SEMB / SETR - 2019/2020 – Topics for seminars

- Moon landing of Apollo 11
  - http://www.hq.nasa.gov/office/pao/History/SP-350/ch-11-4.html
  - http://klabs.org/history/apollo_11_alarms/eyles_2004/eyles_2004.htm
- Mars Pathfinder
  - https://www.cs.unc.edu/~anderson/teach/comp790/papers/mars_pathfinder_long_version.html
- SCHED_DEADLINE in Linux, and its features
  - https://www.youtube.com/watch?v=wzrcWNIneWY
  - https://www.kernel.org/doc/Documentation/scheduler/sched-deadline.txt
- Boot sequence of embedded Linux in a PC
  - UEFI --> bootloader --> kernel --> OS --> OS services
  - https://en.wikipedia.org/wiki/Unified_Extensible_Firmware_Interface
  - https://www.quora.com/How-does-the-Linux-boot-process-work
- Compare tickless versus tick-based kernels
  - https://www.quora.com/What-is-a-tickless-kernel
  - http://www.freertos.org/low-power-tickless-rtos.html
  - http://stackoverflow.com/questions/24105287/what-is-meant-by-real-time-operating-system-tick-time-and-what-is-the-use-of-this
- Linux tickless operation
  - http://www.cs.columbia.edu/~nahum/w6998/papers/ols2007v2-tickless.pdf
  - http://elinux.org/Kernel_Timer_Systems
  - http://elinux.org/High_Resolution_Timers
- Metrics and benchmarks for RTOS
  - https://www.embedded.com/measure-your-rtoss-real-time-performance/
  - http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=6021563&tag=1
- Implementation concerns related to priority inheritance
  - https://www.embedded.com/how-to-use-priority-inheritance/
  - Search for “Against Priority Inheritance”
  - http://www.math.unipd.it/~tullio/SCD/2007/Materiale/Locke.pdf
- Applying Android OS to real-time applications
  - https://www.researchgate.net/publication/236952843_Android_and_Real-Time_Applications_Take_Care
- General description of eCOS
  - http://www.ecoscentric.com/news/press-170314.shtml
- General description of QNX Neutrino RTOS
  - https://pt.slideshare.net/raziel_lucagbo/qnx-os
  - http://www.qnx.com/developers/docs/6.5.0/index.jsp?topic=%2Fcom.qnx.doc.neutrino_user_guide%2Fos_intro.html
- General description of VxWorks RTOS
  - https://resources.windriver.com/vxworks-introductory-video-tour
  - https://resources.windriver.com/articles/engineer-complex-connected-systems-for-safety-security-and-reliability-2
- RT_PREMPT, bringing real-time to Linux
  - https://www.researchgate.net/publication/331290349_The_real-time_linux_kernel_A_survey_on_Preempt_RT
- General description of FreeRTOS

    - https://www.freertos.org/about-RTOS.html
- MISRA-C motivation and overview
    - https://www.embedded.com/introduction-to-misra-c/
- AUTOSAR coding guidelines
    - https://www.automotive-iq.com/electrics-electronics/whitepapers/introduction-autosar-coding-guidelines
- WCET determination (and CPU architectures)
    - https://www.timing-validation.com/wcet/
    - https://pdfs.semanticscholar.org/5c61/6f61e8c9f79453dfdad3cdc9300151ef0e43.pdf
- ISO 26262 motivation and overview
    - https://www.feabhas.com/sites/default/files/2016-06/A%20quick%20guide%20to%20ISO%2026262[1]_0_0.pdf
- Boeing 777 fly-by-wire architecture
    - https://citemaster.net/get/3096e588-8b87-11e8-8c74-00163e009cc7/yeh98_777-fbw.pdf
- Autnomous vehicles reference architecture
    - https://www.altran.com/as-content/uploads/sites/7/2018/09/brochurea5_autonomousdriving_web.pdf
    - https://cs.ru.nl/~aserban/public-papers/pdf/ASerban_Standard_Arch_journal.pdf

Assessment items

- **Technical accuracy** (orally and on the slides) (8 points)
- Trafe-off between **technical depth** and **coverage** of the topic (6 points)
- **Layout** (the simpler the better) (2 points)
- **Oral flow** (fluidity and organization of ideas) (2 points)
- **Timliness** (2 points)