Welcome to Digital & Embedded Systems ENSC3020/ELEC4403 2021

Professor Thomas Bräunl, office EE4.15, phone 6488-1763

Unit web site:

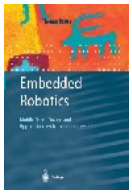
http://robotics.ee.uwa.edu.au/courses/des/
http://robotics.ee.uwa.edu.au/nano/
http://robotics.ee.uwa.edu.au/rasp/

Lab / Project Contact:

- Marcus Pham <marcus.pham@uwa.edu.au>

Material:

- Lecture notes **free online**: http://robotics.ee.uwa.edu.au/courses/des/lecture/ or printed from bookstore
- Textbook "Embedded Robotics" 3rd Ed., **free online** at UWA OneSearch or at bookstore
- Each student gets a **free Arduino Nano** ! Collect at EE 1st floor reception or ask for it to be mailed.



Weekly:

- Lectures — In-person, interactive-remote, recorded, and pre-recorded
- Tutorials / lab preparations — In-person and recorded
- Labs — week 2–12, 1-2 students per group, three-hour block
- Project — week 6–12, 3-4 students per group, free timing

Assessment:

• Prac Course	P/F	wk 2+3	attendance and reasonable effort
• C Test	P/F	before wk 10	any number of tries (50% needed for pass)
• Labs	20%	wk 4-12	best 8 incl. #9
• Project	20%	wk 6-12	
• Midterm 1	30%	wk 6	
• Midterm 2	30%	wk 11	
Total	100%		

Semester Dates:

Week	Week start	Lectures		Textbook reading	Project	Tutorial/Prep.	Lab	Type	Lab contents best 8-of-9 (must 9)
1	*26-Jul*	1. Introduction	2. Number Systems	Ch. 1 + notes		–	–	–	---
2	*2-Aug*	3. Circuits	4. Memory	Ch. 2.1–2.3		**1 Number Systems**	P1	Prac	Tools + PCB Design
3	*9-Aug*	5. CPU	*(continued)*	Ch. 2.4–2.7		**2 Combinatorial**	P2	Prac	Soldering + 3D Print
4	*16-Aug*	6. Assembly	7. State Machines	lecture notes		**3 CPU/Retro**	**1**	**Sim**	State Machines
5	*23-Aug*	8. Architecture	9. Actuators	notes + Ch. 4		**4 Hardware+ASM**	**2**	**Sim**	CPU-Design
6	*30-Aug*	Test preparation	**Midterm-1, 2 Sep.**	–	**Start**	**5 State Machines**	**3**	**HW**	Adder
	6-Sep	*STUDY BREAK*							
7	*13-Sep*	10. C Programming	*(continued)*	C-Book + online	**work**	**6 C Programming**	**4**	**HW**	Counter
8	*20-Sep*	11. Control	12. Sensors	Ch. 5 + 3	**work**	**7 Nano**	**5**	**ASM/ C**	Reaction Game
9	*27-Sep*	13. Linux	14. Image Proc.	notes + Ch. 19	**work**	**8 PID / Raspberry**	**6**	**C**	Servo Control
10	*4-Oct*	15. IO	*(16. Multitasking optional)*	notes (+ Ch. 6)	**work**	**9 Image Processing**	**7**	**C**	Motor Control
11	*11-Oct*	Test preparation	**MidTerm-2, 14 Oct.**	–	**work**	**10 Robot Driving**	**8**	**C**	Image Processing
12	*18-Oct*	**Project presentations**		–	**Finish**	–	**9**	**C**	Robot Driving