**Programming Principles:** DayByDay topics Fall 99
(Comp 110: lecture is 75 minutes; lab is 3 hours per week)

1. Intro, goals, non-goals
   Programming, problem Solving, left/ right brain

2. Algorithms, notation
   Breakouts, reuse, equivalence, "growing" Pay

3. Types, forms, Structured Programming
   The Choice form; int, real, bool, Str: Charge

4. Syntax, bnf, syntax diagrams, syntax boxes
   Nests of Choices, testing, proving equivalence

5. Loops
   Trace tables, repeat form, invariance: Loan

6. Data flow paradigm
   Data flow diagrams; Re-use, int & real flows: Changer

7. Logical data flows
   Expressions, bool type, casts & mix types: Play Ball

8. Design with loops
   Top down design, nested loops: Sine, expo, Calendar

9. State oriented programming
   States & transitions: Dispenser

10. Exam 1

11. Packaging; methods
    Functions and Routines, and reUse: Big Maxes

12. Data Spaces
    Slots, Passing parameters, String Class, Hero, OutRow

13. Many methods interconnected
    Boolean functions, Pay Class, 2D plots

14. OOP: Classes and Objects
    Defining Classes: Account, Name, Employee

15. Creating Classes
    Time, Complex Numbers, Date

16. Big data
    Files, terminators, access (public, private): Stats

17. Arrays
    Mean, Max, Chair inventory

18. Sorting
    Many ways: Select, Swap, Insert, Count

19. Two-Dimensional arrays
    Creating 2D array as a class; Review, ISBN

20. Exam 2

21. Java
    Layout, declarations, types, details

22. Choices in Java
    if, else, else if, "dangling else", nests, no switch

23. Loops in Java
    While, do loop, for, and converting the Repeat

24. Methods in Java
    Functions and Routines

25. Classes in Java

26. Arrays in Java

27. Review

28. Final Exam