NIIT UNIVERSITY
NEEMRANA 301705, Dist. Alwar (Rajasthan)
CS 382 Programming Tools
COURSE HANDOUT
Semester II, 2016-17

Course Code: CS 382
Course Title: Programming Tools
LTPC: 1-0-6-4 (Total lectures = 15 * 1 =15 && Total practicals = 15 * 6 =90)
Course-in-Charge: Ram Narayan Yadav, Supratik Banerjee

Course Description: This course introduces students to the tools used for software development in industries. In particular, it focuses on tools to build, integrate, debug and test programs. After the end of the course the students are expected to learn the skills needed to collaborate towards writing and maintaining good quality code of 'reasonable' size.

Course Objectives: The goal of the course is to familiarize the students with tools used to build, debug, and maintain industry size software.

Brief coverage of the course: Software Build Tools: Introduction to software build tools and their advantages to develop large software systems. Version control systems and Bug Tracking Systems: Basic concepts of version control systems and versioning schemes of software artifacts, requirement of various versions of software artifacts , Difference between centralized and distributed version control systems , Web based version control systems , basic operations in version control systems e.g. check-in, check-out, merge , commit etc. Debugging Tools: Introduction to various debugging techniques-Tracing, program slicing, top down versus bottom up debugging. Text Editors. Structure Analysis Tools. Code Coverage Tools. Integrated Development Environments(IDEs): Advantages of using IDEs in Programming, Evolutionary nature of IDEs, Software Ecosystems nature of IDEs. Profiling and performance analysis Tools: introduction to code profiling, demonstration of popular code profiling tools like gprof.

Text Book:

1. User manuals of various software tools.
2. Unix Programming Tools: Stanford CS Library: http://cslibrary.stanford.edu/107/UnixProgrammingTools.pdf

Evaluation Scheme

Evaluation Component	When	Evaluation time	Mode of examination	Weightage
Mid Term I	TBA	1 hour	Online	10%
Mid Term II	TBA	1 hour	Online	10%
Comprehensive Exam	TBA	2 hours	Online	20%
Lab Evaluation	TBA	--	--	60% (description is given below)*

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Daily Assessment – 15%, Mid Lab Test I – 15%, Mid Lab Test II – 15%, Final Lab Test – 15%

Lecture Plan (Tentative)

Topics	No. of Lectures
Text Editors	1
Software Build Tools	2
Debugging Tools	4
IDEs	1
Profiling Tools	2
Version Control Systems	2
Structure Analysis Tools	2
Code Coverage Tools	1
Total	15

List of Practicals (Tentative)

Topics	No. of Hours
Text Editors	6
Make Tool	12
Apache Ant tool	9
GDB debugging tool	9
Valgrind Debugging Tool	3
Detecting Memory Leaks	3
IDEs	6
Profiling Tools	24
Version control Systems	6
Structure Analysis Tools	6
Code Coverage Tools	6
Total	90

Teaching learning process and Asia lenses: To use new teaching learning methodology as teaching tool to make understand the depth of the programming concepts. The course also covers the Asian contribution in the field of software tools.

Acharya - Multilingual Editor for Indian Languages
This tool provides a framework and a set of software tools for text-processing in Indian languages. The first step in this direction has been to develop a cross-platform multilingual text editor - Acharya. It is a continuation of the work done in the Acharya Project at the Systems Development lab at the Indian Institute of Technology Madras.

Make up Policy: Students who are likely to miss a component of evaluation due to *extreme emergencies and genuine reasons* may be given a make-up of that component by the Course Instructor-in-charge. The students are required to approach the Course Instructor-in-charge *in advance* for the same before the conduct of the evaluation component. The student should produce genuine MEDICAL CERTIFICATE in case of medical emergencies. The decision of the Course Instructor-in-charge in this matter shall be final.

Grading Policy: The Marks obtained in all the components of Evaluation shall be totaled and the final marks shall be converted in the letter grades, namely, A, B, C, D and E. The grading is relative and normally it is centered around the average in a class.

University Attendance Policy: 75% attendance is compulsory.

Consultation Hour: Students are welcome to contact the course in charge for clarification of their doubts.

Plagiarism: In case of plagiarism the decision of the course in charge will be final.