ENCE361:
Embedded Systems 1

Ciaran Moore & Le Yang

What is an Embedded System?

Ciaran Moore
ciaran.moore@canterbury.ac.nz

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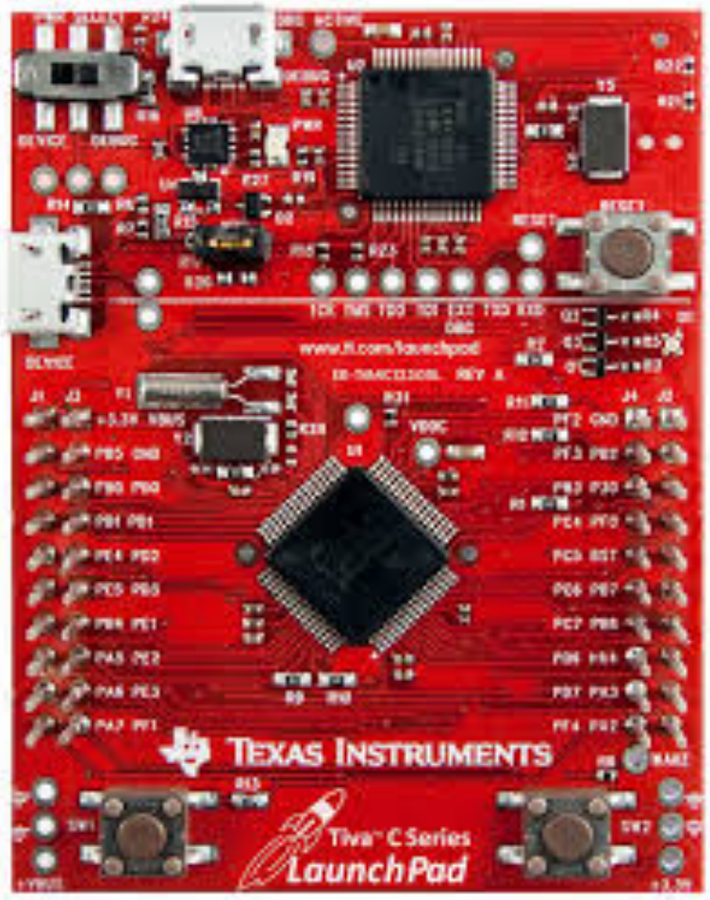
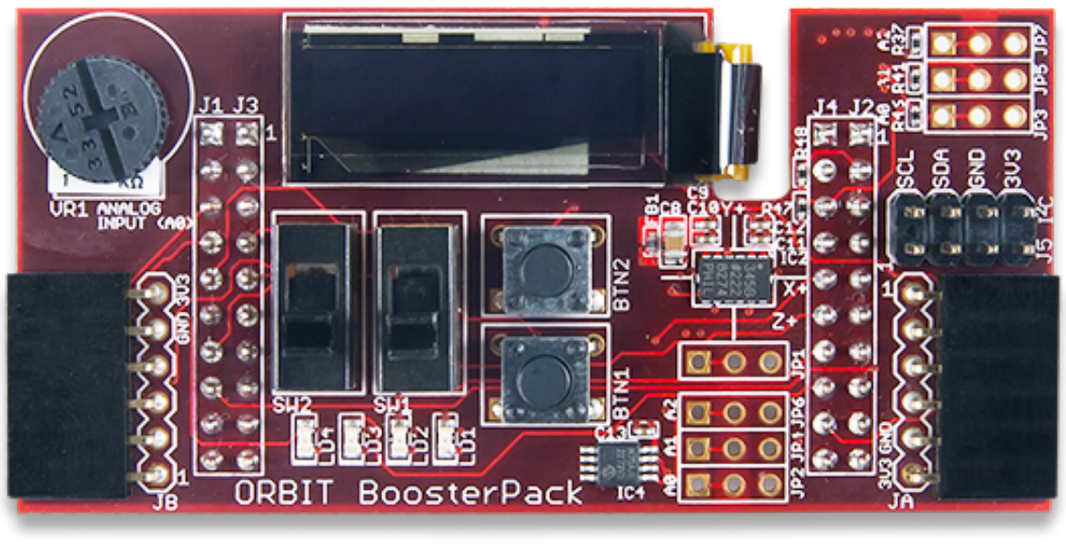
Syllabus

- RISC-based MCU
- Peripherals
- Memory structures
- Kernels





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Project

- Personal Fitness Monitor
  - Labs (wks 2–4)
  - Milestones (wks 5, 8)
  - Demonstration (wk 11)
  - Report & Code (wk 12)

https://www.androidcentral.com/should-you-buy-fitbit-ionic

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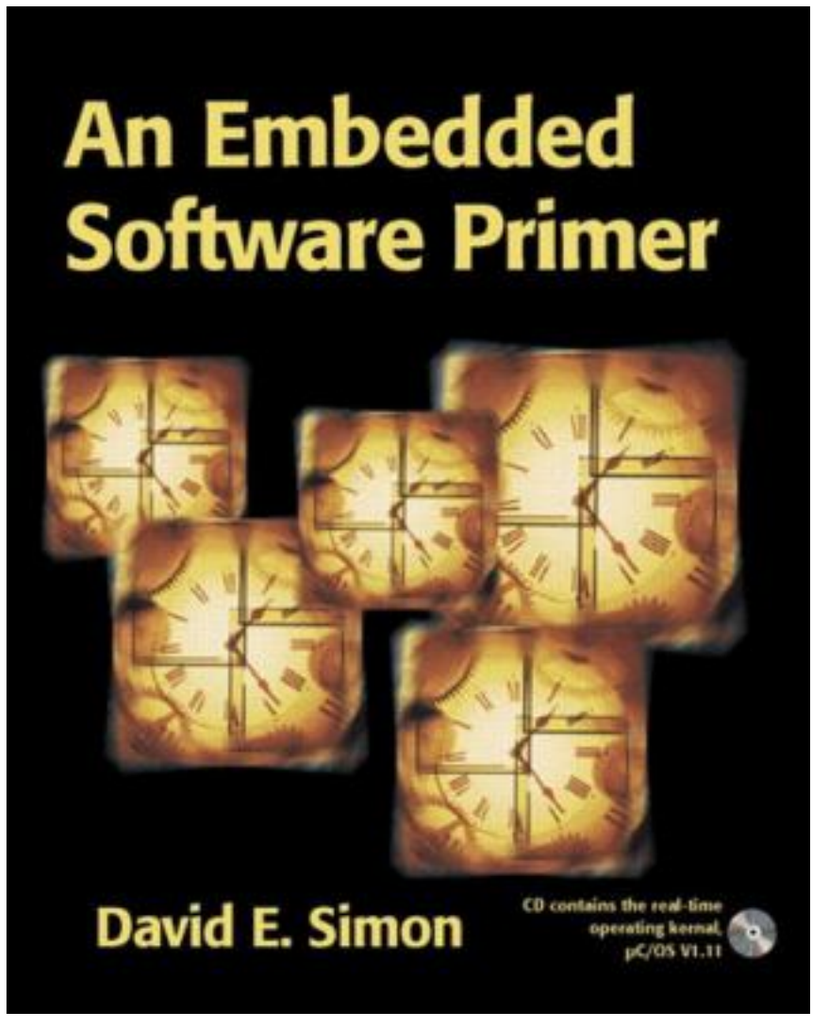
Textbook

- Simon,
  An Embedded
  Software Primer, 1999



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Timetable

- Lectures
  - Monday 1 pm C2
  - Wednesday 2 pm E8
  - Friday 2 pm C2
- Tutorial
  - Tuesday 11 am
    Rehua 009 *or*
  - Wednesday 8 am
    Drawing Office
- Laboratories
  (Electronics Lab A210)
  - Monday 11–1 *or*
  - Tuesday 9–11 *or*
  - Tuesday 11–1 *or*
  - Wednesday 11–1

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Roadmap

		ENCE361 Lecture, Tutorial & Lab Schedule – 2020						v. 20.1	Updated 13/02/2020
		Lec 1		**Tute**	**Lec 2**			**Lec 3**	**Lab**
Wk	**Starting**	**Mon 1p**		**Tue 11a, Wed 8a**	**Wed 2p**			**Fri 2p**	**Mon 11a, Tue 9a, Tue 11a, Wed 11a**
1	**17 Feb**	1	Intro; computer arch.	No tute	2	Introduction to ARM	3	General purpose I/O	Lab 0 – Use of Test Equipment (non-270 only)
2	**24 Feb**	4	Signals; data acq.	Use of CCS	5	Electrical noise	6	A-to-D conversion	Lab 1 – CCS & GPIO
3	**2 Mar**	7	Interrupts (systick)	Labs help	8	Buffers	9	I2C/SPI	Lab 2 – Accelerometer & buttons
4	**9 Mar**	10	Switch debouncing (FSM 1)	Project intro	11	FFs, counters, etc.	12	Timers	Lab 3 – Data acquisition & interrupts
5	**16 Mar**	13	UI design (FSM 3)	Source control with Git	14	Fore-/background	15	Interrupt latency	**Project – Milestone 1: Accelerometer & OLED**
6	**23 Mar**	16	Recap on architecture	Homework help	17	Atomicity, sharing	18	Quadrature decoding (FSM 2)	Project
7	**30 Mar**	19	PID	Test Prep	20	Serial ports	21	Revision	Project; **WED or THU (tbc): TEST (L1–L18)**
					3 week term break				
8	**27 April**	22	ANZAC Day holiday	Test Answers	23	Kernels 1	24	Kernels 2	**Project – Milestone 2: GUI**
9	**4 May**	25	CPU load analysis	Homework help	26	Microcontroller interfacing	27	Kernels 3	Project
10	**11 May**	28	Memory structures	Homework help	29	MCU memory types	30	Arm Arithm./Logic ccts	Project
11	**18 May**	31	The ARM ISA	Homework help	32	ARM Assembly language	33	IEEE FP representation	**Project demos in usual lab slot**
12	**25 May**	34	Revision (LY)						
13	**1 June**			Revision/Exam Prep (CM)					**Project report & code due Fri 29 May**
	Key:	Le Yang							
		Ciaran Moore							

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Assessment

Week 1	Lab Orientation	0%
Week 5	Project Milestone 1	4%
3 April 6:30 pm	Test (1 hr)	20%
Week 8	Project Milestone 2	8%
Week 11	Project Demo	10%
2 June	Project Report & Code	10% + 8%
TBC	Exam (2 hrs)	40%

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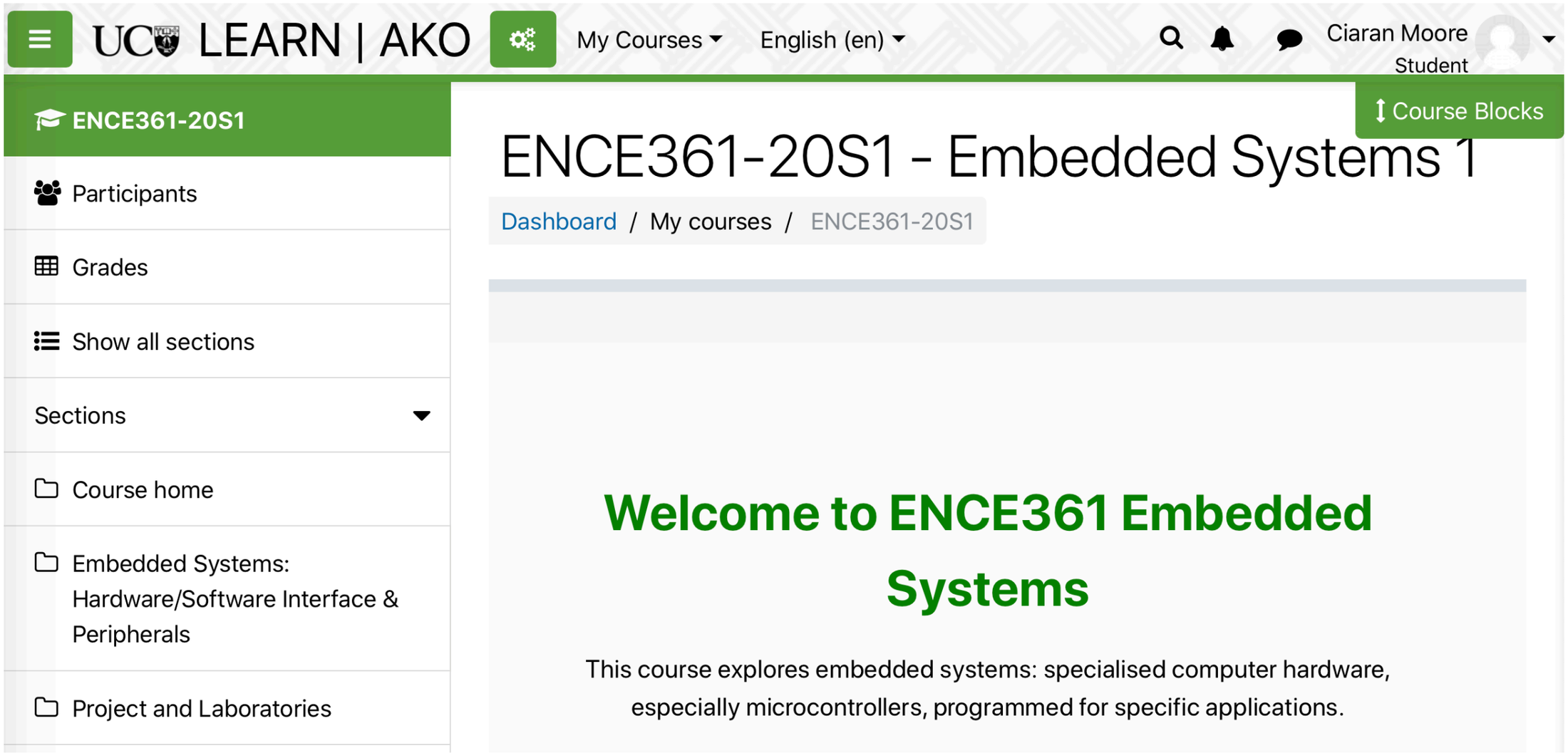
Course Information



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