

## Syllabus: Precision Engineering Measurement and Design

### TU Berlin Summer University 2019 Term 1

#### Week 1 June 10<sup>th</sup>-14<sup>th</sup>

	10	11	12	13	14
	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 - 10:30	Public Holiday in Germany	<b>Welcome Day!</b> Room H3005, 3 <sup>rd</sup> floor, TUB main building  10:30: Orientation session 12:30-13:15: Buffet lunch 13:30-15:30: First class session 15:30-16:15: Campus Tour 16:15-16:45: Coffee & Cake	Introduction to Measurements	Engineering Tour	Statistics
11:00 - 12:30			Statistics	Engineering Tour	Errors in Measurement
13:30 - 15:30			Cultural Program	Engineering Tour	Group Work
16:00 +				Cultural Programm	

#### Week 2 June 17<sup>th</sup>-21<sup>st</sup>

	17	18	19	20	21
	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 - 10:30	Engineering Design Process	Engineering Tour	Tribology	Rheology	No class
11:00 - 12:30	Engineering Design Process	Engineering Tour	Tribology	Rheology	Cultural Program
13:30 - 15:30	Group Work	Engineering Tour	Cultural Program	Group Work	
16:00 +	Cultural Program				

## Week 3 June 24<sup>th</sup>-28<sup>th</sup>

	24	25	26	27	28
	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 - 10:30	Uncertainty Analysis	Engineering Tour	Optics	Sensors	No class
11:00 - 12:30	Uncertainty Analysis	Engineering Tour	Optics	Actuators	
13:30 - 15:30	Group Work	Engineering Tour	Cultural Program	Group Work	
16:00 +	Cultural Program				

## Week 4 July 1<sup>st</sup>-5<sup>th</sup>

	1	2	3	4	5
	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 - 10:30	Controllers	Soft Materials	Engineering Tour	Case Study 1	No class
11:00 - 12:30	Monte Carlo Methods	Soft Materials	Engineering Tour	Case Study 2	Last class
13:30 - 15:30	Group Work	Group Work	Engineering Tour	Final Exam	<b>Certificates Ceremony</b> Lichthof, 1 <sup>st</sup> floor, TU Berlin main building
16:00 +	Cultural Program				

### Key

Lecture	Field Trip or Practical	Assessment	Cultural Program activity*
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\*The cultural program timetable will be emailed to you shortly before your course starts. For more information about the cultural program, and for examples of previous schedules, head here: [https://www.tu-berlin.de/menue/summer\\_university/cultural\\_program/](https://www.tu-berlin.de/menue/summer_university/cultural_program/)

## Engineering Tours for Course Content:

Four lecture days will involve faculty-accompanied tours where students will learn about precision measurement and design in both historic and current engineering practice. Student reports and problems for the course will be based on tour content. Faculty led discussions and reflections on the course content from a historical perspective will occur.

- Tour 1: German Science and Technology Museum
- Tour 2: TBA
- Tour 3: Berliner-Kindl-Schultheiss-Brauerei
- Tour 4: BAM (Bundesanstalt für Materialforschung)

## Assessment information

Student grades will be comprised of performance on homework assignments, in-class group work, one short written report, and a culminating final exam.

- Homework – 20 %
- Group Work – 30 %
- Report – 20 %
- Exam – 30 %

## Grading information

All participants of the TU Berlin Summer & Winter University are required to select their grading option at the time of registration. The two options available are (i) graded or (ii) pass/fail.

All participants who select option (i) graded, will receive a grade under the German grading system. The following table provides an overview of the grading system and equivalent scores for international credit transfers:

Total mark	German grade	English description
More or equal to 95	1,0	Excellent
More or equal to 90	1,3	Very good
More or equal to 85	1,7	Good
More or equal to 80	2,0	Good
More or equal to 75	2,3	Good
More or equal to 70	2,7	Satisfactory
More or equal to 65	3,0	Satisfactory
More or equal to 60	3,3	Satisfactory
More or equal to 55	3,7	Sufficient
More or equal to 50	4,0	Sufficient
Less than 50	5,0	Failed

## Credit Points

ECTS is a point system and European standard developed by the Commission of the European Community. ECTS stands for European Credit Transfer System. The aim is to provide common procedures and guarantee academic recognition of studies abroad. The credit system is based on student workload. All lectures, seminars, excursions and homework count towards the workload. One point is awarded for the equivalent of 25-30 hours of workload.

## Reading list

There are no required text books for this class. Students will be provided handouts, and/or will be emailed any useful materials.

Students will need to bring materials to take notes in class and should bring a laptop with Microsoft Word, Excel, and PowerPoint in order to complete assignments.