SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

SAULT COLLEGE

COURSE OUTLINE

COURSE TITLE: Java III – Web Application Development

CODE NO. :   CSD322   **SEMESTER:**   6

PROGRAM: IT Studies

AUTHOR: Fred Carella

DATE: Fall 2011   **PREVIOUS OUTLINE DATED:**   Winter 2011

APPROVED: "Brian Punch"   Aug/11

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                                             CHAIR   **DATE**

TOTAL CREDITS: 5

PREREQUISITE(S):   CSD221

HOURS/WEEK: 3

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I.   COURSE DESCRIPTION:
This course continues application development in Java with an emphasis in web application development. Various technologies and application frameworks will be introduced. Traditional form based web applications will be built using servlets, java server pages and struts while applications that feature newer Ajax functionality will be written using the Google Web Toolkit (GWT).   Students will develop the ability to write form based CRUD (Create, Read, Update and Delete) applications, persisting data to a database backend using each of the aforementioned technologies. Applications will be written using the Netbeans IDE (V6.5) and the MySql database.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course, the student will demonstrate the ability to:

1.   Create databases.

Potential Elements of the Performance:

This section builds on, and applies skills developed in previous courses to…
- Create database schemas using various tools.
- Manage database schema using various tools.
- Understand the relational database model and apply that understanding to the creation of various related tables.
- Create tables related through primary and foreign keys.
- Create one to one, one to many and many to many relationships between tables.
- Perform queries and data manipulation through the use of appropriate sql statements.
- Understand the role of java ee in the programmed access of data.
- Create entity classes that model database data.
- Create data access objects.
- Write java code that retrieves data from databases.

2.   Develop Servlet based applications.
Potential Elements of the Performance:
- Identify the various components of a generic web application including the client, the server, the http request, the http response, server side components and databases.

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- Identify the role of the servlet in a web application.
- Identify the various parts of the Web Application Life cycle including code development, management of deployment descriptors, project compile, application packaging and application deployment.
- Identify the various parts of the servlet life cycle including servlet loading and initialization (int()), the invocation of its service methods and servlet unload (destroy).
- Indentify various life cycle events.
- Write context listeners.
- Identify the four scope objects and understand and apply their use in the sharing of data. The objects include the web context, the session, the request and the page objects.
- Write a servlet based web application that demonstrates knowledge of the servlet life cycle and can respond to servlet initialization, context listener events, client side requests, and provide responses back to the client.
- Write a servlet based application that can access, modify and persist data in a database (perform CRUD operations).
- Write client side code to create a form based interface to the application.

Understand sessions and write code that applies knowledge of sessions to provide application authentication and per user data management.

3.   Develop Java Server Pages based applications.

Potential Elements of the Performance:
- Identify the role of a jsp page in a web application and its relationship to servlets.
- Identify the main features of jsp technology including its ability to process requests, create responses, to access server side objects and its extensibility.
- Identify the structure of a jsp page.
- Identify and apply various jsp tags in the writing of a jsp page.
- Write jsp pages that access and display server side data.

4.   Develop Struts based applications

Potential Elements of the Performance:
- Identify the limitations of servlet and jsp based web applications and identify the role of struts in addressing those limitations.
- Understand the Model View Controller architecture and identify components of a struts based web application that apply to

that architecture.
- Understand the role of a struts controller.
- Write jsp based views.
- Write action classes to respond to client requests.
- Write action form beans that transfer data between views and actions.
- Write a struts based application that demonstrates the ability to access, modify and persist data in a database (perform CRUD operations).

5. Develop Ajax based applications using Google Web Toolkit.

Potential Elements of the Performance:
- Define the term Web 1.0 and be able to identify the characteristics of a Web 1.0 application.
- Define the term Web 2.0 and be able to identify the characteristics of a Web 2.0 application.
- Define the term AJAX and understand its role in Web 2.0 applications.
- Indentify the components of a client side AJAX application.
- Download and install the google web toolkit (GWT).
- Identify the role of GWT in the writing of AJAX applications.
- Write a simple application using GWT that demonstrate and incorporate the following
    - The structure of a GWT project.
    - GWT layout widgets including vertical and horizontal panels.
    - GWT widgets including Labels and Buttons.
    - Write event handlers for various widgets including buttons.
    - Communicate and transfer data with a server using RPC.
- Write a GWT based application that demonstrates the ability to access, modify and persist data in a database (perform CRUD operations).

III.   TOPICS:

1. Create databases.
2. Develop Servlet based applications.
3. Develop Java Server Pages based applications.
4. Develop Struts based applications
5. Develop Ajax based applications using Google Web Toolkit.

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:
Java EE 5 Tutorial in PDF format:
download from
http://java.sun.com/javaee/5/docs/tutorial/doc/JavaEETutorial.pdf

Deitel Java Howto Program, 7th Edition (you already have this textbook from a previous course).

V.   EVALUATION PROCESS/GRADING SYSTEM:
NOTE: *It is required to pass both the theory and the lab/assignment parts of the course. It is not possible to pass the course if a student has a failing average in the tests but a passing grade in the labs (or vice versa).*

	Weight
Tests	
Topic 1 and 2	20%
Topic 3 and 4	20%
Topic 5	10%
Labs	
Exercise 1	2.5%
Exercise 2	2.5%
Exercise 3	2.5%
Exercise 4	2.5%
Exercise 5	2.5%
Exercise 6	2.5%
Assignment 1	10%
Assignment 2	10%
Assignment 3	10%
Assignment 4	5%
Totals:	100%

The following semester grades will be assigned to students:

Grade	Definition	*Grade Point Equivalent*
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00

CR (Credit)   Credit for diploma requirements has been awarded.

S   Satisfactory achievement in field /clinical placement or non-graded subject area.

U   Unsatisfactory achievement in

	field/clinical placement or non-graded subject area.
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR	Grade not reported to Registrar's office.
W	Student has withdrawn from the course without academic penalty.

VI.   SPECIAL NOTES:

Absenteeism will affect a student's ability to succeed in this course. Absences due to medical or other unavoidable circumstances should be discussed with the professor. Students are required to be in class on time and attendance will be taken within the first five minutes of class. A missed class will result in a penalty in your marks unless you have discussed your absence with the professor as described above. The penalty depends on course hours and will be applied as follows:

Course Hours	Deduction
5 hrs/week (75 hrs)	1% / hr
4 hrs/week (60 hrs)	1.5% /hr
3 hrs/week (45 hrs)	2% /hr
2 hrs/week (30 hrs)	3%/hr

Absentee reports will be discussed with each student during regular meetings with Faculty Mentors. Final penalties will be reviewed by the professor and will be at the discretion of the professor.

VII.   COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.