All good things…must come to an ACCEPT state

Course Highlights

Final Exam Details

- Mostly covers post-midterm material
  - See lecture slides for Section numbers in the text we covered
  - Problems similar to homework problems
- You can bring TWO 8 1/2" x 11" review sheets, 1 from midterm or both new (double-sided ok, handwritten or typed).
- Calculators okay to use.

- Go through the homeworks, lecture notes, and examples in the text
- Do the practice final on the website and avoid being surprised!

Syllabus for Final Exam

Topic	*Text sections*
Logic	1.1-1.4
Basic proofs	1.5-1.7
Sets and functions	2.1-2.3
Basic number theory	3.4-3.7
Finite-state machines	12.2-12.4
Computability	3.1, 12.5
Induction	4.1-4.3
Binary relations	8.1, 8.5
Circuits	11.1-11.3
Graphs and Trees	9.1,10.1

80% of exam

Chapter 1 Highlights (Sections 1.1-1.7)

- Propositional Logic
  - Propositions, logical operators $\neg$, $\wedge$, $\vee$, $\oplus$, $\rightarrow$, $\leftrightarrow$, truth tables for operators, precedence of logical operators
- Propositional Equivalences
  - Tautology , Logical equivalence $p \equiv q$
- Predicates and Quantifiers
- Nested Quantifiers
- Rules of Inferences
- Proof Methods

Chapter 2: Sets and Functions (Sections 2.1-2.3)

- Sets
- Set operations: $\cup$, $\cap$, difference, complement
- Bit string representation of sets and bitwise operations
- Definition of a function
- 1-1 and onto functions, bijections

Chapter 3: Number Theory (Sections 3.4)

- Division: a | b, **div**, **mod**
- Modular arithmetic
- Primes, Fundamental Theorem of Arithmetic (FTA)
- GCD and LCM

Da 3-1-1 Rap
(by Snoop Modus Ponens *aka* Snoop Mod)

So da quartah's dun and ya've had some fun,
Now dig these topics from da 3-1-1…

Prime numbers, GCD, don't forget da LCM
What about da FTA 'n' da prime factorization
Binary, octal, hexadecimal representation
You gotta move shake groove to the modulah exponentiation.

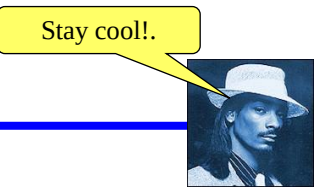
The Euclidean algorithm for GCD,
Applications of Number theory,
If Linear Congruences ain't your cuppa tea
Then try some Chinese Remaindering
with some Public Key Cryptography.

So da quartah's dun and ya've had some fun,
Now dig these topics from da 3-1-1…

Languages and strings, and Finite State Machines
Ya got it goin' on with a Finite State Automaton
But late at night when you can't find that finite automaton
Jam it to the max with the…equivalent Regular Expreshon.

For them funky languages that ain't regulah
You got machines named after that Turing fellah
Their 5-tuples can capture languages all
So sayeth the Church-Turing Thesis y'all
But don't forget da Halting Problem
That ain't decidable at all.

So da quartah's dun and ya've had some fun,
Now dig these topics from da 3-1-1…



From the base to the k to the k+1
Mathematical Induction gets the job done
But when ya need that kick in the inductive step,
From 1 to the 2 to the 3 to the k
Crank it up with some Strong Induction
It will show ya the way.

Partition a set with an equivalence relation
It's reflexive, symmetric, transitive…whatever
Party all night with some graphs and trees
And have a Hamiltonian for that hang-over.

Now that the quatah's dun and ya've had some fun,
Hope you liked these topics from da 3-1-1…WORD.