EE495 **Multilingual Computing** **Fall 1997**

Credit: 3 hours

Engineering Science: 2 hours
Engineering Design: 1 hours

Prerequisite: EE495F or equivalent C programming experience. No foreign language skills are required.

Description: This course is intended to introduce students to the issues involved in designing computing systems that are capable of efficiently processing multiple different languages. The issues to be covered include the input, encoding, processing, and the output of languages consisting of large, dynamic and graphically complex character sets. Computing systems that can process the Japanese language are used as a case study since Japanese text typically includes a combination of English, words written phonetically from two different syllabaries, as well as a modified version of Chinese logographic characters. Students who successfully complete this course will have the knowledge required to configure computer systems to handle communications in Japanese and to access Japanese language electronic databases.

Text: K. Lunde, *Understanding Japanese Information Processing*, O'Reilly & Associates, 1993. (ISBN 1-56592-043-0)

References:

[1] J. K. T. Huang and T. D. Huang, *An Introduction to Chinese, Japanese, and Korean Computing,* World Scientific, 1989.

[2] B.-L. Yeo, M. Yeung, and A. A. Maciejewski, "An X11-based Japanese language processing and learning environment," Technical Report No. TR-EE 92-33, School of Electrical Engineering, Purdue University, August 1992, 37 pages.

	Topics	Weeks

1.	Introduction to the Japanese Language
	    Romaji
	    Katakana
	    Hiragana
	    Kanji
	        Pronunciation
	        Structure
		3

2.	Encoding Methods
	    JIS X 0208-1990
	    JIS X 0212-1990
	    UNICODE/ISO DIS 10646
	    Shift-JIS
	    EUC
		2

3.	Text Input
	    Non-Phonetic Methods
	    Phonetic Conversion
	        Kterm
	        Jserver
	        Kinput
	        Nemacs
	        Wnn
		3

4.	Text Output
	    Vector
	    Bit-Mapped
	        Kanjips
	        Jenscript
		2

5.	Language Processing
	    Electronic Dictionaries
	    Japanese Parsing Software
	    Text Processing
	        Jtex/Jlatex
	        JemTex
	        Stevie
		3

6.	Accessing Japanese Technology
	    JICST Databases
	    (Japanese Information Center of Science & Technology)
		1

7.	Exams and Projects	1