Welcome to Embedded Systems – ENSC3020   2024
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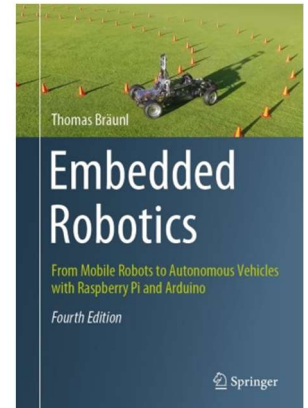

Unit web site:
>   http://roblab.org/courses/embedded/
>   http://roblab.org/ttgo/
>   http://roblab.org/rasp/
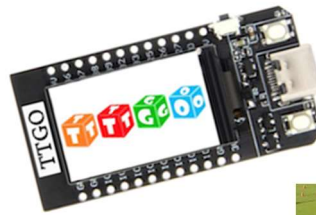
Material:
- Lecture notes **free online** on LMS
  or printed from bookstore
- Textbook "Embedded Robotics" 4th Ed.,
  free online at UWA OneSearch or at bookstore
- Each student gets a **free TTGO controller** !
  Collect in lab session.

Weekly:
- Lectures   In-person (recorded)
- Tutorials / lab preparations   In-person (recorded)
- Labs   week 3–12, 1-2 students per group, three-hour block
- Project   week 6–12, 3-4 students per group, free timing

Assessment:
- Labs   25%   wk 3-12   best 9 out of 10 labs (must do final lab)
- Project   25%   wk 6-12
- Midterm 1   25%   wk 6
- Midterm 2   25%   wk 11
- Total   100%

Must achieve at least 50% in labs and at least 25% in Project to pass the unit.

Semester Dates:

Week	Week start	Lectures		EmRo reading	Project	Tut	Tutorial/Prep.	Lab	Type	Lab contents
1	22-Jul	1. Introduction	2. Number Systems	Ch. 1 + notes			--	--	--	---
2	29-Jul	3. Circuits	4. Memory	Ch. 2.1–2.3		1	Number Systems	--	--	---
3	5-Aug	5. CPU	(continued)	Ch. 2.4–2.7		2	CPU/Retro	1	Sim	State Machines
4	12-Aug	6. Assembly	7. ESP32 8. Architecture	Ch. 3 + notes		3	Hardware+Assembley	2	Sim	CPU-Design
5	19-Aug	9. C Programming	10. Actuators	notes + Ch. 6		4	Architecture + C (TTGO)	3	HW	Adder/Counter
6	26-Aug	Test preparation	Midterm-1, 29. Aug.	–	Start	5	Actuators + Sensors	4	TTGO	Reaction Game
	2-Sep	STUDY BREAK								
7	9-Sep	11. Sensors	12. Control	C-Book + online	work	6	IOT	5	TTGO	Servo Control
8	16-Sep	13. Linux		Ch. 7+ Ch. 5	work	7	Motor Control, PID	6	TTGO	IOT
9	23-Sep	Public Holiday	14. Image Proc.	notes + Ch. 4	work	8	Robot Drive + Image Proc.	7	TTGO	PID Motor Control
10	30-Sep	15. Interfaces 16. Multitask		Ch.5.11 + Ch.16	work	9	Image Proc. + Interfaces + threads	8	Rasp	Robot Driving
11	7-Oct	Test preparation	Midterm-2, 10 Oct.	–	work	10	Can collection	9	Rasp	Image Processing
12	14-Oct	Video presentations	Project presentations	–	Finish		--	10	Rasp	RoCan collection