<http://www.kbs.tu-berlin.de/>
**Display language:**

Englisch

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## Learning Outcomes

Students who have successfully finished this module have an advanced knowledge of operating systems for embedded systems. They are aware of the specific design aspects (like realtime behavior, energy consumption, schedulability, fault tolerance) and know of their interdependencies.

## Content

Embedded OS: Requirements for embedded systems; example application areas; embedded processor architecture; realtime scheduling; worst case execution time estimation, schedulability analysis; Dependable Systems: Basic notions and quantities, failure models, fault trees, availability analysis for composition, Byzantine protocols.

## Module Components

Course Name	Type	Number	Cycle	SWS
Dependable Systems	VL	0432 L 592	WS	2
Embedded Operating Systems	VL	0432 L 595	SS	2

## Workload and Credit Points

Dependable Systems (Vorlesung)	Multiplier	Hours	Total
Preparation and follow-up	15.0	3.0h	45.0h
Presence	15.0	2.0h	30.0h
			75.0h

Embedded Operating Systems (Vorlesung)	Multiplier	Hours	Total
Preparation and follow-up	15.0	3.0h	45.0h
Presence	15.0	2.0h	30.0h
			75.0h

Course-independent workload	Multiplier	Hours	Total
Examination preparation	1.0	30.0h	30.0h
			30.0h

The Workload of the module sums up to 180.0 Hours. Therefor the module contains 6 Credits.

## Description of Teaching and Learning Methods

The lecture conveys the material in traditional form.

## Requirements for participation and examination

**Desirable prerequisites for participation in the courses:**

Basic (undergraduate) course on operating systems is required to follow the lectures.

**Mandatory requirements for the module test application:**

No information

## Module completion

**Grading:**

graded

**Type of exam:**

Mündliche Prüfung

**Language:**

English

**Duration/Extent:**

30 minutes

## Duration of the Module

This module can be completed in 2 semesters.

### Maximum Number of Participants

This module is not limited to a number of students.

### Registration Procedures

See homepage of module at <http://www.kbs.tu-berlin.de/>

### Recommended reading, Lecture notes

**Lecture notes:**

*unavailable*

**Electronical lecture notes :**

available

*Additional information:*

<http://www.kbs.tu-berlin.de/>

**Recommended literature:**

C.M. Krishna, K.G. Shin, Real-Time Systems, McGraw-Hill, 1997

D.K. Pradhan (Ed.): Fault Tolerant Computer Systems, Prentice Hall, 1996

D.P. Siewiorek, R.S. Swarz: The Theory and Practice of Reliable Systems Design, Digital Press, 1995

Jane W. S. Lui, Real-Time Systems, Prentice Hall, 2000

Stallings, W.: Operating Systems, 5th ed., Prentice Hall, 2004

T. Anderson, P.A. Lee: Fault Tolerance: Principles and Practice, Prentice Hall, 1982

Tanenbaum, A.; Woodhull, A.: Operating Systems Design and Implementation, 3rd ed., Prentice Hall, 2006

### Assigned Degree Programs

This module is used in the following modulelists:

**Automotive Systems (Master of Science)**

Automotive Systems (MSc) -StuPO 2017

Modullisten der Semester: WS 2017/18

StuPO 2014

Modullisten der Semester: SS 2017 WS 2017/18

**Computer Engineering (Master of Science)**

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18

**Computer Science (Informatik) (Master of Science)**

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18

**Double-Degree-Masterstudiengang ICT Innovation (Master of Science)**

Msc ICT Innovation PO 2014

Modullisten der Semester: SS 2017 WS 2017/18

MSc ICT Innovation StuPO 2016

Modullisten der Semester: SS 2017 WS 2017/18

Msc ICT Innovation StuPO 2017

Modullisten der Semester: WS 2017/18

**Elektrotechnik (Master of Science)**

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18

**Elektrotechnik/Informationstechnik als Quereinstieg (Lehramtsbezogen) (Master of Education)**

M.Ed. Elektrotechnik/Informationstechnik als Quereinstieg\_StuPO 2016

Modullisten der Semester: SS 2017 WS 2017/18

Anforderungen für die Fachwissenschaften - Anlage 3 - StuPO 2016

Modullisten der Semester: SS 2017 WS 2017/18

**Informatik (Bachelor of Science)**

BSc Informatik StuPO 2014

Modullisten der Semester: SS 2017 WS 2017/18

StuPO 2013

Modullisten der Semester: SS 2017

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18

**Informatik (Master of Science)**

MSc Informatik PO 2013

Modullisten der Semester: SS 2017 WS 2017/18

**Informationstechnik (Lehramtsbezogen) (Master of Education)**

Kernfach StuPO 2016

Modullisten der Semester: SS 2017 WS 2017/18

Zweifach StuPO 2016

Modullisten der Semester: SS 2017 WS 2017/18

**Informationstechnik (Lehramtsbezogen) (Bachelor of Science)**

Kernfach StuPO 2016

Modullisten der Semester: SS 2017 WS 2017/18

Zweifach StuPO 2016

Modullisten der Semester: SS 2017 WS 2017/18

**Informationstechnik im Maschinenwesen (Bachelor of Science)**

StuPo 29.12.2009

Modullisten der Semester: SS 2017 WS 2017/18

**Physikalische Ingenieurwissenschaft (Bachelor of Science)**

Physikalische Ingenieurwissenschaft (BSc) - StuPO 29.03.2017

Modullisten der Semester: WS 2017/18

StuPO 09.01.2012

Modullisten der Semester: SS 2017 WS 2017/18

**Physikalische Ingenieurwissenschaft (Master of Science)**

Physikalische Ingenieurwissenschaft (MSc) - StuPO 29.03.2017

Modullisten der Semester: WS 2017/18

StuPO 19.12.2007

Modullisten der Semester: SS 2017 WS 2017/18

**Technische Informatik (Bachelor of Science)**

BSc Technische Informatik StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18

StuPO 2013

Modullisten der Semester: SS 2017 WS 2017/18

**Technische Informatik (Master of Science)**

StuPO 2013

Modullisten der Semester: SS 2017 WS 2017/18

Technomathematik (Bachelor of Science)

Bachelor Technomathematik 2014

Modullisten der Semester: SS 2017 WS 2017/18

Technomathematik (Master of Science)

StuPO 2014

Modullisten der Semester: SS 2017 WS 2017/18

Wirtschaftsinformatik (Bachelor of Science)

BSc Wirtschaftsinformatik StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18

Wirtschaftsinformatik / Information Systems Management (Master of Science)

StuPO 2013

Modullisten der Semester: SS 2017 WS 2017/18

StuPO 2017

Modullisten der Semester: WS 2017/18

Wirtschaftsingenieurwesen (Master of Science)

StuPO 2015

Modullisten der Semester: SS 2017 WS 2017/18

## Miscellaneous

The module is offered every year. Students can start the module every semester either with the lecture Dependable Systems or with the lecture Embedded Operating Systems .