



TEXAS TECH  
UNIVERSITY.

JADE UNIVERSITY  
OF APPLIED SCIENCES  
Wilhelmshaven Oldenburg Elsfleth

# Joint Project Overview

## Texas Tech University – Jade UAS

A best practice report for the IMPROPAL project



- Joint study of TTU and Jade UAS students to foster International Cooperation and Intercultural Competence
- Teaching method *which is particularly suitable: Project Work*
- *application of their theoretical* knowledge from home universities in a practical project
- Result: a finalized product
- Assessment: final presentation
- Interdisciplinarity: Students from different disciplines cooperate: mechanical engineering, electrical engineering, management
- Modules with a big intersection of knowledge = programming, control engineering, automation technology, sensor and actor technology, project management

- The students start with a complete mechanic physical system
- By using their skills they have to...
  - repeat the theory
  - create a concept
  - complete the phys. system with sensors and actors
  - program the software
  - test their software
  - present their project
- The project is finished within one semester.

# THE PROJECT PHASES



TEXAS TECH  
UNIVERSITY.



Spring 2016

TTU & Jade

- Literature research
- Arduino and MIT App Inventor 2

Summer 2016  
together at Jade

- Kick-Off-Meeting, grouping
- Lectures, definition work packages, create basic functions
- Presentation

Fall 2016  
Distance Learn.

- Resolve problems
- Create special functions

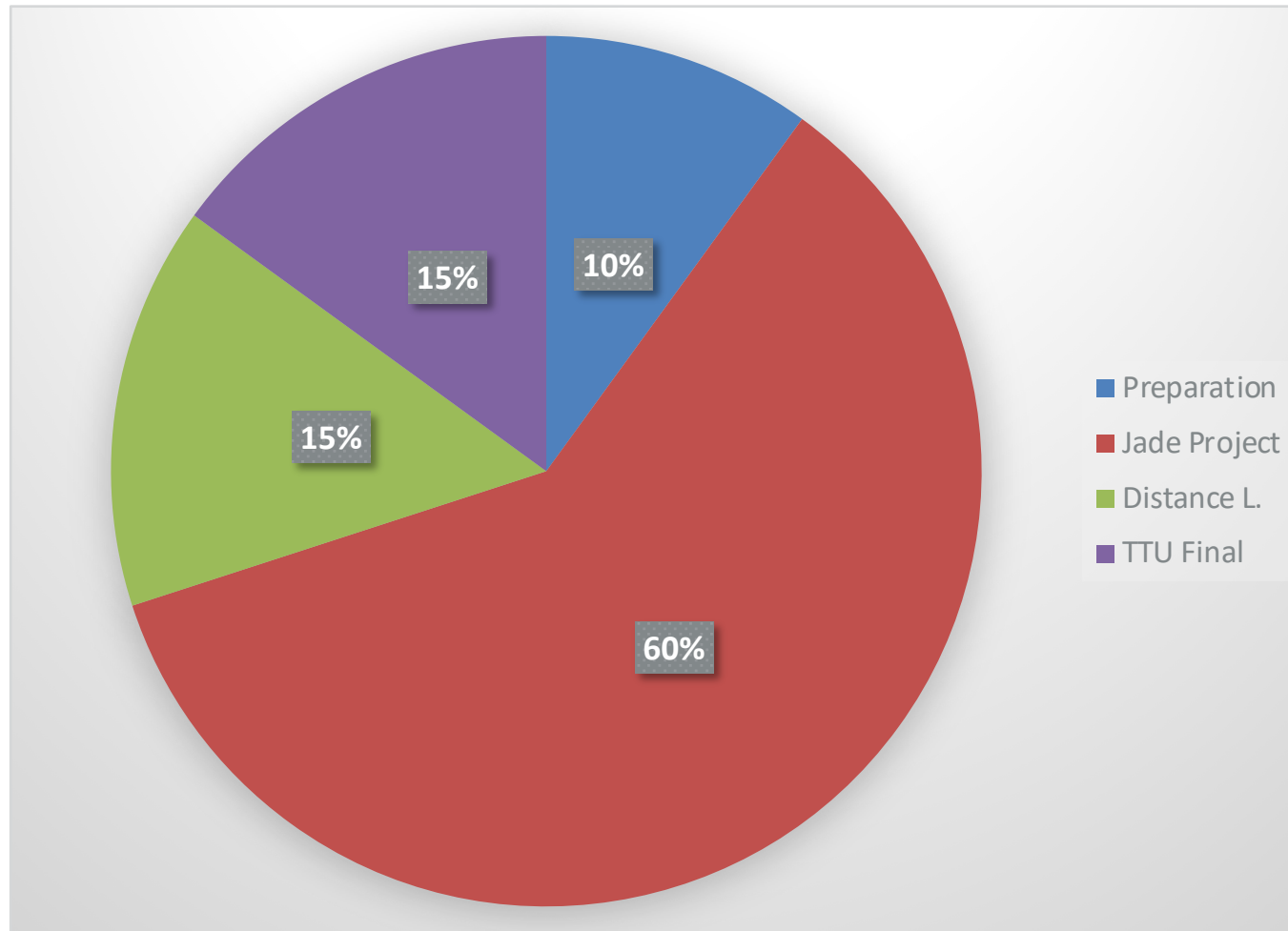
Sep. 2016  
together at TTU

- Test the whole system
- Final Presentation

# WEIGHT OF THE PHASES

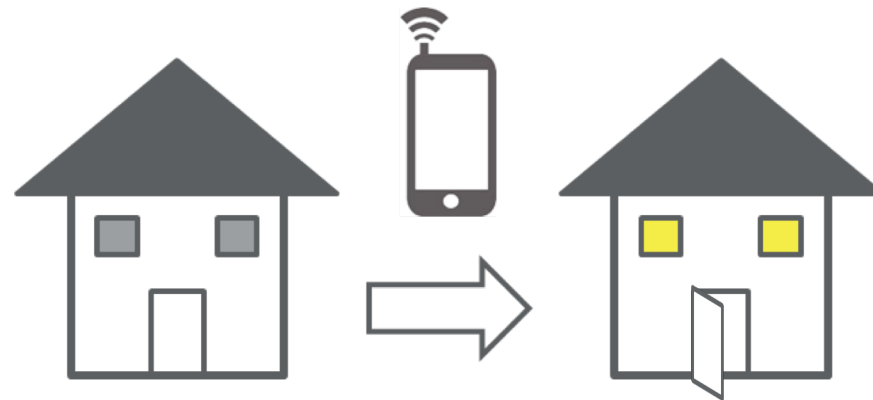


TEXAS TECH  
UNIVERSITY.



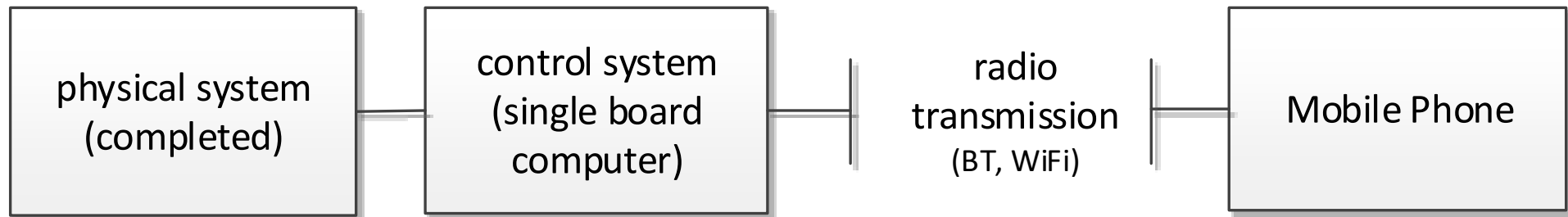
The students receive a complete physical system. By using their skills in control engineering, automation technology, programming, sensor and actor technology, project management, they have to

- create a concept
- complete the physical system with sensors and actors
- program the software and
- test the software



to control the system via a wireless connection. The results will be finally presented.

## The Task – details:



1. Development of a mathematical system
2. Planning of sensors and actuators for the system
3. Selection and analysis of single board computer
4. Programming of the SBC
5. Testing the current system
6. Programming the Mobile Phone
7. Testing the complete system



## Required technical skills:

- Control technology
- Sensor and actuator technology
- Measurement technology
- Programming

## Additional required skills:

- Language skills
- Intercultural competence

➤ The joint project work will deepen basic knowledge and skills of the students





Two work packages for the students:

Distance learning at the respective locations (TTU, Jade UAS)

- Theoretical basics are taught and exercised during the lectures from the study plan
- Literature search

Joint project work (Jade UAS, 5 weeks, starting May or June)

- Kick-Off-Meeting
- Formation of groups
- Lectures on specific theory
- Working on the project task in interdisciplinary teams consist of students from the TTU and Jade UAS



## Overview

Lectures and joint project work (approx. 2-4 days per week)

- Approx. 30 hours per week
- 5 weeks of joint project work result in finally 150 hours
- This corresponds to 5 ECTS Credit Points

Cultural program (approx. 1-2 days per week)

- Company visits
- City trip (for example Berlin)
- Exploration of the surroundings (for example *Wattenmeer*)
- Lectures on Germany (history, policy, etc.)

# PROJECT PLAN



TEXAS TECH  
UNIVERSITY.

JADE UNIVERSITY  
OF APPLIED SCIENCES  
Wilhelmshaven Oldenburg Elsfleth

Nr.	Exercise	Ressource	kind of lesson	KW 28	KW 29	KW 30	KW 31	KW 32
				11.07.	18.07.	25.07.	01.08.	08.08.
				MDMDFSS	MDMDFSS	MDMDFSS	MDMDFSS	MDMDFSS
1	Kick-Off Meeting							
	Presentation of the programm, Create groups	<teacher>	Lecture					
2	Repetition basics/ lecture							
	Description of the given situation, lecture, Repetition basics	<teacher>	Lecture / Teamwork					
3	Students develop concepts/ strategy							
	Finding problem solutions, Discussion of the results	<teacher>	Teamwork					
4	Project: Students implementate their ideas							
	Perform measurements, Selection and sizing of the equipment, Programming Software...	<teacher>	Teamwork					
5	Presentation of the basic results							

# WEEKLY SCHEDULE



TEXAS TECH  
UNIVERSITY.

JADE UNIVERSITY  
OF APPLIED SCIENCES  
Wilhelmshaven Oldenburg Eilsfleth

10.7. Sonntag

Arrival

## KW 28: Kick-Off Meeting, Presentation of the programm, Create groups

Jul 11	Jul 12	Jul 13	Jul 14	Jul 15	Jul 16	Jul 17
Welcome / Kick Off Meeting	Theory					

## KW 29: Description of the given situation, lecture, Repetition theory

Jul 18	Jul 19	Jul 20	Jul 21	Jul 22	Jul 23	Jul 24
Excursion	Theory / Teamwork			Excursion		

## KW 30: Students develop concepts/ strategy: finding problem solutions, Discussion of the results

Jul 25	Jul 26	Jul 27	Jul 28	Jul 29	Jul 30	Jul 31
	Teamwork		Excursion	Teamwork		

## KW 31: Perform measurements, Selection and sizing of the equipment, Programming Software

Aug 1	Aug 2	Aug 3	Aug 4	Aug 5	Aug 6	Aug 7
Teamwork			Excursion	Teamwork	Excursion	

## KW 32: Presentation of results

Aug 8	Aug 9	Aug 10	Aug 11	Aug 12
Teamwork		Pre Presentation of the results	farewell dinner	Departure

# TIMETABLE



TEXAS TECH  
UNIVERSITY.



## American-German summer course Program July 11th - August 12th 2016

		class 1	class 2	lunch	class 3	class 4	Theory	Groupwork	
		8:30-10:00	10:15-11:45	60 min.	12:45-14:15	14:45-16:15	minutes	minutes	minutes
	<b>10.07.2016</b>	Arrival							total
									a day
<b>KW28</b>	11.07.2016	Welcome address President 10am Jade University							
		Theory			Theory		900	270	1170
<b>KW29</b>	18.07.2016	Theory			Theory		0	1350	1350
<b>KW30</b>	25.07.2016	Groupwork			Groupwork		0	1260	1260
<b>KW31</b>	01.08.2016	Groupwork			Groupwork		0	1080	1080
<b>KW32</b>	08.08.2016	Groupwork					0	720	720
	<b>12.08.2016</b>	Departure							
					total (minutes)		900	4680	5580



Student groups which participate in the lecture project:

Texas Tech University (up to 20 .. 25 students, 3. year)

- College of Engineering

Jade UAS (up to 20 students, 3. year)

- Department of Engineering Sciences (10)
  - Electrical Engineering
  - Mechanical Engineering
  - Mechatronics
- Department Management, Information, Technology (10)
  - Engineering and Management

In enterprises – in addition to technical abilities – increasingly the following skills are required:

- Business knowledge
- Language skills
- Intercultural competence: As customers are everywhere in a globalized world knowledge and skills to work in international contexts are required. 'Diversity' in team becomes more and more important.

The evidence of ability to have worked successfully in international projects are very important to improve chances in the labor market.

➤ These skills are provided to our students by international project work.