Background Preparation Worksheet
CS-01

Instructions:
The following UNC courses define the background preparation assumed in the M.S. and PhD programs. This worksheet is intended to help identify possible missing areas in your preparation; it is entirely normal to include one or more background courses in the MS or PhD Program of Study in order to satisfy the background preparation requirement.

For each course, indicate how (e.g. course work, independent study, or work experience) and when you mastered the materials as defined by the list of principal topics. For additional information on UNC course content, consult the online syllabi. In case you are uncertain about the adequacy of your preparation for a given course, consult a course instructor or the instructor(s) of graduate courses that depend on the course in question.

Name **PID**

Background Course Information

COMP 283: Discrete Structures:
Introduces discrete structures and the formal math used to establish their properties & those of algorithms that work with them. Develops problem-solving skills through puzzles & applications central to CS.
or
MATH 381: Discrete Mathematics
(see below)

Covered by: **Dates:**

COMP: 410: Data Structures
The analysis of data structures and their associated algorithms. Abstract data types, lists, stacks, queues, trees, and graphs.

Covered by: **Dates:**

COMP 411: Computer Organization
Data respresentation, computer architecture and implementation, assembly language programming.

Covered by: **Dates:**

COMP 455: Models of Languages & Computation
Introduction to the theory of computation. Boolean functions, finite automata, pushdown automata, & Turing machines. Unsolvable problems. The Chomsky hierarchy of formal languages & their acceptors. Parsing.

Covered by: **Dates:**

***COMP 521: Files & Databases**
Placement of data on secondary storage. File organization. Database history, practice, major models, system structure and design.

Covered by:

Dates:

***COMP 520: Compilers**
Design & construction of compilers. Theory & pragmatics of lexical, syntactic, & semantic analysis. Interpretation. Code generation for a modern architecture. Runtime environments. Includes a large compiler implementation project.

Covered by:

Dates:

***COMP 530: Operating Systems**
Types of operating systems. Concurrent programming. Management of storage, processes, devices. Scheduling, protection. Case Study. Students implement significant components of a small operating system.

Covered by:

Dates:

(*Any two of these three will suffice*)

COMP: 524: Programming Language Concepts
Concepts of high-level programming & their realization in specific languages. Data types, scope, control structures, procedural abstraction, classes, concurrency. Run-time implementation.

Covered by:

Dates:

COMP 541: Digital Logic & Computer Design
Digital logic, both combinational & sequential. State machines. The structure & electronic design of modern processors.

Covered by:

Dates:

COMP 550: Algorithms & Analysis
Formal specification and verification of programs. Techniques of algorithm analysis. Problem-Solving paradigms.

Covered by:

Dates:

MATH 233: Calculus of Functions of Several Variables
Vector algebra, solid analytic geometry, partial derivatives, multiple integrals.

Covered by:

Dates:

MATH 381: Discrete Mathematics
Topics from the foundations of mathematics; logic, set theory, relations & functions, induction, permutations & combinations, recurrence.
or
COMP 283: Discrete Structures

Covered by:

Dates:

MATH 547: Linear Algebra for Applications
Algebra of matrices with applications; determinants; solution of linear systems by Gaussian elimination; Gram-Schmidt procedure; eigenvalues. Math 116 may not be taken for credit after credit has been granted for Math 147.

Covered by:

Dates:

MATH 661: Introduction to Numerical Analysis
Error in computation; solution of nonlinear equations; interpolation; approximation of functions; Fourier methods; numerical integration & differentiation; introduction to numerical solution of ODE's; introductions to numerical linear algebra.

Covered by:

Dates:

STAT 435: Introduction to Probability (MATH 146)
Introduction to mathematical theory of probability covering random variables, moments, binomial, Poisson, normal & related distributions, generating functions, sums & sequences of random variables, & statistical applications.

Covered by:

Dates:

Review this worksheet with your adviser and submit the completed worksheet to the Student Services Coordinator preferably in electronic form. Hard copies also accepted. **The worksheet is a component of the Program of Study for MS (CS-03) and/or PhD (CS-06).**

Student Signature

Date Signed

Student's Advisor Signature

Date Signed/Approved

Advisors Printed Name: