Engineering Maths,
Revision Checklist

December 17, 2012

The exam is only a few weeks away, I thought this could help.

1. General Advice

It is of course easy to become overwhelmed with the amout of work that has been covered in the course. General tips for exam preparation are:

1. Go through this checklist identifying the parts you can and can't do
2. Go through past papers, this is arguably the best way to prepare
3. Go through examples and questions in the book, answering as much as you can
4. Do the mid-term again, can you now do it?

If you can tick everything in the table then you'll do just fine. Make sure that you're happy with calculus (differentiation and integration) in all their various forms. They've made up a big part of this module and you'd be foolish to neglect them.
Furthermore, the exam will consist of 6 questions, of which you're to answer 4. Each question is worth 25 marks and will be broken down into sub parts.
Work hard at all of this and you'll do fine.

2. Table of Material

This table aims to list the material covered, print it out and tick which parts you're happy with

Chapter	Name	Key points	✔
3a,3b	Functions, inverses	Evaluate	
4a,4b	Basic Trig	Sketch,max and min, where do they cross the x-axis,	
4g	Trig Identities	Be familiar!	
4i	Amplitude Phase Form	$Rcos(\theta - \beta)$	
5a	Index Notation	Be happy with various notation	
5b	The exponential Function	Handle e^x and e^{-x}. Be comfortable with properties	
5c	Logarithms	Be happy with handling logs	
5e	Hyperbolic Functions	Be familiar with definitions	
6a,6b	Basic Differentiation	Differentiate various things	
6c	The Chain Rule	Know when to use	
6d	The product Rule and quotient rule	Know when to use	
6f,6g	Parametric,logarithmic and implicit differentiation	Know how to find each	
7a,7b,7c	Maximum, Minimums, first derivative test, second derivative	Be able to find max/min points. Verify with either derivative test	
7f	Series Expansion	Maclaurin and Taylor series	
8a,8b,8d	Integration	Integrate functions	
8c	Integration by substitution	Know when to use a substitution	
8e,8f	Partial Fractions and integrals with them	Know how to convert to a partial fraction and how to integrate them	
9a,9b	Numerial Integration	Trapezium,Simpsons Rule	
9c	Applications of integration	RMS value and the area under a curve	
10a 10b	Complex Numbers	various forms	
10c	Multiplication and Division	Perform operations in various forms	
10d	Roots	De Moivre's Theorem	
10e	Exponential Form	Change from one form to another	
11a	Matrices	Addition,subtraction and multiplication.	
11b	Determinants and Inverse	Find the determinant and inverse	
11c	3 X 3	Find the determinant of a larger matrix	
11d	Gaussian Elimination	Use Gaussian elimination to solve equations	