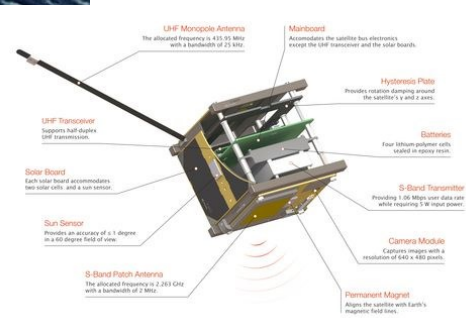
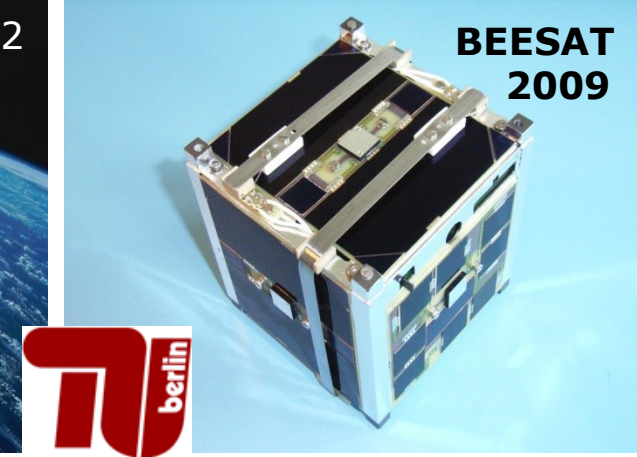




# Pico-Satellites in Germany



# UWE Roadmap

(University Würzburg's Experimental satellites)

## 2016 NetSat-1 to -4 Formation Flying Mission

- Higher Data Rates
- Formation Control
- DTNs, MANets
- ...

## 2016 UWE-5

- Relative Navigation

## 2015 UWE-4

- Position Control

## 2013 UWE-3

- Attitude Control

## 2009 UWE-2

- Attitude- and Orbit  
Determination

## 2005 UWE-1

- Telecommunication "Internet in Space"



UWE-2

# SpaceMaster

Joint European Master in Space Science and Technology



Education and Culture

Erasmus Mundus

**SpaceMaster** is supported by scholarships within the "ERASMUS MUNDUS"-Program of the EU for European elite-curricula. It is offered at University Würzburg in cooperation between Computer Science and Physics/Astronomy, and by the partner universities

- Luleå University of Technology, Sweden
- Cranfield University, United Kingdom
- Czech Technical University, Czech Republic
- Helsinki University of Technology, Finland
- Université Paul Sabatier Toulouse III, France
- University Siegen, Germany

[www.spacemaster.eu](http://www.spacemaster.eu)

[spacemaster.uni-wuerzburg.de](http://spacemaster.uni-wuerzburg.de)



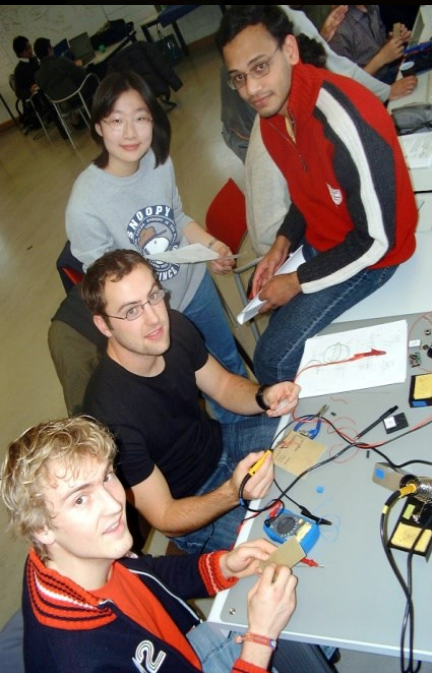
**Education: SpaceMaster**

# SpaceMaster

Joint European Master in Space Science and Technology



Erasmus Mundus



University partners outside the EU :  
Stanford University, USA  
University of Tokyo, Japan  
University of Toronto, Canada  
Shanghai Jiao Tong Uni, China



International students :  
~ 25 from outside EU  
~ 15 Europeans outside Germany  
~ 10 German students



## Recent awards of Würzburg students

- ZARM Award 2006
- 1<sup>st</sup> price in Student Contest at Internat. Astronautical Conference 2006 Valencia
- Award of the British Interplanetary Society
- IABG-Award 2008 for Oliver Kurz
- Silver medal at Student Contest IAC 2008 Glasgow
- Rotary Award 2011
- Gold medal at IAC 2013 in Beijing
- 2013 Amelia Earhart Fellowship by Zonta

**International Education**



# UNISEC Europe (application)

## Objectives

- joint proposals for space outreach activities to be funded by European Union, ESA
- contributions to CanSat educational programs
- joint CubeSat conferences and exchange of experiences
- organization of small satellite ground station networks to support the CubeSat community
- standardization of electrical and software interfaces

## Members

- UNISEC Germany
- UNISEC Lithuania
- UNISEC Samara
- UNISEC Turkey
- ...



# Offers for cooperations

- International missions emphasizing distributed networked small satellites for applications in Earth observation and telecommunications
- Support in small satellite design
- International cooperation for networked ground stations
- Intensive classes on small spacecraft design (Tunisia, Russia, USA, Turkey, Brasil, China, ...)
- Participation of students in the „SpaceMaster“ program (<http://www.spacemaster.uni-wuerzburg.de/> )
- Information exchange at Pico- and Nano-Satellite conference (alternating in Berlin and in Würzburg, already 8 conferences, > 100 participants)

**Contact:** Prof. Dr. Schilling [schi@informatik.uni-wuerzburg.de](mailto:schi@informatik.uni-wuerzburg.de)



## 8<sup>th</sup> Pico and Nano Satellite Workshop *Technology for Small Satellite Research*

September 15-16, 2015  
Würzburg, Germany



### Topics

- In orbit experiences
- Small satellite missions
- Distributed small satellite systems
- Subsystem technologies for small satellites
- Payloads for small satellites
- Applications
- Flight opportunities and launchers for Pico satellites
- Educational aspects

### Call for Papers and Detailed Information

The call for papers and other information will be provided on the following website:

[www7.informatik.uni-wuerzburg.de/pina2015](http://www7.informatik.uni-wuerzburg.de/pina2015)

### Würzburg

The city is located near the center of Germany, offers a wide range of recreation and leisure activities together with theaters, open-air concerts, and wine festivals. Located at the shores of the river Main, vineyards, castles, medieval cities and baroque residence palace are characteristic for the region. Würzburg offers a broad range of accommodations facilities at all costs.



### Registration

Participants are requested confirm their participation through e-mail latest by August 12th, 2015.

- Registration fee: 70 €

The registration fee covers lunch and coffee breaks expenses for the duration of workshop.

### Schedule

- Submission of abstract: July 20, 2015
- Notification of acceptance: August 05, 2015
- Registration closure: August 12, 2015
- Workshop: September 15-16, 2015

### Language

The main language of the workshop is English but contributions in both English and German languages are accepted.

### Workshop Location

The IFAC symposium will be held at the Informatics building, Turing-Hörsaal, located at Hubland campus of University of Würzburg and can be quickly be reached by public transport from the city center.



### Approach

Würzburg can be easily approached by frequent trains directly from Frankfurt airport in about one hour. Two ICE high speed train routes cross pass through Würzburg, as well as three important German motorways, the A3, A7 and A81. Thus access by train or car is very efficient and easy.