Course Outline
Management of Software Testing
MIS 7681 Spring Term – Fogelman 257

INSTRUCTOR: Adjunct Instructor Dave J. Miller
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Phone:
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Office Hours: By appointment
Textbooks:
Systematic Software Testing by Rick D. Craig and Stephan P. Jaskiel
A Practitioners Guide to Software Test Design by Lee Copeland
Automated Defect Prevention by Dorota Huizinga and Adam Kolawa

OBJECTIVES: To explore systems testing managerial and personnel issues, the role of testers and users at all levels to systems development, walkthroughs and reviews, and unit through acceptance testing techniques. To discuss the role of systems at each level of the systems development life cycle. To understand the role of system testing in other systems development environments including prototyping and agile development.

METHODS: Lectures, Homework, Computer lab assignments, and exams

GRADING:
Midterm Exam: 20%
Comprehensive Final Exam: 20%
Course Project: 40%
Homework, Computer Lab Assignments, Class Participation: 20%
Late computer lab assignments and homework will only be accepted with the approval of the instructor.

Attendance in class is expected, as lectures and class discussion are an important part of this course.

Students are required to read all of the assigned chapters and pages of the course textbook and other assigned sources. Students are responsible for the material in the assigned readings and for all material in the lectures.

Students are responsible for all work covered and all announcements made in class. Finding out about work and announcements missed due to lateness or absence for any reason is a student’s responsibility.

There will be no make-up exams for the two semester exams. An exam missed because of an approved university activity, documented illness, or other reason approved by the instructor will be replaced by the score on the final exam.
POLICIES:
All University of Memphis policies regarding Classroom Misconduct and Cheating will be enforced. Details of the policies can be found in the Student Handbook, www.memphis.edu/stuhand2 or at the Office of Judicial and Ethical Programs Web site, saweb.memphis.edu/judicialaffairs/. Please turn off all cell phones and pagers before coming to class.

University of Memphis regulations allow an instructor to discuss grades with a student only in person or by email request on the student’s U of M email account. Instructors are not permitted to discuss grades by phone or by email request on a non-U of M email account.

The use of laptop computers and electronic devices in class is not permitted, except for taking lectures notes.

SERVICES:
Academic Counseling is available from the University’s Educational Support Program (ESP). For more information go to: saweb.memphis.edu/cclt/html/esp.htm

I. Course Outline

1/14/10 Logistics; Course Overview
1/19/10 Overview of Testing {SST-1}
1/21/10 Risk Analysis {SST-2}
1/26/10 Master Test Planning {SST-3}
1/28/10 Detailed Test Planning & Analysis {SST 4, 5 pp 145-158}
2/2/10 Build Quality In – Dr. Bart Dahmer
2/4/10 Black Box, Grey Box, White Box Testing - Dfn & Considerations – Dr. Mark Gillenson
2/9/10 Equivalent Class & Boundary Value Testing {STD 3, 4}
2/11/10 Decision Tables and Domain Analysis Testing {STD 5 - 8}
2/16/10 Pairwise Testing {STD 6}
2/18/10 State Transition Testing and Use Cases {STD 7, 9}
2/23/10 Test Implementation {SST 6}
2/25/10 Test Execution {SST 7}
3/2/10 Midterm Review {Class Notes}
3/4/10 MIDTERM
3/9/10 Break
3/11/10 Break
3/16/10 Project Plan Version 1.0 Due
3/18/10 Application Architecture & Design {ADP 6}
3/23/10 Control Flow & Data Flow Testing {STD 10, 11}
3/25/10 Scripted and Exploratory Testing {STD 12, 13}
3/30/10 Defect Taxonomies {STD 15}
4/1/10 Putting it all Together
4/6/10 Project Mgt for Testing – Dr. Robin Poston
4/8/10 Science of Testing – Dr. Jasbir Dhaliwal
4/13/10 Test Organization and Polotics {SST 8}
4/15/10  Testing Skills (SST 9, 10)
4/20/10  Project Presentations - Project Plan Final Version Due - All Projects Due
4/22/10  Project Presentations - Project Plan Final Version Due
4/27/10  Project Presentations - Project Plan Final Version Due
5/4/10   Final

II. SUGGESTED/RELATED READINGS [Text mnemonic shown below]
1/19-1/28  ADP - 1, 2; STD - 1
2/2-2/18   ADP-4; SST 4,5
2/23-2/25  STD - 16
3/16-3/25  SST - 5
4/13-4/22  SST - 11; ADP - 10

Course Texts

SST  Course Text:  *Systematic Software Testing* by Rick D. Craig and Stephan P. Jaskiel

         Publisher:  Artech House Publishers, Copyright:  2004, Sixth Printing, September 2006

ADP   On Reserve in the Library:  *Automated Defect Prevention* by Dorota Huizinger
         and Adam Kalawa
         Publisher:  John Wiley and Sons, Inc.
         Copyright:  2007

III. Class Topical Presentations
Class Presentation Charts required for following topics on given dates:
2/9/10   Equivalence Class Testing; Boundary Value Testing
2/11/10  Decision Tables; Domain Analysis Testing
2/18/10  State Transition Testing; Use Cases
3/23/10  Control Flow Testing; Data Flow Testing
3/25/10  Scripted Testing; Explatory Testing

A. Students pair up and present one of the above topics
B. Presentation outline, target 30 minutes:
   Chart 1:  Dfn, Author of approach, Reference
   Chart 2:  Pro/Con Comparator Table; when to use
   Charts 3-8: Examples: How it works; What it does
   Discussions
C. Presentation Charts logged in course Library

IV. COURSE NOTES
A. Per class, one student has lead
B. All students send following to the lead:
B.1. Top 5 ideas from Class
B.2. Rank ordered, top to bottom

C. Lead summarized all inputs and presents top 3 ideas at next class
   C.1. 1st five minutes of class
   C.2. Shows top 10 on compiled list

D. Any adjustments from class discussion, lead finalizes and files in course Notes Library

V. Project Definition
A. Business Model
You work for an internet online store called Products Anonymous (PA). PA sells ten
different products, all weighing 1 to 4 pounds each. A customer can access the PA site
and order any combination/number of products with the max order being 50 pounds or less.
There is no shipping and handling nor taxes due on any product or order. Customers can
pay by credit cards: Visa and MasterCard. Shipping is only by US Mail (USPS). Shipping
costs are:
- 1st Class  Shipment order 5 pounds or less  $2/pound  4-day delivery
- Book Rate Shipment order 5 pounds or greater $1/pound  8-day delivery
Continental US delivery only.

The PA Warehouse drop-ships the order within 1 business day for orders placed by 3pm
Central Time. The Warehouse provides the shipping date and expected date of arrival at
destination to an automated call response unit. The Warehouse has an on-site postage meter
to weigh and determine amount of postage for each order. Package orders are picked up
by the USPS at the Warehouse location, daily.

Customers can call in to the 800 number and check their order status. The customer can
electronically provide order number and receive ship date or delivery date information.
There is also an option on the 800 number for a Customer Service Representative (CSR) for
questions on the order. The CSR has the following information through the CSR Support
System:
- Customer order number (searchable)
- Customer name and address and telephone number (searchable)
- Customer payment method - Visa or MasterCard
- Order amount, products (types, number in order, weight of each), total weight of order
- Order cost, order placement date, if order has been cancelled or not
- Order ship date and if it has been shipped or not
- Order delivery date and if it has been delivered or not
- Comments from any previous calls by same customer - this order and previous orders
- Comments on this specific order from the PA Warehouse, noting any anomalies
   [Anomolies can be out of stock, delayed stocking, delayed shipping, etc.]
- Complete product offering list with prices, weights, in/out of stock, next stock date
B. **Project EXPAND**
Your Team is in charge of testing for Project EXPAND. Project EXPAND provides the following enhancements to the PA business:

Feature 1: Add 5 new products - Prod21, Prod22, Prod23, Prod24, Prod25
- The products weigh 1 to 5 pounds for Prod21 through Prod25, respectively.
- The products cost $6, $7, $8, $9, $10 for Prod21 through Prod25, respectively.

Feature 2: Add American Express as a third credit card payment option.

Feature 3: Add two parcel carriers to the shipping options: SHA and SHB.

SHA:
- 2-day delivery
- First 5 pounds costs $10
- 6 to 10 pounds costs $1.90 per pound
- each 5-pound increment costs 10 cents less per pound, e.g.,
  - 11 to 15 pounds costs $1.80 per pound
  - 16 to 20 pounds costs $1.70 per pound

SHB:
- 3-day delivery
- First 8 pounds costs $12
- 9 to 22 pounds costs $1.40 per pound
- each 14-pound increment costs 10 cents less per pound, e.g.,
  - 23 to 36 pounds costs $1.30 per pound
  - 37 to 50 pounds costs $1.20 per pound

Both SHA/SHB provide daily pick up stops at the Warehouse, same as USPS.

C. **Project Team Test Planning**
- Your Test Team must document the test approach, providing the following:
  C.1. Master Test Plan, including all sections
  C.2. Business flow for Products Anonymous
  C.3. High-level application system flow of systems supporting Products Anonymous
  C.4. Test injection points on High-level application system flow

- Your Test Team must provide your own team's work plan
  C.5. Team structure, roles, responsibilities
  C.6. Team deliverables and team schedule

- Assessments - grade A, B, C, F
  C.7. The Team does a joint assessment of their project
  C.8. Each Team member does a self-assessment of his/her contributions to the project and also assesses each of their other Team members on the project for that team member's contributions to the project

- Project Presentation
  C.9. The team must present their project to the class
  - 30-minute presentation, includes 5 minutes of Q&A, using the following outline:
    - Team structure
    - Approach
    - Major issues/concerns
    - What did you learn
    - Team self assessment, including rationale
  C.10. All other class members will rate the team project with one of three Ratings:
    - Excellent, Non-Critical Improvements Needed, Critical Improvements Needed