Teaching Outline / Semester 1, 2004-2005

1. **Subject Code:** 240-571
   Subject Name: Special Topics in Information Engineering
   Introduction to J2ME Programming
2. **Credits**: 3 (0-6-3)
3. **Teaching Period**: June 2004 -- October, 2004
4. **Responsible Department**: Dept. of Computer Engineering
   Faculty of Engineering, PSU, Hat Yai

5. Course Objectives

5.1. To develop skills in introductory J2ME programming, assuming previous exposure to Java;

5.2. To explore technical issues related to developing games applications for mobile devices embodied in J2ME.

6. Motivation

Java 2 Micro Edition (J2ME) is arguably the best programming solution for a extremely wide range of small devices, and is supported by all the major phone vendors.

Estimates place J2ME on over 600 million devices by the end of 2004, with perhaps 100 million mobile game players by the end of 2006.

J2ME's popularity is likely to grow even further, due to improved gaming support in the latest version (MIDP 2.0 has a games API), the ease with which Java developers can migrate to J2ME, and the portability of J2ME code across platforms.

7. Course Description

This course will teach students how to write J2ME games using the latest programming techniques. There will be a series of programming exercises and a project, which will result in the student having written a fairly large game by the end of the subject.

Topics covered include: the midlet lifecycle, user interfaces (using UML state diagrams for design), persistent storage, graphics based around the canvas, the new games API introduced in MIDP 2.0, and networking using sockets and HTTP.

8. Prerequisites

A student must have a B grade or higher in 240-424 *Introduction to Java Programming* (or equivalent), or be a project student of Aj. Andrew.

9. Teaching Method

There will be no lecturers. Instead all the students will meet with Aj. Andrew once a week for 2-3 hours to discuss topics/problems of their choosing.

The students will be given reading assignments (detailed below), three coding exercises, and a games project to carry out.

10. Course Outline

The course outline includes required chapter readings from the Knudsen J2ME book. There are also *optional* chapter readings from the Fox and Verhosek (FV) and the Feng and Zhu texts (FZ).

The optional readings are intended to be used if the student is unsure of something in Knudsen; the Feng and Zhu text is written in Thai.

The handouts will typically be material printed from the Web, which will be of particular help to the students in their exercises or project.

Weeks	Subject	Chapter Readings
1	Background.	Knudsen 1 (FV 8; FZ 1-2)
2-3	Midlet Introduction.	Knudsen 2-3 (FV 8-9; FZ 3-4)
4-5	User Interfaces.	Knudsen 5-6, handouts (FV 9,13; FZ 5-6)
6-8	Persistent Storage.	Knudsen 8 (FV 19; FZ 8)
9	*Mid term exam*	
10	The Canvas. (part 1)	Knudsen 10, handouts (FV 14; FZ 7)
11	PSU Open Week	
12	The Canvas (part 2)	
13-15	The Games API.	Knudsen 11, handouts
16-17	Networking.	Knudsen 9 (FV 20 part; FZ 9)
18-19	*Final exam*	

11. Assessment

- Three programming exercises:
  - top-level game screens (weeks 5-6, July 5-16): 10%
  - high scores table interface (weeks 7-8, July 19-30): 10%
  - an animated splash screen (weeks 10 and 12, August 9-27): 10%
- Mid-term Exam: **20%** (**2** hours)
- Games project

- arcade, tile game, side-scroller, etc., using the MIDP 2.0 Games API. Includes a brief report with UML diagrams.
  (weeks 13-16, August 30-September 24): 30%

- Final Exam: **20%** (**2** hours)

Grading Scheme

Grade	Mark Range
A	80 and above
B+	75-79
B	70-74
C+	65-69
C	60-64
D+	55-59
D	50-54
E	below 50

12. Lecturer

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13. Teaching Equipment

- a computer with network connection, a projector connected to the computer, a projector screen, overhead projector

14. Textbooks

These textbooks are in the CoE library or available from Aj. Andrew:

- *Wireless Java: Developing with J2ME*
  Jonathan Knudsen
  APress, 2003, 2nd edition
  The 2nd edition must be used, since it discusses MIDP 2.0.

- *Micro Java Game Development*
  David Fox and Roman Verhosek (FV)
  Addison-Wesley, 2002

- *Wireless Java Programming with Java 2 Micro Edition*
  Yu Feng and Jun Zhu (FZ)
  Sams, 2001 (**Thai version**)

We do not yet have the following book:

- *J2ME Games with MIDP 2*
  Carol Hamer
  APress; June 2004

15. Useful URLs

These URLs point to J2ME software and/or articles which will be used during the subject.

Bill Day's J2ME Archive, `http://www.billday.com/j2me/`

Carol Hamer, MIDP 2.0 Games: a Step-by-Step Tutorial with Code Samples,
`http://www.microjava.com/articles/techtalk/midp2_games`

Eric Giguere, Building Splash Screens for MIDlets,
`http://developers.sun.com/techtopics/mobility/midp/ttips/splshscrn/`

JavaMobiles.com midlets repository,
`http://javamobiles.com/midlets/index.html`

J2ME online at CoE, `http://java.coe.psu.ac.th/RefImp.html#J2ME`

J2ME online at Sun, `http://java.sun.com/j2me/`

J2ME Wireless Toolkit Version 2.1,
`http://java.sun.com/products/j2mewtoolkit/`

microdevnet, J2ME Articles and Code, `http://www.microjava.com/`

Mikko Kontio, MIDP 2.0: The Game API,
`http://www.microjava.com/articles/techtalk/game_api?content_id=4271`

Jonathan Knudsen, Creating 2D Action Games with the Game API,
`http://developers.sun.com/techtopics/mobility/midp/articles/game/`

16. Subject Type: elective