



# Teaching and Learning During COVID-19 Pandemic at Aarhus University (Denmark)

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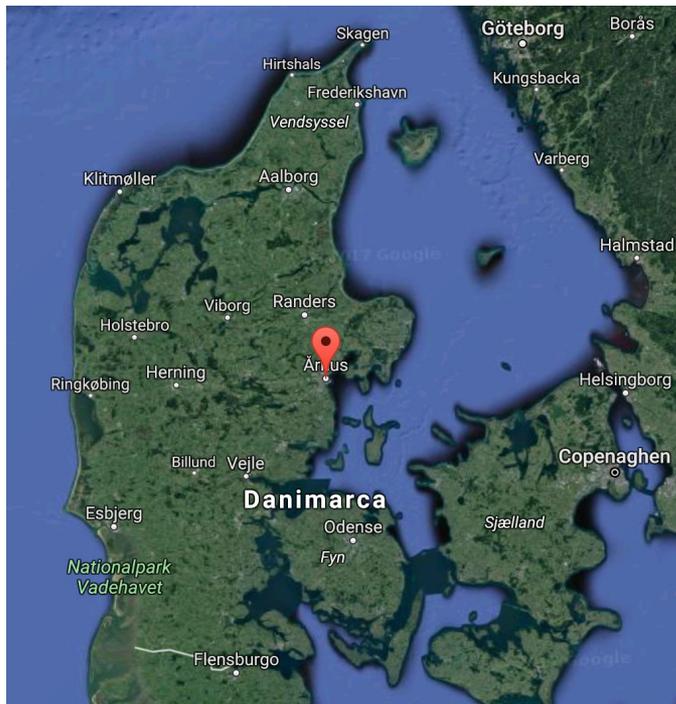
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# Outline

- Aarhus University: Briefs
  - Some figures and facts
- Aarhus University: Engineering
  - Electrical and Computer Eng.
- Teaching and Learning during COVID-19 pandemic
  - Virtuality vs. Reality
- My teaching and learning experience
  - Analog Electronics, Analog ICs, Radio-Frequency ICs
- My Conclusions

# Aarhus University: Briefs

- Funded in 1928 as public and independent university
- 2<sup>nd</sup> largest city of Denmark (EU Capital of Culture 2017)
- 2<sup>nd</sup> largest university in Denmark (40000 students)
  - 2000 international students from 120 countries



# Aarhus University: Briefs

- 5 faculties, 44 departments (inside/outside the Campus)
- 90 BSs (10 EN), 128 MSc (60 EN), 32 PhD (EN) programmes



# Aarhus University: Briefs

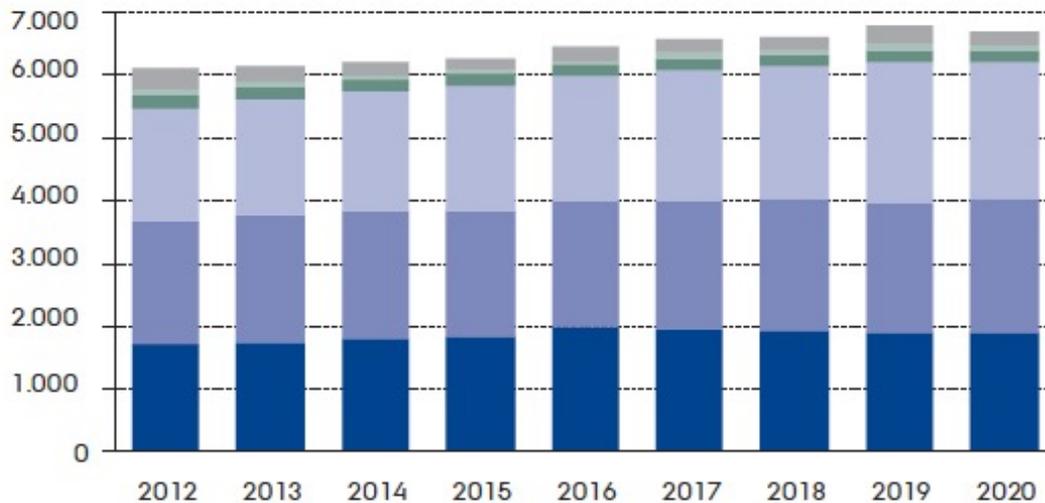
- 104<sup>th</sup> work-wide university ranking by THE (2<sup>nd</sup> of Denmark)
- World/EU/Denmark positioning vs. university rankings

	WORLD	EU	DENMARK
SHANGHAI	71	11	2
LEIDEN	128	25	3
NTU	93	21	2
QS	155	32	3
THE	104	23	2
US NEWS	103	25	2

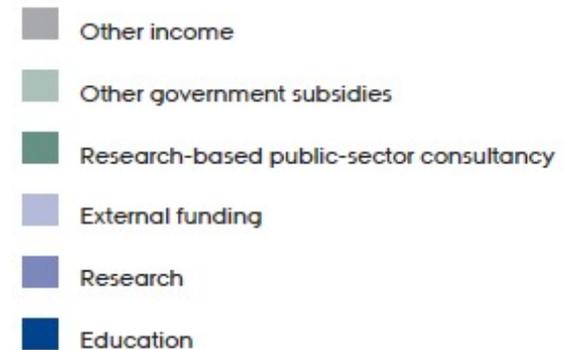
# Aarhus University: Briefs

- Total income vs. sources

- About 1/3 education, 1/3 research and 1/3 external funding



AU's total income, by purpose, DKK mill.  
in prices for the year



# Aarhus University (AU): Engineering

- Faculty of **Technical Sciences**
- 4 Departments

Department of Biological and  
Chemical Engineering

**bce.au.dk**



Department of Civil and  
Architectural Engineering

**cae.au.dk**



Department of Electrical and  
Computer Engineering

**ece.au.dk**



Department of Mechanical and  
Production Engineering

**mpe.au.dk**



# AU: Electrical & Computer Engineering (ECE)

- Aarhus University School of Engineering (100+ years)
  - Diploma in Engineering (4 years)
- 2011: Department of Engineering
  - MSc (since 2011), BSc (since 2020)
- 2021: Department of Elec. & Comp. Engineering
  - Diploma (50 students/year)
  - BSc (50 students/year)
  - MSc (25 students/year)
- 1<sup>st</sup> semester: August - December
- 2<sup>nd</sup> semester: January - May

# Aarhus University – Denmark **Lockdown**

- Friday 13 March 2020 8pm: **The “Corona” lockdown!**
  - Corona **thing**, Corona **stuff**, and in the end just... **Corona!**
- **AU: Two-week teaching suspension**
  - **No access to university premises**
  - Discussions about which software tool (Zoom)
  - Training sessions of teaching staff
  - **Cancellation of all labs**
  - **Online teaching**
  - Revisions of the course catalogues
  - **Online exams**

# AU ECE: Teaching & Learning (a.a. 2020/2021)

- 1<sup>st</sup> semester (Autumn 2020): **Only physical presence!**
  - Including labs
  - **Progressive increase of infections...**
  - **Hybrid exams**
- 2<sup>nd</sup> semester (Spring 2021): **Only online teaching!**
  - Hybrid teaching discouraged (limited arrangements)
  - **No labs**
  - **Students were given hardware component kits**
  - **Online exams**

# AU ECE: Teaching & Learning (a.a. 2021/2022)

- 1<sup>st</sup> semester (Autumn 2021): **Only physical presence!**
  - Including labs
  - **Progressive increase of infections...**
  - **Hybrid exams**
- Friday 31 January 2022: **Stop restrictions!**
  - 80% population immunized
  - **50.000 (+1% population) new infections a day**
- 2<sup>nd</sup> semester (Spring 2022): **Only physical teaching!**
  - **Classes decimated... right now!**
  - **Teaching “Jungle”... (really everything...)**
  - **Some (very few) labs...**
  - Exams (?) – likely in physical presence but... who knows?!

# AU ECE: My Teaching Courses

- Analog Electronics (BSc) – 5 ECTS
  - 4 hrs/w, 11 weeks, 2 assignments (50%) and final exam (50%)
  - Lecture: 2 hrs/w
  - Exercise and CAD sessions: 2 hrs/2w
  - Labs: 2 hrs/2w
- Analog ICs (MSc) – 5 ECTS
  - 6 hrs/w, 7 weeks, 2 assignments (50%) and final exam (50%)
  - Lecture: 4 hrs/w
  - Exercise and CAD sessions: 2 hrs/w
- Radio-Frequency ICs (MSc) – 5 ECTS
  - 6 hrs/w, 7 weeks, 2 assignments (50%) and final exam (50%)
  - Lecture: 4 hrs/w
  - Exercise and CAD sessions: 2 hrs/w

# My Teaching Courses: Analog Electronics (BSc)

- Spring 2020: “Zero-time” switching to online teaching (3/5 labs)
  - Recordings
  - 90% attendance, good teaching and learning experience
  - Good student performance (4 assignments and final exam)
- Spring 2021: Only online! (no labs)
  - Recordings
  - Teaching assistants task force (3), mentoring programme (none)
  - 60% attendance, fair teaching and learning experience
  - Fair student performance (3 assignments and final exam)
- Spring 2022: Only physical presence... but on Zoom!
  - Recordings
  - 30% physical attendance, uncertainty on teaching and learning experience
  - Evaluations (plan): 2 assignments and final exam

# My Teaching Courses: Analog ICs (MSc)

- Spring 2020: “Zero-time” switching to online teaching
  - Recordings
  - 100% attendance, good teaching and learning experience
  - Quite good student performance (2 assignments and final exam)
- Spring 2021: Only online!
  - Recordings
  - 80% attendance, quite good teaching and learning experience
  - Acceptable student performance (2 assignments and final exam)
- Spring 2022: Only physical presence!
  - No recordings
  - 50% attendance, uncertainty on teaching and learning experience
  - Evaluations (plan): 2 assignments and final exam

# My Teaching Courses: RFICs (MSc)

- Spring 2020: **Online teaching**
  - Recordings
  - 100% attendance, good teaching and learning experience
  - Quite good student performance (2 assignments and final exam)
- Spring 2021: **Only online!**
  - Recordings
  - 80% attendance, acceptable teaching and learning experience
  - Acceptable student performance (1 assignment and final exam)
- Spring 2022: **Only physical presence!**
  - No recordings
  - 50% attendance, uncertainty on teaching and learning experience
  - Evaluations (plan): 1 assignment and final exam

# My Conclusions

- Online teaching & learning tools have allowed solving somehow a (big) problem and has provided a great acceleration to the progression in the Digital Era (having tools  $\neq$  having teachers and students)
- Lots of responsibilities and efforts left to teachers, university and government measures quite insufficient
- Quite positive experience: “zero-time” switch, acceptable/good results for the boundary conditions, but massive workload/efforts
- Online T&L has inherent pros and cons, it has been key to address an emergency, can expand in-class teaching, but is not the *Panacea* of solving all major issues of modern T&L, rather emphasizes the needs
- The potential is quite large, but still unexplored to fully address the frontiers of modern teaching and learning (e.g. mass resources vs. first-hand contents)
- Teaching “Revolution” would be desirable... but...

... **Vision** is required!

