150:306 Processing III

Spring 2006

Class Meeting Details:

3 Units. Class meets from 1:40 to 3:00 on Tuesdays and Thursdays.
Location: SEC 203

Instructor:

Dunbar P. Birnie, III, Professor
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Campus phone: 732-445-5605
Office: CCR 212

Design Content:

This class will be heavily Design oriented – we will work extensively with processing methods and how we control them to achieve reproducible and reliable products.

Grading:

Occasional in-class activities (individual and small team): 20%
Daily in-class microstructure commentaries: 10%
Individual HW's: 20%
Mid-Term Test: 25%
Final Exam: 25%

Office Hours:

Tuesday and Thursday 3:00 to 5:00 and by appointment

Class Website:

The class website is here: http://www.rci.rutgers.edu/~dbirnie/processingIII/
This will contain updates of useful material for use in HW's as well as solutions to selected problems and tests.

Sintering

Solid-State Sintering, Liquid-Phase Sintering, Viscous Sintering
Reaction Bonding, Hot-Pressing, HIPing, Composites and Reinforcements

Tape-Casting, Coating Deposition, Printing

Formulation, Binder Removal, Shrinkage, and Drying

Crystal Growth

Czochralski Growth, Bridgman Growth, Float-Zone Growth
Solution Growth, Liquid Phase Epitaxy, Vapor Phase Growth

Microstructure Development and Characterization

Influenced by Processing Technique
Failure Analysis

Statistics in Process Design

Reliability, Yield, Optimization