**EEC 172 Final Study Review Material**

**BitBanding**

**ADC**

* Know Sample Sequencers and know the difference
  + How to implement multistep
* Using Software timer to trigger
* Polling ADC Sequence
* ADC Interrupts

**DMA**



**ZigBee/XBee**

* XBEE modes – Transparent/AT Command/ API
* Over the air Protocols
* Addressing
  + PAN ID
  + CH
  + MY
  + DH
  + DL
* Duplex of ZigBee and XBee
* Accessing AT command Mode
* API Model Frame
  + Specifically how to calculate the CHKSUM

**Interrupts**

* How they work
  + Enable/Disable/Clear Interrupts
* Communication with global variables (keyword: volatile)
* Tailchaining
* Preemption
* Critical Section
* GPIOIntStatus()
* Look Over Interrupts.C

**Lab 0**

* Know how it works

**Systick.C**

* 24 bit clear on write, decrementing, wrap on zero counter
* Use of Systick in combination of PWM without interrupts
* Use systick interrupts to measure times, longer Pulse Widths
* Accurate delay routine using Systick

**General Purpose Timers**

* Differences from Systick
* How to use them for polling and interrupts
* How to Trigger ADC sequences
* How to Trigger DMA sequences

**SPI**

* Schematic of how interface the SPI with the TIVA board
* Know the Signals and Waveform
* SPO/SPH for SPI

**UART**

* Schematic on how to wire the UART
* Waveform and Signal of UART

**I2C**

* Waveform/Protocol
* Addressing
* Writing and Reading to/from Slave
* Example Code Review
  + Look over how to initialize I2C
* Interrupts with I2C
* [General Overview of I2C](https://learn.sparkfun.com/tutorials/i2c)
* [How I2C Works – Full Examples and goes over everything](http://www.robot-electronics.co.uk/acatalog/I2C_Tutorial.html)
* [Advanced In-Depth Reading on I2C](http://www.i2c-bus.org/takterzeugung-clock-stretching-arbitrierung/)

**For UART/SPI/I2C, you should know the following as well:**

* Know how to send and receive data using ints or polling
* Blocking vs **NON**Blocking
* Which peripherals use the FIFO
* Characteristics of each:
  + Synchronous vs. Asynchronous
  + Half or Full Duplex
  + Master/Slave, Pt. to Pt. or Multimaster Bus
  + Bus Arbitration