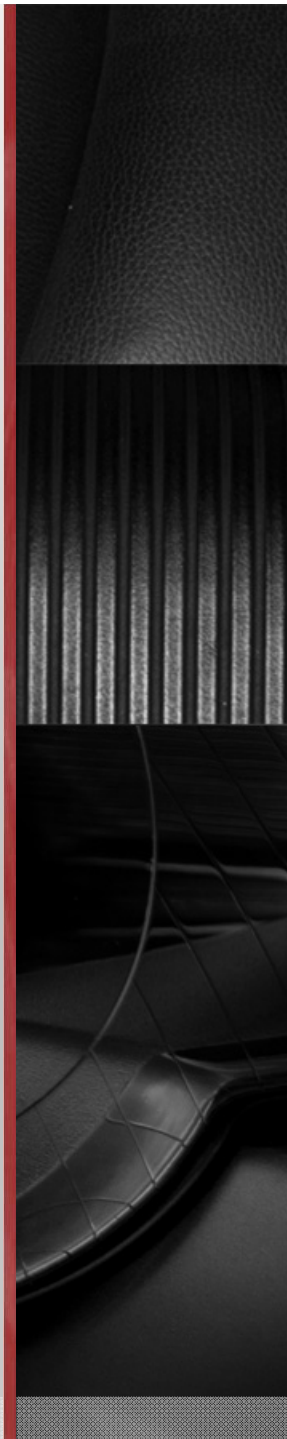


# CONTRIBUTION OF CZECH TECHNICAL UNIVERSITY TOWARDS THE DEVELOPMENT AND DELIVERY OF SMTP

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# ABOUT CTU

- **One of the oldest technical university in Europe**
- Established 1707 by Edict of Joseph I
- **8 Faculties**
  - **Electrical Engineering (since 1950)**
  - Architecture
  - Biomedical Engineering
  - Civil Engineering
  - Information Technology
  - Mechanical Engineering
  - Nuclear Sciences and Physical Engineering
  - Transportation Sciences
- **~25 000 students**



# ABOUT THE SMTP

- developed under the auspices of the ITU Academy
- comprises a set of high level training materials in all areas of Spectrum Management
- covers a full range of topics developed by experts drawn from within and outside ITU
- **Coordinated by the Human Capacity Building division within the Projects Support and Knowledge Management department of the ITU's Telecommunications Development Bureau (BDT),**
- developed by experts, academia representatives and other stakeholders





# SMTP - two level approach

Basic and Advanced levels : Each level includes obligatory modules (OM) and elective modules (EM)

Specialization: Technical, Legal/economic

## BASIC

**OM1:** Legal Basis and Regulatory Framework of Spectrum Management;  
**OM2:** Spectrum Engineering Fundamentals;  
**OM3:** Wireless Telecommunications Technologies;  
**EM1-1:** Spectrum Monitoring;  
**EM1-2:** Enforcement and Type Approval of Equipment;  
**EM1-3:** SM for Satellite Systems;  
**EM1-4:** SM for HF Systems, Science, Maritime and Amateur Services;  
**EM1-5:** SM for Aeronautical and Radio Determination Services and Military Systems;  
**EM1-6:** Computer-aided Spectrum Management

## ADVANCED

**OM4:** Economic and Market Tools of Spectrum Management;  
**OM5:** Strategic Planning and Policies for Wireless Innovation;  
**EM2-1:** (Legal Specialization): Advanced Spectrum Authorization Regimes;  
**EM2-2:** (Legal Specialization): Socio-Economic Impact of Spectrum Regulation; Competition and Consumer Protection;  
**EM2-3:** (Technical Specialization): Terrestrial TV Broadcasting Planning and Digital Transition;  
**EM2-4:** (Technical Specialization): Opportunistic Spectrum Access and Cognitive Radio.



# SMTP

- **2 semesters (1 year)**
- **Combination of face-to-face, remote teaching and self-studying**
- **Module corresponds to**
  - ...4-5 weeks per module
  - 125 hours, 40 hours of classroom training
  - 30 hours of lectures
  - 10 hours of practical exercises
  - About 20 slides per lecture
  - Assessment in the end of each module (about 50-100 assessment questions)



# SMTP Implementation at CTU

- Running at CTU promises in Prague
  - Logistics support (accommodation, etc.)
- Standalone program (no CTU's master program) → flexibility
  - Accreditation of program is no needed
  - "SMTP semester" can begin anytime
  - Selected SMTP modules will be part of CTU's master program (students will obtain ECTS for these modules)
- On-site and Online versions
- Diploma/certificate (ITU certificate)






# Example: Spectrum Monitoring (EM1-1)

## ■ Basic Theories

- Signals, Modulations, Spectrum
- Antennas – basic parameters
- Monitoring equipment – principles
- Introduction to EMC
- Propagation
- SW monitoring

## ■ Practical Measurements

- Signal parameters
  - Modulation parameters
  - Antenna parameters
  - Occupied bandwidth measurements
  - Interference analysis
  - Direction finding
- 



# Conclusions

- SMTP is implemented with cooperation with ITU since September 2015 (last run: started January 2017)
  - Place: CTU in Prague, Prague, Czech Republic
  - 2 semesters of blended learning
  - lectures – distance education
  - practical training and exams – 1 week per semester in Prague
- <https://comtel.fel.cvut.cz/cs/itu/academy/sntp>





**Thank you for your attention!**

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