

# Digital Electronics II 2010/11

(<http://www.ee.ic.ac.uk/hp/staff/dmb/courses/dig2/dig2.htm>)

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**Lectures:** Tue 16:00 Weeks 2-9 (12/10 – 30/11)  
Fri 14:00 Week 1 (9/10)  
Fri 17:00 Weeks 2-8 (15/10 – 26/11)

**Problem Classes:** Tue 15:00 Weeks 4 - 11 (26/10 – 14/12)  
Fri 16:00 Week 3 (22/10)  
You are strongly advised to attempt the indicated problems before attending the problem class.

## Introduction

Week 1 L1 Notation, Cause and Effect, Flipflops, Counters

## Interfacing Digital Systems

Week 2 L2 Synchronous bit-serial interfacing  
L3 Asynchronous bit-serial interfacing  
Week 3 L4 Microprocessor-to-memory interface  
Prob 1 □ Problem Class: P1.1, P1.3, P1.5  
L5 Microprocessor-to-memory timing constraints  
Week 4 □ Problem Class: P1.8

## Synchronous State Machines

L6 Shift register control and sequencing  
L7 Data decoding with a counter  
Week 5 Prob 2 □ Problem Class: P2.2, P2.3, P2.4  
L8 Synchronous state machine analysis  
L9 Synchronous state machine design  
Week 6 □ Problem Class: P2.7, P2.8, P2.12

## Digital ↔ Analog Conversion

L10 Digital-to-analog conversion  
L11 Analog-to-digital conversion: Flash and dither  
Week 7 Prob 3 □ Problem Class: P3.3, P3.5, P3.7  
L12 Analog-to-digital conversion: Successive approximation

## Addition Circuits

L13 Adders and propagation delays  
Week 8 Prob 4 □ Problem Class: P4.2, P4.5, P4.8  
L14 Fast adders: bit inversion & carry lookahead  
L15 Fast adders: carry skip and carry save  
Week 9 Prob 5 □ Problem Class: P5.5, P5.6, P5.8  
Week 10 Prob 6 □ Problem Class: P6.2, P6.8, P6.9  
Week 11 Prob ? □ Problem Class: ??