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ABSTRACT

This report is the fourth in a series of reports which the PLATO Services Organization publishes to keep users up to date on curricular developments on the PLATO system. Materials are listed here under 71 subject areas. The report first presents all subject areas in which PLATO lesson development is in progress; it then provides a summary of completed topics available for student use, arranged by subject area together with the number of instructional hours and the names of persons to contact for further information. (SC)
PLATO CURRICULAR MATERIALS

Elisabeth R. Lyman

COMPUTER-BASED EDUCATION RESEARCH LABORATORY
UNIVERSITY OF ILLINOIS, URBANA, ILLINOIS
JULY 1976
No. 4
ACKNOWLEDGEMENTS

Grateful appreciation is expressed to William Golden for his encouragement during the preparation of this report, to Sheila Knisley and Sibyl Pellum for their assistance in typing the manuscript, and to Elizabeth Crabtree for her help with editorial details.
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PLATO CURRICULAR MATERIALS

SECTION I

Introduction

PLATO curricular materials have increased steadily in numbers available to users during the first six months of 1976. In addition, there has been a noticeable trend in revision of many of the older lessons. Two principal motivating factors were the cause of such revisions: the data gathered from considerable student use of the lessons and the opportunity to publish lessons for use on other PLATO systems. The number of terminals on the network has reached its present capacity of around 950 located at 146 sites, one in Stockholm, Sweden, and the rest in the United States. Twenty-six of the sites are on the University of Illinois campus in Urbana. There are also two other PLATO systems, one in Tallahassee, Florida, and one in Minneapolis, Minnesota. PLATO curricular materials now include about 4500 well-tested lessons representing about 4000 hours of instructional material in seventy-one subject areas.

This report is the fourth in a series of reports which the PLATO Services Organization at the Computer-based Education Research Laboratory of the University of Illinois publishes to keep PLATO users and prospective users up to date on curricular developments on the University of Illinois PLATO system. The report supersedes CERL Report X-41, No. 3, published in December 1975. The X-41 Reports provide information on lessons which have been completed, have been adequately checked, and have been used by students.

CERL Report X-41, No. 4 contains a list of (a) all the subject areas and instructional levels in which lesson development is in progress and (b) the completed topics arranged by subject area together with the number of instructional hours available in each topic whenever possible, and the names of persons to contact for more detailed information on the listed materials.
SECTION II

A. Subject Areas

Lesson development is in progress in the following curricular areas: (numbers indicate teaching levels; * indicate areas having tested completed materials).**

*Accountancy 3,4
Agriculture
  Agricultural Economics 4
* Agronomy 4
  Animal Science 4
* Dairy Science 4
Architecture 4,5
  Biomechanics 4
*Broadcast Media
*Business Administration 4,5
*Cinema Studies 4
*Classics 4
*Communications 4
  Computer Graphics 2,4
*Computer Science 4
  Counseling 4
  Design Science 4
*Driver Certification 6
Education
  Art Education 2,4
  Business Education 2,3,4
  Computer-Assisted Instruction 4
* Computer-Managed Instruction 4
* Education—General 3,4
  Educational Administration 4
  Educational Psychology 4,5
Engineering
* Aeronautical and Astronautical 4
  Agricultural Engineering 4
  Bioengineering 4
  Chemical 4
  Construction Engineering 4
* Electrical/Information 4
  Energy Engineering 4
* Graphics 3,4
  Industrial 4
  Materials 4
  Mechanical 4
  Nuclear 4
  Theoretical and Applied Mechanics 4
*English 2,4

Foreign Languages
  Akkadian 2,4
  Arabic 2,4
* Chinese 4
* Danish 2,4
* English as a Second Language 2,4
  Esperanto 2,4
* French 2,4
* German 2,4
* Hebrew (Modern) 2,4
  Hindi 2,4
* Italian 2,4
* Japanese 2,4
  Korean 2,4
* Latin 2,4
  Lithuanian 4
  Navajo 4
  Norwegian 2,4
  Persian 2,4
* Polish 2,4
* Russian 2,4
  Sanskrit 2,4
  Serbian 2,4
* Spanish 2,4
* Swahili 2,4
  Swedish 2,4
  Thai 2,4
  Turkish 2,4
  Yoruban 2,4
Home Economics 3,4
Humanities 4
  Industrial and Labor Relations 4
  Information Science 4
  International Relations 2,4
*Journalism 4
*Law 5
*Library Science 5
*Linguistics 4
*Literature 4
*Mathematics 1,2,3,4

***********************
** 1 - Elementary  2 - Secondary  3 - Vocational  4 - College
  5 - Professional  6 - General
Medical and Health Sciences
* Dentistry 5
* Medicine 5
* Nursing 3,5
* Pathology 5
* Pharmacology 5
* Pharmacy and Pharmacal Science 5
* Radiology 5
* Veterinary Medicine 4,5
Military Leadership Training 4,5
* Music 1,2,4
Natural Sciences
* Biochemistry 4,5
* Biology 2,4
* Biophysics 4,5
* Botany 4
* Environmental Studies 2,4
  Forestry 4
* Genetics 4,5
* Microbiology 4,5
* Physiology 4,5
  Zoology 4
* Nutrition 4
Optometry 5
*Photography 2,3,4
*Physical Education 2,4
Physical Sciences
* Acoustics 4
* Astronomy 2,4
  Astrophysics 4
* Chemistry 4,5
* Electron Microscopy 4
* Geology 2,4
  Meteorology 4
* Physics 4,5
*Population Dynamics 2,4,5
*Reading 1
Recreation and Park Administration 4
Rocketry 2
Social Sciences
  Anthropology 4
* Economics 4
* Finance 4
* Geography 2,4
  History 4
  Philosophy 4
* Political Science 2,4

* Psychology 4,5
* Social Welfare 4
* Sociology 4
*Speech and Hearing Sciences 3,4
*Statistics 3,4,5
Telegraphy 2,3
Theater 4
Traffic and Transportation 2,3,4
*Urban Studies 4
Video and Film 4
Vocational Training
  Business Education 2,3,4
* Business Skills 2,3,4
* Electronic Training 3,4
* Food Service Training 3
* Leadership Training 3,4
* Machinist Training 3,4
* Micro Precision 3,4
* Pilot Training 3,4
* Retail Training 3,4
* Vehicular Training 3,4

***************************
** 1 - Elementary 2 - Secondary 3 - Vocational 4 - College
5 - Professional 6 - General
SECTION II

B. Summary of Materials Available for Student Use

ACCOUNTANCY

Financial Accounting Principles
  Accrual Concepts (40 min)
  Changes in the Balance Sheet Equation (55 min)
  *Journal Entries I (75 or 50 min)
  *Journal Entries II (50 or 75 min)
  *Classification and Normal Balances (30 min)
  Income Statement (45 min)
  Closing Entries (50 min)
  General Journal, Ledger (variable)
  Adjusting Entries I (75 or 65 min)
  Adjusting Entries II (65 or 75 min)
  Worksheets (50 min)
  Inventory (Perpetual and Inventory Errors) (40 min)
  Accounts Receivable (55 min)
  Terms of Sale (40 min)
  Special Journals (20 min)
  Inventory Methods (35 min)
  Temporary Investments (90 min)
  Bank Reconciliations (50 min)
  Notes and Interest (70 min)
  Fixed Assets I: Acquisition and Depreciation (70 min)
  Fixed Assets II: Depletion, Amortization and Disposal (45 min)
  Compound Interest (70 min)
  *Long-term Investments in Bonds (Effective Rate Amortization) (55 min)
  Entries for Stockholders' Equity (75 min)
  *Long-term Liabilities (Effective Rate Amortization) (90 min)
  Investments (Cost vs Equity) (45 min)
  Funds Flow (45 min)
  Fund Statements (70 min)

Managerial Accounting Principles (30 hrs)
  Introduction to Cost Accounting (35 min)
  Cost Classification II
  Process Costing
  Job-Order Costing
  Non-Manufacturing Costs
  Breakeven Analysis
  Incremental Analysis

*Alternative versions of these lessons:
  Journal Entries for Service Firms
  Classification
  Long-Term Liabilities -- Bonds (Straight-Line Amortization)
ACCOUNTANCY  -continued-

Managerial Accounting Principles  -continued-
   Compound Interest
   Capital Budgeting
   Planning and Control
   Operational Budgeting
   Cash Budgeting
   Standard Costing I and II

(Contact:  J. C. McKeown, 285 Commerce West, UIUC, Urbana, Illinois 61801, 217/333-4538 {mckeown of com})

AERONAUTICAL and ASTRONAUTICAL ENGINEERING

Aircraft Design (12 hrs)

(Contact:  H. S. Stillwell, 101 Transportation Building, UIUC, Urbana, Illinois 61801, 217/333-2650 {glass of aero})

General
   Aerospace Engineering Games (.25+ hrs)

Solid Mechanics
   Elementary Beam Theory
      Design (3 hrs)
      Displacements (1 hr)
      Internal Forces (3 hrs)
      Section Properties (1.5 hrs)
      Sheer Stress (2 hrs)
      Theory (2 hrs)
   Elementary Torsion Theory
      Design (1 hr)
      Displacements (.5 hrs)
      Internal Forces (3.5 hrs)
      Section Properties (1.5 hrs)

(Contact:  James A. Bennett, General Motors Corp., Research Laboratories, Warren, Michigan 48093 (work done at UIUC) {glass of aero})

AGRONOMY

Soil Physics
   Soil Water (open-ended, 2 to 15 hrs)

(Contact:  Charles Boast, S-216 Turner Hall, UIUC, Urbana, Illinois 61801, 217/333-4370 {boast of cerl})
ASTRONOMY

Kepler's Laws of Planetary Motion (open-ended, 2-3 hrs)
Moon Phases and Almanac (open-ended, 2-3 hrs)
Stellar Constellations (open-ended, 2-3 hrs)

(Contact: Elaine Avner, 364 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-6500 {e avner of psc})

BIOCHEMISTRY

Basics of pH and Acid/Base
Introduction and the Henderson-Hasselbach Equation
Acid-Base Character of Amino Acids, Peptides, Proteins
Buffer Problems
Basic Science Applications in Clinical Medicine

Energetics
Basic Thermodynamics Quiz

Enzyme Kinetics
Quantitative Description and the Michaelis-Menton Relationships
Interactive Graphics
Allosteric Control

Proteins
Amino Acids: Structures and Biochemical Characteristics
Natural Amino Acids: Structures, Names and Abbreviations
Amino Acids, Part II: Peptide Sequence Analysis
Introduction to Serum Enzymes

Nucleic Acids
Identification of Nucleic Acids -- Competitive Interaction

Carbohydrates
Introduction to Monosaccharides
Structure of Monosaccharides
Carbohydrate Identification and Structure
Carbohydrate Identification -- Competitive Interaction

Lipids
Identification of Lipid and Lipid-like Compounds -- Competitive Interaction

Cofactors, Etc.
Vitamins I: Comprehensive Quiz
Vitamins II: The Water Soluble Vitamins: B_1, B_2, B_6, and B_12
Vitamins III: The Water Soluble Vitamins: Niacin, Pantothenic Acid, Folic Acid, C, and Biotin
Intermediate Metabolism
Carbohydrate Metabolism: Glycolysis
Intermediate Metabolism II: The TCA Cycle

(Contact: Dr. Allen Levy, School of Basic Medical Sciences, UIUC, Urbana, Illinois 61801, 217/333-2507; levy@mcil.uiuc.edu)

Protein Synthesis

(Contact: Prof. E. Kuemmerle, Chemistry Department, Illinois State University, Normal, Illinois 61761, 309/438-2359)

BIOLOGY

Experimental Tools and Techniques (see also BOTANY, MICROBIOLOGY)
Tools Used in Biology -- Log Scales, Metric System, Chi-Square Analysis (60 min)

Chemical Basis of Life
Matter and Atoms (50 min) (richcrockett@kka.edu)
Bonding and Organic Chemistry (35 min) (roncrockett@kka.edu)
Periodic Table of the Elements (30 min) (arsenty@lsci.edu)
Scalor Experiment and Carbon-14 Dating Experiment (45 min) (arsenty@lsci.edu)
Chemistry for Biology Students (40 min)

Cellular Structure and Function (see also BOTANY, MICROBIOLOGY)
Ultrastructural Concept (45 min)
Cells Structure and Function (45 min)
Diffusion and Osmosis (35 min)
Surface Area/Volume in Living Systems (15-25 min)

Reproduction and Development (see also BOTANY)
Mitosis (35 min)
Mitotic Cell Division (30-40 min)
Meiosis (45 min)
Embryology (45 min)

Molecular Genetics
DNA and Protein Synthesis (40 min)
DNA, RNA, and Protein Synthesis (15-30 min)

Bioenergetics: Enzymes and Metabolism (see also BOTANY)
Enzyme Experiments (30 min)
Essentials of Photosynthesis (15-20 min)
ATP, Anaerobic and Aerobic Respiration (30 min)
Electron Transport Chain (15-20 min)
Measuring the Level of Life (30 min)

Classical Genetics (see GENETICS)
Evolution (see also BOTANY, GENETICS)
  Natural Selection (50 min)
  Natural Selection Experiment (30-40 min)
  Comparative Serology (30-45 min)
  Genetic Drift (30-40 min) {hyatt of uiccbio}

Population Biology and Ecology (see also BOTANY, MICROBIOLOGY)
  Biogeochemical Cycles (20-30 min)
  Energy Relationships in Biological Systems (60-75 min)
  Predator-Prey Relationships (60 min)
  Buffalo -- Animal Population Experiment (25-45 min)
  Population Dynamics (15-30 min)

Plant Anatomy and Morphology (see BOTANY)

Plant Pathology (see BOTANY)

Plant Growth and Development (see BOTANY)

Taxonomy (see also BOTANY)
  Use of Taxonomic Keys (20 min)

Human Anatomy and Physiology
  ADH and Water Balance in Humans (30-40 min)
  Neuron Structure and Function (30-45 min)
  Hormonal Control of the Menstrual Cycle (60 min)
  Human Digestive System (50 min)
  The Heart -- Structure and Function (40 min)
  Cardiac Cycle (50 min)
  Heart Rate Regulatory Mechanisms (45 min)
  The Mechanics of Breathing (50 min)
  Elementary Psycho-Physiology of Audition (90-120 min)
  Movement (Muscles) (60 min) {denault of biocc}

Animal Behavior
  Physiological Basis of Learning (30 min)
  Simple Animal Behavior -- Klinokinesis (30-45 min)
  Social Behavior of Birds (30-45 min)
  Classical Imprinting in Fowl (35-45 min) {hyatt of uiccbio}

(General Contact: Kathie Herrick, 2038 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7450 {herrick of biocc})
BIOPHYSICS

Bioelectric Phenomena in Excitable Cells (3-6 hrs)
Electricity in Physiology
Neuron Excitability Experiment
Electrodiffusion

(Contact: Lloyd Barr, 446 Burrill Hall, UIUC, Urbana, Illinois 61801, 217/333-7423 {mckown of physio})

Modelling (open-ended)
Hodgkin-Huxley Model of a Nerve Cell Membrane (2 hrs)
Generalized Biophysical Modelling Program

(Contact: David Walter or Russ McKown, 42 Burrill Hall, UIUC, Urbana, Illinois 61801, 217/333-4687 {mckown of physio})

BOTANY

Tools and Techniques
A Tool: The Spectrophotometer (25 min)
Experimental Technique (45 min)
Life in a Microcosm (20+ min)

Taxonomy
Plant Taxonomy (45 min)
Tree Identification (15 min)

Anatomy and Morphology
Organization of the Higher Plant (45 min)

Populations
Populations Laboratory Using E. Coli (15-25 min)

Genetics (see GENETICS)

Evolution
Induced Mutations Experiment Using Aspergillus (20-40 min)
Plant Life Cycles (90 min)

Growth and Development
Seed Germination (30-40 min)
Plant Growth (20-30 min)
Plant Responses and Apical Dominance (30-40 min)
Flowering and Photoperiod (30-45 min)
Fruiting and Leaf Senescence (15-20 min)
Enzyme–Hormone Interactions (20-40 min)

Plant Pathology
Plant Pathology (40 min)
BOTANY -continued-

Bioenergetics
Photosynthesis (40 min)
Experiments in Photosynthesis (20 min)
Respiration and Enzymes (45 min)
Experiments in Respiration (30 min)

Cell Function
Introduction to Water Relations (15 min)
Water Relations Laboratory (30 min)

(Contact: Alan Haney, 401 Natural History Building, UIUC, Urbana, Illinois 61801, 217/333-4396 {haney of bot100})

BUSINESS ADMINISTRATION

Management Science (12.5 hrs)
Inventory Theory
Introductory Game Theory
Linear Decision Models
Rational Decision Making

(Contact: Richard V. Evans, 383 Commerce West, UIUC, Urbana, Illinois 61801, 217/333-6511)

BUSINESS SKILLS

Business Skills Training Course (Lowry Air Force Base)
Inventory Management for Supply Specialists (2 hrs)

(Contact: Larry D. Francis, MTC Project, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 {larry francis of mtc})

Typing
Beginning typing (9 15 min. sessions)

(Contact: A. Appel, 206 Pell Circle, Urbana, Illinois 61801, 217/344-4131 {a appel of mcl})
Analytical Chemistry
Calculation of $K_{sp}$ from Potentiometric Data (60-90 min)
Effects of $pK_a$ (acid) and (base) on Shape of Titration Curves (60 min)
Introduction to Beer's Law (45 min)
Ion Selective Electrodes (45 min)
Basic Gas Chromatography (60 min)

(Contact: Ed Nagel, Neils Science Center, Valparaiso University, Valparaiso, Indiana, 46383, 219/462-5111 {nagel of vu})

Introduction to Mass Spectroscopy
Nodes and Shapes of Atomic Orbitals

(Contact: Harrison Shull, Chemistry Department, Indiana University, Bloomington, Indiana 47401, 812/337-3913 {shull of iu})

General Chemistry
The Gas Laws (40 min)
Writing Formulas for Ionic Compounds (25 min)

(Contact: Milada Benca, Kennedy King College, 6800 S. Wentworth, Chicago, Illinois 60622, 312/362-3421 {benca of kka})

Identification of Some Inorganic Ions

(Contact: Gardiner Myers, Department of Chemistry, University of Arizona, Tucson, Arizona 85721, 602/822-4218 {kent of arizona})

Interpretation of Mass Spectra
Chromatography

(Contact: Steven Murov, Cox House, Sangamon State University, Springfield, Illinois 62708, 217/786-6549 {murov of ssu})

Behavior of Gases (30 min)
Review of Mathematical Skills
Use of the Slide Rule
Calculator and Graphing
Kinetics
Practice Balancing Simple Chemical Equations
Chemical Formulas Practice
Inorganic Qualitative Analysis Simulation
Ionic Nomenclature
Simple Covalent Nomenclature
Quiz on Stoichiometry
Octahedral Ligand Effect
Mass Spectra Illustration
Nuclear Chemistry

(Contact: Robert Grandey, Cleveland Learning Center, 7835 Freeway Circle, Westerville Heights, Ohio 43130, 614/243-9292)
CHEMISTRY -continued-

General Chemistry -continued-

Review of Basic Tools
The Metric System (60 min)
Scientific Notation (50 min)

Elements and Atoms
Names of the Elements (20 min)
Names of the Elements (Interterminal Game)
Description of Some Elements (30 min)
Atomic Number and Atomic Mass (30 min)
Valence Electrons (20 min)
Electronic Configurations (60 min)
Historical Introduction to Atomic Theory (40 min)

Chemical Bonding, Compounds
Ionic Bonding (25 min)
Lewis Structure and Chemical Bonding (65 min)
Molecular Formulas and Percent Composition (60 min)
Calculation of Molecular Weights

Nomenclature
Inorganic Nomenclature (ions, acids, bases, salts) (50 min)

Solutions
Solutions: Concentration (60 min)
Freezing Point Depression Experiment (50 min)

Balancing Equations, Stoichiometry
Chemical Stoichiometry (60 min)
Balancing Equations (30 min)
Balancing Oxidation-Reduction Equations (30 min)

Acid-Base Chemistry
Reactions of Acids and Bases (25 min)
Introduction to Titrations (2 versions, 35 min each)
Acid-Base Titration Experiment (20 min)

pH and Acid-Base Titration Curves (40 min)

Chemical Equilibrium
Introduction to Chemical Equilibrium (30 min)
Chemical Equilibrium Problems
Chemical Equilibrium Problems II (K_a, K_b, pH)

Chemical Thermodynamics
Heats of Reactions (Hess's Law) (50 min)

Laboratory Techniques
Use of the Analytical Balance (uses microfiche)

(Contact: Ruth Chabay, 250 Roger Adams Laboratory, or Stanley Smith, 254 Roger Adams Laboratory, Box 46, UIUC, Urbana, Illinois 61801, 217/333-3839 (chabay of chem or stan smith of chem))

Organic Chemistry

Nomenclature and Structure
Organic Nomenclature (2 parts) (60 min)
Names of Organic Functional Groups (40 min)
Conformation of Alkanes (25 min)
Conformation of Cycloalkanes (40 min)
Bonding in Carbon Compounds (30 min)
Optical Activity in Organic Molecules (40 min)
Organic Chemistry -continued-

Functional Group Chemistry
Free Radical Hologenation (60 min)
Alkene Chemistry (40 min)
Alkene Problems (touch) (30 min)
Alcohol Chemistry (70 min)
Alcohol Problems (touch) (25 min)
Substitution and Elimination Reactions (40 min)
Substitution Problems (touch) (30 min)
Additions to Carbonyl Groups (40 min)
Arenes Chemistry (50 min)
Carboxylic Acids (40 min)
Esters of Carboxylic Acids (35 min)
Carboxylic Acids (Part 3) (50 min)

Multistep Synthesis
Synthesis of Aromatic Compounds (40 min)
Aliphatic Synthesis Games (mono and interterminal) (1 hr)
Aromatic Synthesis Game (interterminal)

Carbohydrates and Amino Acids
Carbohydrates (Parts 1, 2, 3) (20, 40, 60 min)
Glucose Mutarotation Experiment (30 min)
Names and Structures of Common Amino Acids (40 min)

Spectroscopy
Introduction to Nuclear Magnetic Resonance (25 min)
NMR Spin-Spin Coupling (30 min)
Infrared Spectroscopy (with microfiche) (60 min)

Qualitative Organic Analysis
Calculation of Empirical Formulas
Some Reactions Used in Qualitative Analysis (50 min)
Qualitative Organic Analysis (90 min)
Identification of Organic Unknowns (20 min)

Organic Laboratory
Melting Points and Mixed Melting Points (15 min)
Fractional Distillation Experiment (15 min)

Advanced Topics
Mechanism of Semicarbazone Formation (60 min)

(Contact: Stanley Smith, 254 Roger Adams Laboratory, Box 46, UIUC, Urbana, Illinois 61801, 217/333-3839 {stan smith of chem})

CHINESE

Elementary Chinese (15 hrs)

(Contact: Chin-Chuan Cheng, 4101 Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-1206 {cheng of mfl})
CINEMA STUDIES

Experimenting with Film Studies (4 hrs)
- Bibliographies on Films and Directors
- Cinema Chronology
- Cinema Hardware
- Cinema Quiz
- Multiple Choice Questions with Mini-Essay Answers
- Selected Student Papers

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 {marty of mfl})

COMMUNICATIONS

Broadcast Media
- Broadcast Management Simulation (4.5 hrs)

(Contact: Timothy Fay, Control Data CBEducation Center, 901 S. Highland St. Arlington, Virginia 22204, 703/979-3483)

COMPUTER MANAGED INSTRUCTION

(The following lessons are not available for public use at this time, but the "contact" is glad to talk to anyone about them.)

- Management of Study and Learning for Course in Elementary Economics (10 hrs)
- Management of Study and Learning for Course in American History (5 hrs)

(Contact: Thomas Anderson, 226 Education, UIUC, Urbana, Illinois 61801, 217/333-2604 {alessi of edpsych})
COMPUTER SCIENCE

General and Miscellaneous Programs
- Entry into the ACSES System
- Conversational Request Translator and Processor
- Master Index to the Computer Science Lessons
- Introduction to Computers and Computer Programming
- Introduction to Algorithms
- Turing Machines
- Simulation of Epic 2000 Calculator
- Maze Traversing Algorithm
- Manual for Grafix
- PLATO Hardware and Software

Mini-Languages
- Introduction
- Child's Drawing
- Drawing Language
- Recursion
- Introduction to Robot
- Robot Mini-Language
- Stacks Mini-Language
- Backtrack Algorithm

Language Independent Programming
- Introduction
- Flow Charting
- DO-Type Loops
- Begin Blocks
- Decision Tables
- File Processing
- Recursion
- Structured Programs
- Formal Computer Languages

PL/I Language (25 hrs)
- Introduction
- Data Types
- Operations
- Arithmetic
- String Operations
- IF-THEN, DO Groups
- DO Loops
- Arrays
- Advanced Array Examples
- Procedures
- LIST Input/Output
- EDIT Input/Output
- Drill on EDIT I/O
- Recursive Programming
- Data Structures
- Exam
FORTRAN Language (10-20 hrs)
Introduction
Arithmetic
IF Statements
DO Statements
Subprograms
Subprogram Examples
Introduction to Arrays
Advanced Arrays
FORMAT Statements
Character Handling
Format Simulator
Exam

BASIC Language
Introduction
Beginning BASIC
Advanced BASIC
Arrays in BASIC
Exam

COBOL Language
Introduction to the COBOL Lesson Sequence
COBOL Identification and Environment Divisions
Advanced COBOL PICTURE Clauses
COBOL Data Division
COBOL Procedure Division

APL Language
Introduction to the APL Language
Scalars
Vectors

Machine and Assembler Languages and Computer Simulators
A Simple Computer
Machine Language
PDP8/L Simulator

Other Languages
SNOBOL4
LISP
Introduction to LOGO
LOGO Test Instruction
LOGO Procedures
COMPUTER SCIENCE -continued-

Information Processing
- Sorting
- Sort Program Judging
- Binary Searching
- Introduction to the Data Structures Sequence
- Information Structures
- Information Structures Drills
- Experience with Stacks
- Experience with List Space
- Experience with List Nodes Drills

Numerical Analysis
- Introduction
- Matrix Multiplication
- Numerical Integration
- Linear Equations
- Nonlinear Equations
- Least Squares
- Linear Programming
- Monte Carlo
- Spline Approximations

Applications
- Discrete Simulation
- Simulation Games
- Traffic Simulation
- Payroll Program
- Business Applications

Logical Design
- Introduction
- Boolean Expressions
- Basic Building Blocks
- Complementary Building Blocks
- Combined Problems
- Data Flow Diagrams

Compilers
- Reference Manual
- PL/I Compiler
- FORTRAN Compiler
- BASIC Compiler
- COBOL Compiler
- APL Compiler
- SNOBOL4 and SPITBOL Compiler
COMPUTER SCIENCE  -continued-

Communication
Comments Between C.S. Students and Authors
On-Line Consultation with an Instructor
Bulletin Board for Course Messages
C.S. Author-Author Communication

Lesson Writing and Evaluation
User Feedback
On-Line Consultation
Author Introduction
Lesson Writing
KAIL Compiler
KAIL Reference
Common Code, etc.
Author Communication
Student Router
Author Practice

Computing Services Office
IBM OS/360/370 Job Control Language
IBM 360 Load Modules and Dec-10 SAV Files
CalComp Plotter
Remote Terminals

(Contact: George Friedman, Jr., 128 Digital Comp. Lab., UIUC, Urbana, Illinois 61801, 217/333-7505 {friedman of csal})

Data Structures (1 hr)

(Contact: Stuart C. Shapiro, Computer Science Department, 101 Lindley Hall, Indiana University, Bloomington, Indiana 47401, 812/337-1233 {shapiro of iu})

PLATO TUTOR Language Training Lessons (up to 40 hrs)
Computer Background for New PLATO Authors (2 hrs)
TUTOR, an Interactive Reference for New Authors (24 hrs)
Editing Principles and Exercises (7 hrs)
Tests on Basic TUTOR Commands (2 hrs)
Author Mode and Student Mode Solutions to the Basic TUTOR Programming Problems
States in TUTOR, the Order of Execution of TUTOR Commands Variables, for Those Who Hate Them (1 hr)

(Contact: Larry D. Francis, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 {larry francis of mtc})
DANISH

Syntax (2 hrs)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 {marty of mfl})

DENTISTRY

Biostatistics
Dental Histology
Structure of the Tooth

(Contact: Robert Votaw, Bldg, A, Rm. M033, Health Center, University of Connecticut, Farmington, Connecticut 06032, 203/674-2137 {votaw of conn} or {kavanagh of conn})

Diagnosis and Treatment of Emergencies (self-evaluation and post-test) (1.5 hrs)
Liquid Solutions
Medical Emergencies (2 hrs)
  Cardiopulmonary Resuscitation
  Routes of Drug Administration
  Treatment of Medical "Life-Threatening" Emergencies for the Dentist
Mock National Boards (100 questions from the 1974 Standard Achievement Test in Biological Sciences)
Neuroscience Self-Assessment Lessons
Prescription Writing (2 hrs)
Simulation Exercises
Statistics for Dentistry (1.5 hrs)

(Contact: Steve Summers, J. Hillis Miller Health Center, ComiCore Building, Rm. C-237, University of Florida, Gainesville, Florida 32601, 904/392-4119)

DRIVER CERTIFICATION

Mastery Learning Materials for Driver Training (5 hrs)

(Contact: Lisa Parker Brenner, School of Basic Medical Sciences, UIUC, Urbana, Illinois 61801, 217/333-2107 {brenner of med})

ECONOMICS

General Equilibrium Theory in an Exchange Economy (1.5 hrs)
Consumer Behavior
Multiple Market Equilibrium Simulation

(Contact: Robert Gillespie, 450 Commerce West, UIUC, Urbana, Illinois 61801, 217/333-4586)
Introductory Economics Concepts
Macroeconomics (2 hrs)
Microeconomics (1.5 hrs)

(Contact: Donald Paden, 225 David Kinley Hall, UIUC, Urbana, Illinois 61801, 217/333-2175 (barr of econ))

See also COMPUTER MANAGED INSTRUCTION

EDUCATION

Mathematics
Secondary and Continuing Education
Classroom Simulations Focusing upon Teaching and Questioning Strategies (5 hrs)

(Contact: Janice Flake, Mathematics Education Department, Florida State University, Tallahassee, Florida 32306, 904/644-1833 (lessons developed at UIUC))

Physical Education
Physical Education Curriculum Planning--A Simulation (2 hrs)

(Contact: Karen Fry, 201 Kinney Gymnasium, UIUC, Urbana, Illinois 61801, 217/333-2484 (fry of pecp))

Psychology
Effective Feedback Skills for Company Commanders (6 hrs)

(Contact: Larry D. Francis, MTC Project, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 (larry francis of mtc))

Reading Disabilities
A Computer Simulation of Students with Reading Disabilities

(Contact: Vicki Boysen, 227 Computer Science, Iowa State University, Ames, Iowa 50010, 515/294-8338 (boysen of amesrad))

Science
Teaching for Mastery in Science (2 hrs)

(Contact: James R. Okey, College of Education, University of Georgia, Athens, Georgia 30602, 404/542-1764)

Teaching
Simulation of First Year of Teaching (1 hr)

(Contact: Owen F. Gaede, 382 Education Building, UIUC, Urbana, Illinois 61801, 217/333-3643 (gaede of ed))
EDUCATION —continued—

Test Construction (Aberdeen Proving Grounds) (12 hrs)
Supervision of Practice Exercise
Characteristics of Testing
Purposes of Testing
Types of Tests
Test Administration
Test Analysis I and II
Test Analyzer and Math Drills
Test Item Analysis

(Contact: Larry D. Francis, MTC Project, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 {larry francis of mtc})

ELECTRICAL/INFORMATION ENGINEERING

Computer-Guided Experimentation
Description of Computer-Guided Experimentation Research
Computer-Guided Experimentation Research Routines
Computer-Guided Experimentation Lessons (4-12 hrs)
(Completion time dependent on prior laboratory experience)
  Introduction to Computer-Guided Experimentation (15 min)
  The Oscilloscope (2 hrs)
  The Audio Oscillator (1 hr)
  The Function Generator (1 hr)
  The DC Supply (.5 hr)
  The Vacuum Tube Voltmeter (1 hr)
  Transients (1.5 hr)
  Impedance (1.5 hr)
  Two-Port Networks (1.5 hr)

(Contact: James P. Neal, 361 Electrical Engineering Building, UIUC, Urbana, Illinois 61801, 217/333-4351 {neal of eecge})

Basic Electronics
Diode Electronics (.75 hr)
Transistor Bias (1.5 hr)
Transistor Amplifiers (1.5-2 hrs)

(Contact: R. Arzbaecher, Information Engineering Department, UICC, Chicago, Illinois 60680, 312/996-2311 {droege of uicc})

Circuits
Basic Principles of Network Analysis
Drills on DC Analysis Topics
  Conventional Current (5 min)
  Ohm's Law and the Resistor (26 min)
  Voltage and Current Sources (9 min)
  Series/Parallel Nets (22 min)
  Voltage Division (10 min)
Drill on AC Analysis Topics
Sinusoidal Functions (10 min)
Complex Number Arithmetic (15 min drill, calculator, plotter)

Network Simulators (open-ended, non-tutorial)
DC and Steady-State AC
Step-Function and Source-Free RL and RC
Source-Free Parallel RC

(Contact: Paul Weston, 329d Electrical Engineering Building, UIUC, Urbana, Illinois 61801, 217/333-4694 {weston of ee})

Electromagnetics
Introductory Electromagnetics (Statics)
Concepts of Dielectrics in Media and Polarization
Divergence (.5 hr)
Physical Significance and Electrical Applications of the Curl
(.5 hr)
Potential Maps (open-ended)
Rectangular, Cylindrical and Spherical Coordinate Systems (2 hrs)
Antennas and Wave Propagation
Electromagnetics: Smith Charts, Antennae Field Patterns, Array Patterns (open-ended)

Circuits
Semiconductor Electronics
 pn Junction Theory
Measurement of Resistivity in Semi-Conducting Materials
Diode Design (open-ended)
Graphical Notes on Mosfets
Theory and Fabrication of Semi-Conductor Devices
Diffusion Profile Plotter (open-ended)
Integrated Circuit Mask Generator

Systems
Control Systems -- Plotting Routines
Logical Expression Minima (open-ended)

(Contact: David V. Meller, Rm. 257 Engineering Research Laboratory, UIUC Urbana, Illinois 61801, 217/333-6500 {dvm of ee} or Edward Mast, 3718 Electrical Engineering Building, UIUC, Urbana, Illinois 61801, 217/333-4946 {ed mast of ee})
**ELECTRONIC TECHNOLOGY**

Electronic Training (7 hrs) (Army Signal Center, Ft. Monmouth)
- Parallel Circuits
- Series Parallel Circuits
- Ohm's Law
- DC Power
- Series Circuits
- Trouble Shooting
- Introduction to First Aid and Safety in the Shop

Electronic Training (San Diego)
- Using the Simpson 601-1 Multimeter as an Ohm meter (4 hrs)
- Using the Simpson 601-1 Multimeter as an Ammeter (4 hrs)
- Oscilloscope Training (4 hrs)

(Contact: Larry D. Francis, MTC Project, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 {larry francis of mtc})

**ELECTRON MICROSCOPY**

The Hitachi HU-11 Series Vacuum System (.3-1 hr)

(Contact: D. L. Davis, Center for Electron Microscopy, UIUC, Urbana, Illinois 61801, 217/333-2108 {davis of uicem})

**ENGINEERING GRAPHICS**

- Multiview Projection (3 hrs)
- Crossword Puzzle on Drafting Terminology (1 hr)
- Engineering Terms (1 hr)

(Contact: Ben Lathan, Malcolm X College, 1900 W. Van Buren, Chicago, Illinois 60622, 312/962-3316 {lathan of kka})

- Scales and Engineering Measurements (20 min)
- Orthographic Projection: Points (15 min)

(Contact: Wayne C. Dowling, 305A Marston Hall, Iowa State University, Ames, Iowa 50011, 515/294-8365 {dowling of engr})

**ENGLISH**

- Capitalization
  - Common and Proper Nouns (30 min)
  - Test in Basic Capitalization (30 min)
  - Capitalization Rules for Names and Titles (15 min)
  - Capitalization of Geographic Sections, Directions and Addresses (20 min)
  - Capitalization of Time, Events, Organizations, and Subjects (20 min)
ENGLISH—continued—

Composition
Assembling a Paragraph (45 min)
Editing Symbols, Verbs (30 min)
Topic Sentences (15 min)
Irrelevant Details in Paragraphs (10 min)

Editing
Improving Editing Skills (60 min)
Editing Misspellings (60 min)
Paragraph Editing I (1 hr)
Paragraph Editing II (1 hr)
Diction and Punctuation Errors (80 min)
Basic Errors in Punctuation and Word Usage (60 min)
Commonly Misused Words (90 min)
Proofreading and Spelling (20 min)

Grammar
Short Review of Parts of Speech (40 min)
Test on Grammar and Usage (30 min)
Complete Sentences (15 min)
Subject and Predicate Recognition (50 min)
Simple Subject, Verb, and Simple Complement Recognition (45 min)
Subject-Verb Agreement I and II (1.75 hrs)
Pronoun-Verb Agreement (10 min)
Pronouns (30 min)
Pronouns: Possessive, Object, Subject (45 min)
Introduction to Verbs (30 min)
Verb Tenses (60 min)
Recognition of Verb Tenses (60 min)
Subjunctive (40 min)
Passive Verbs (30 min)
Irregular Verbs (5 separate lessons) (3 hrs)
Copulative Verbs (10 min)
Verbs and Verb Phrases Within a Sentence (45 min)
Prepositional Phrases (40 min)
Dangling Participles, Misplaced Modifiers (60 min)
Infinitive (35 min)
Run-on Sentences (10 min)
Gerunds (60 min)
Double Negatives (15 min)
Direct and Indirect Objects (60 min)
Who/whom (60 min)
Noun Clauses (60 min)
Adjective Clauses (50 min)
Adverbia Clauses (25 min)
Compound Sentences (35 min)

Poetry
Analysis of e e cummings' "portrait" (45 min)
Inductive Approach to Poetry (20 min)
Full, Part, and Symbolic Rhyme (60 min)
ENGLISH  -continued-

Punctuation
  Punctuation Diagnostic (40 min)
  Commas and Periods (30 min)
  Semicolons and Commas (30 min)
  Basic Rules of the Semicolon (45 min)
  Use of Semicolons with Adverbs (30 min)
  Placement and Punctuation of Adverbs (20 min)
  Quotations I-VI (2.5 hrs)
  Commas with Nonrestrictives I and II (40 min)

Research
  Bibliographic Form (60 min)
  Use of the Dictionary (40 min)
  Footnotes (60 min)
  Footnotes in Term Paper--Sample (35 min)

Spelling
  Diagnostic Spelling Test (40 min)
  Singular and Plural Nouns and Possessives I and II (1 hr)
  Spelling Drill (1.5 hrs)
  Commonly Misspelled Words (2 hrs)
  "c-related" Words (25 min)
  Dictionary Symbols: Consonants (30 min)
  Dictionary Symbols: Syllable Division, Accents, Vowel Symbols (35 min)
  Plural Nouns (1 hr)

Usage
  Diagnostic Test in Usage and Sentence Structure (45 min)
  Misused Words (2 separate lessons) (90 min)
  Homonym Puzzle (20 min)
  Word Confusions I and II (25 min)

Vocabulary
  Vocabulary Building Using Latin and Greek Roots (38 lessons --
   60 min each) (scanlan of mfl)

Miscellaneous
  Analogies (1.5 hrs)
  Spelling Word Game
  Hangman Game
  Reasoning (30 min)

(General Contact: Gary Michael, Community College English, 201C Engineering
Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7450 (michael of
english))

Introductory Lessons For Chaucer Students (40 min)

(Contact: N. D. Hinton, Sangamon State University, Shepherd Road, Springfield,
Illinois 62708, 217/786-6720 (hinton of ssu))
ENGLISH AS A SECOND LANGUAGE

Practice in Reading and Writing (designed for foreign students) (32 hrs)

(Contact: Bill Pech, G93 Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-1719 (pech of flb))

Syntax (10 hrs)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 (marty of mfl))

ENVIRONMENTAL STUDIES

Animal Ecology
Animal Management
Diet Program
Ecosystem Model
Model Development Language
Simulated Disaster
Water Pollution

(Contact: Steven Petak, 166 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801 (petak of ed))

FINANCE

Fundamentals of Real Estate and Urban Economics (6 hrs)
  Urban Growth
  Urban Structure
  Urban Problems
  Legal Environment of Urban Space Use
  Housing
  Urban Redevelopment
  Valuation and Investment Analysis
  Large-Scale Real Estate Development

(Contact: Austin Jaffe, Box 4, David Kinley Hall, Department of Finance, UIUC, Urbana, Illinois 61801, 217/333-2110 (jaffe of cerl))

Real Estate Model and Simulation (10 hrs)

Simulation of Stock Market Activity (10 hrs)

(Contact: Austin Jaffe (jaffe of cerl) or Bruce Copland, 356 Weston Hall, Champaign, Illinois 61820 217/332-2020 (copland of csa))
FOOD SERVICE TRAINING

Food Service Training Course (Maxwell Air Force Base (3 hrs)
Food Service Preparation Forms
Senior Cook's Requisitions
The Cook's Worksheet
Flight and Missile Feeding
Techniques for Serving Lines

(Contact: Larry D. Francis, MTC Project, 361 Engineering Research Laboratory,
UIUC, Urbana, Illinois 61801, 217/333-7465 {larry francis of mtc})

FOREIGN LANGUAGES -- GENERAL

Polyglot Game (13 languages) (2-26 hrs)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana,
Illinois 61801, 217/333-9776 {marty of mfl})

FRENCH

Beginning French (100 hrs)
Dialogue
Grammar

Culture and Civilization (6 hrs)
Anthropology
Geography of France
Geology of France
Stylistic Diversion
Subway

Grammar and Syntax (12 hrs)

Linguistics (70 hrs)
Phonemics
Phonetics

Reading Comprehension/Translation (30 hrs)

Vocabulary (28 hrs)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana,
Illinois 61801, 217/333-9776 {marty of mfl})
GENETICS

Classical
Vocabulary Drills for Genetics (2 hrs)
Elementary Probability and Mendel's Laws (50 min)
Blood Typing (40 min)
Drosophila Genetics (50 min)
Genetics and Heredity (20 min)
Plant Genetics Problems (20 min)
Gene Mapping in Diploid Organisms (60–90 min)

(Contact: Kathy Herrick, 203B Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7450 {herrick of biocc})

Chromosome Karyotyping I and II (1+ hrs)
Genetics Counseling (1+ hrs)
Reading and Writing Pedigrees (1 hr)

(Contact: Darlene Chirolas, 270 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-2375 {darlene of pso})

Quantitative Genetics (2–3 hrs)
Population Genetics (2–3 hrs)

(Contact: Michael Grossman, 215 Animal Science Laboratory, UIUC, Urbana, Illinois 61801, 217/333-2626 {grossman of lsci})

GEOGRAPHY

Social/Cultural Geography
Room Geography (.25 hr)
Spatial Diffusion (1+ hrs)

(Contact: Ivan M. Pour, Department of Urban Planning, 904 W. Nevada, Urbana, Illinois 61801, 217/333-3891 {pour of urban})

Geography of France (1 hr)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 {marty of mfl})

GEOLOGY

Geology of France (1 hr)

(Contact: B. Mainous, G70d Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776)
GEOLOGY -continued-

Introduction to Radioactivity and Geologic Time (30 min)

(Contact: D. Oberpriller, c/o Prof. John Robson, PLATO Project, Room 311, University Computer Center, University of Arizona, Tucson, Arizona 85721 {oberpriller of arizona})

New Global Tectonics and Continental Drift

(Contact: Christopher Scotese, c/o PLATO Project, 221 S.E.S., UICC, Chicago, Illinois 60640, 312/996-5157 {droege of uicc})

GERMAN

Syntax (16 hrs)
Vocabulary (44 hrs)
Reading Program for Graduate Students (26 hrs)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 {marty of mfl})

German Vocabulary and Reading Skills (11 hrs)

(Contact: David M. Weible, German Department, UICC, Box 4348, Chicago, Illinois 60680, 312/996-3205 {weible of german})

HEBREW (MODERN)

Elementary Modern Hebrew
First Year (60 hrs)
Second Year (first semester--20 hrs)

(Contact: Abraham Ziv, Language Laboratory, Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-1719 {ziv of mfl})

ITALIAN

Syntax (4 hrs)
Vocabulary (35 hrs)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 {marty of mfl})
JOURNALISM (see also ENGLISH)

Topics in Newspaper Editing and Design
Basic Typography (1.25 hrs)
Headline Writing (1.25 hrs)
Picture Editing (1.25 hrs)
Page Layout (.3 hr)
Spelling Test (.15 hr)

(Contact: Bill Oates, Dept. of Journalism, Indiana University, Bloomington, Indiana 47401 (oates of iu))

LATIN

Beginning Latin (40 lessons - 90 min each)
Latin Composition (31 lessons - 60 min each)
Vergil's Aeneid (8 lessons - 4 hrs each)

(Contact: Richard Scanlan, 4072 Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217-333-1008 (scanlan of mfl))

LAW

Pre-Law--Simulated Law Schools Admissions Test
Law School--Simulated First-Year Law School Experience

Lawyering
Client Counseling
Client Interviewing

(Contact: Charles D. Kelso, Indianapolis Law School, 735 West New York Street, Indianapolis, Indiana 46202 (kelso of lawyer))

Future Interests (2 hrs)
Offer and Acceptance (1 hr)
Patents--Non-Obviousness (1 hr)
Utility Regulation (2 hrs)
Statute of Frauds (1 hr)
Insurance Law (12 hrs)
Evidence (2 hrs)
Legal Ethics (2 hrs)
Multistate Bar Examination (7.5 hrs)
Legal Abbreviation Drill (2 hrs)
Legal Latin Drill (2 hrs)
Federal Procedure (3 hrs)

(Contact: Peter Maggs, 141 Law Building, UIUC, Urbana, Illinois 61801, 217/333-6711 (maggs of law))
LIBRARY SCIENCE

Cataloging and Classification (5 hrs)
- Bibliographic Data Identification
- File Organization—Truncated Search Keys
- Serial Cataloging
- Subject Heading Principles and Marc Tags
- Title Entries

(Contact: Kathryn Luther Henderson, 327 Library, UIUC, Urbana, Illinois 61801, 217/333-6191)

Student Guide to the Library
- The University of Arizona Main Library (10 min)
- University of Arizona Branch Libraries (20 min)
  - The Card Catalog
    - Sample Card Catalog and Classification Schemes (40 min)
    - L.C. Guide to Subject Headings (20 min)
    - Types of Catalog Cards and Cross References (25 min)
    - Filing Rules: Author/Title (50 min); Subject (40 min)
    - Filing Rules: ALA Dictionary Catalog (30 min)
  - A Beginning Library Research Strategy (40 min)

(Contact: Nancy Douglas, Main Library 101, University of Arizona, Tucson, Arizona 85721, 602/884-3619 (douglas of ualib))

Library Skills Test (30–40 min)

(Contact: Florence Lewis or William Bloemer, Sangamon State University, Shepherd Road, Springfield, Illinois 62708, 217/786-6600 {bloemer of ssu})

LINGUISTICS

Computational Linguistics (7 hrs)

Introduction to General Phonetics (15 hrs)
- Mid-Sagittal View of the Speech Tract
- Laryngeal Mechanisms
- Air-Stream Mechanisms
- Place of Articulation
- Classification of Speech Sounds
- Consonants
- Vowels
- Tone and Stress
- Rhythm
- Sine Wave
- Vowel Formats
- Jakobsonian Distinctive Features
- Sound Pattern of English (SPE) Features

(Contact: Chin-Chuan Cheng, 4101 Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-1206 {cheng of mfll})
LINGUISTICS —continued—

Introductory Transformational Grammar (10 hrs)
Introduction to Linguistics
Phonetics and Phonology
Morphology
Syntax
Relative Grammaticality and Idiolect
Syntactic Deviancies of Deaf Students

(Contact: Stephen Quigley, Children's Research Center, UIUC, Urbana, Illinois 61801, 217/333-1850)

MACHINIST TRAINING

Machinist Training Course (29 hrs) (Aberdeen Proving Ground)
Conversion of Metric to English
Solution of Right Triangles
Ordnance-Sergeant Game
Grinding Wheels
Identification of Tool Bits
Milling Machines
Indexing
Introduction to Tapers
Keys and Keyways
Introduction to Threads
Ratio and Proportion
Thread Forms
Lathe Speed Feeds and Depth of Cut
Lathe Toolbits and Tool Holders
Unified and American Threads
MI Drills
Reading the Micrometer
Spur Gears
Square and Acme Threads
Verniers
Shaper Toolbits and Tool Holders

(Contact: Larry D. Francis, MTC Project, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 larry francis of mtc)

MATERIALS ENGINEERING

Tension Tests

(Contact: Graham Brown, Room 221, SES, UICC, Chicago, Illinois 60680, 312/996-3428)
Mathematics

Elementary (60-115 hrs)

Graphing Lessons
- Graphs I and II
- Signed Numbers
- Variables
- Functions
- Games

Whole Numbers Lessons
- Addition
- Subtraction
- Multiplication I and II
- Division
- Renaming and Symbols
- Place Value
- Word Problems
- Miscellaneous

Fractions Lessons
- Meaning of Fractions
- Mixing Numbers
- Equivalence
- Addition, Like Denominators
- Addition, Unlike Denominators
- Meaning of Decimals
- Multiplication of Mixed Numbers

(Contact: PLATO Elementary Mathematics Curriculum Group, 202 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7410 (weaver or sharon of matha))

High School

Sample Beginning Algebra Lessons (1 hr)

(Contact: Kenneth Travers, 375 Education Building, UIUC, Urbana, Illinois 61801, 217/333-3598)

Community College and Adult Education (see also Mathematics: University)

- Signed Numbers (6 hrs)
- Divisors and Multiples of Numbers (2 hrs)
- Fractions (5.5 hrs)
- Decimals (5.2 hrs)
- Percent (2.7 hrs)
- Roots and Exponents (3 hrs)
- Sets (.5 hr)
- Multiplying and Factoring (3 hrs)
- Solving Linear Equations (3.5 hrs)
- Graphing Straight Lines (5.5 hrs)
- Simultaneous Equations (4.5 hrs)
- Algebraic Fractions (2.5 hrs)
- Plotting Points (2 hrs)
- Quadratic Equations (2 hrs)
MATHEMATICS -continued-

Community College and Adult Education -continued-
Function Plotters
Trigonometry (4 hrs)
Slide Rule and Scientific Notation (3.5 hrs)
Common Logarithms (1 hr)
Probability (.5 hr)

(Contact: Lou DiBello, 203B Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-4405 {dibello of cerlcc})

University
Linear Algebra
Inequalities
Introduction to Vectors
Introduction to Matrices
Matrix Calculator
Solving a System of Linear Equations
Differential Calculus
Defining the Tangent to a Curve
How a Tangent Approximates a Curve
Minimum/Maximum Problems
Newton's Method
Practicing Differentiation (open-ended)
Integral Calculus
Rules of Integration
Volumes of Solids of Revolution
Exercising Indefinite Integration (open-ended)
Analytic Geometry (4+ hrs)
Approximations
General Curve Drawing
Plotting Problems Laboratory
Surface Drawing
Sine Curve Plotting
Graphics Tutorial
Miscellaneous
The Function: a sin (b(x+c))
The Function: ln x
The Constant π
Probability and Statistics
Number Theory

(Contact: Samuel Wagstaff, Jr., Department of Mathematics, 221 Altgeld Hall, UIUC, Urbana, Illinois 61801, 217/333-2168 {wagstaff of uimatha})

Solving Algebraic Equations

(Contact: Peter Boysen, 227 Computer Science, Iowa State University, Ames, Iowa 50010, 515/294-8338 {boysen of amesrad})
MATHEMATICS -continued-

University -continued-
Logical Expression Minima (open-ended)

(Contact: David V. Mellor, 357 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-6500 (dvm of je))

Maxima-Minima
Trigonometry for Calculus Students

(Contact: Arunas Dagys, Mathematics Department, UICC, Chicago, Illinois 60680, 312/996-5157 (dagys of uicc))

Calculus Aids

(Contact: L. Evens, Northwestern University, 2003 Sheridan Road, Evanston, Illinois 62201, 312/492-3131 (jennifer of nuc))

Drill in Ordinary Differential Equations

(Contact: Prof. M. Mansfield, Kettler Hall, Purdue University at Fort Wayne, Fort Wayne, Indiana 46805, 219/482-5695 (stone of pfw))

Numerical Quadrature (Integration) Methods

(Contact: George Friedman, Jr., 128 Digital Comp. Lab., UIUC, Urbana, Illinois 61801, 217/333-7505 (friedman of csa))

Fourier Analysis and Synthesis (open-ended)
Matrix Inversion and Linear Equation Solution (open-ended)
(may also be -used in other lessons)
Introduction to Base-Ten Logarithms I and II (1 hr)
(applicable to community college level also)

(Contact: Don Shirer, 125 Neils Science Center, Valparaiso University, Valparaiso, Indiana 46383, 219/464-5370 (shirer of vu))

MEDICINE (also see other Health-related Fields in Index)

General
Medical Instructional Resources Catalog

(Contact: Dennis Olson, Rockford School of Medicine, 1601 Parkview Avenue, Rockford, Illinois 61101, 815/987-7203 (olson of ced))
MEDICINE -continued-

Anatomy
General Concepts
Anatomical Terminology I-V: Dictionary, Drills, and Quiz on Root Words, Prefixes and Suffixes
Planes, Directions, and Movements
The Upper Limb
Upper Member Clinical Application
Upper Member Anatomy Quiz
The Head and Neck
ATS Tutorial on the External Muscles of the Eye
The Chest
Anatomy Quiz: Coronary Heart Disease

Biochemistry (see Index)

Clinical Science
Clinical Programs
Emergency Room
Doctor's Office
Clinical Self-Assessment Questions
Liver I, Heart I, Kidney I (84 questions)
Biochemistry I, Nerve-Muscle I, Tissue-Skin I, Nutrition I (85 questions)
Microorganisms I, Central Nervous System I, Gastrointestinal I (91 questions)
Behavioral Science I, Blood I, Nutrition II, Pulmonary I (90 questions)
Renal I, Cardiovascular I, Liver II, Behavioral Science II (88 questions)
Liver III, Renal II, Pulmonary II, Central Nervous System III (85 questions)
Biochemistry II, Behavioral Science III, Nerve-Muscle II, Tissue-Skin II (93 questions)

Other Clinical Exercises
Drug Identification Game
Venereal Disease--Diagnosis, Manifestations, and Microbiological Characteristics
Exercises in Differential Diagnosis

Health Hazard Appraisal

Genetics (see Index)
Microbiology (see Index)
Pharmacology (see Index)
Physiology (see Index)

(Contact: Dr. Allen Levy, School of Basic Medical Sciences, UIUC, Urbana, Illinois 61801, 217/333-2507 {levy of mcl})

Biostatistics
Error Types and Hypothesis Testing--An Approach to Decision Making

(Contact: Robert Votaw, Building A, Room M033, Health Center, University of Connecticut, Farmington, Connecticut 06032, 203/674-2137 {votaw or kavanagh of conn})
MICROBIOLOGY

Cell Growth
Phases of Cell Growth (3 hrs)

(Contact: Rosanne Francis, 110 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-6210 {r francis of microbiol})

Bacteriology
Microbial Toxins
  Algal and Fungal Species
  Bacterial Toxins
  Clinical Cases
Micrologue I and II: Gram Positive Cocci

Parasitology
General Parasitology Terminology
Parasitic Protozoan Terminology
Parasitic Metazoan Terminology
Medical Parasitology
  Commensal Amoebae
  Pathogenic Amoebae
  A Typical Sporozoan Life Cycle
  Parasitic Sporozoans I and II
  Tissue and Lumen-Dwelling Ciliates
  Tissue and Lumen-Dwelling Flagellates
  African Trypanosomiasis
  American Trypanosomiasis
  Leishmaniasis

Virology
Structural Characteristics of the Virion
Viral Multiplication (Adsorption through Eclipse)
Viral Multiplication (Replication through Release)
Viral Diagnostic Techniques
Major Viral Groups
  Small-Size DNA Viruses
  Medium-Size DNA Viruses
  Large-Size DNA Viruses
  DNA Virus Review Quiz

Microquizzes
Respiratory Infections
Gastrointestinal Infections

(Contact: Dr. Allen Levy, School of Basic Medical Sciences, UIUC, Urbana, Illinois 61801, 217/333-2507 {levy of mcl})
MICROBIOLOGY -continued-

Serial Dilution Problems (1 hr)

(Contact: Gary Hyatt, P.O Box 4348, Department of Biological Sciences, UICC, Chicago, Illinois 60680, 312/996-2797 {hyatt of uicbio})

MUSIC

Elementary Music (1.5 hrs)
  Complete the Measure
  Keyboard Drill
  Notes and Rests
  Rhythm Exercises
  Time Signatures

Instrumental Methods (19 hrs)
  Bassoon, Clarinet, Euphonium, Flute, Horn, Oboe, Percussion,
  Saxophone, Trombone, Trumpet, Tuba

Jazz Chording (2 hrs)
Kodaly Handsignals and Solmization (1 hr)
Music Box Demonstration

Music Games (.5 hr each)
  Five X Seven
  Keyspinner
  Music Canon
  Musical Squares

Percussion Terminology (5 hrs)
Scale Structures (1 hr)
Tests and Measurements (5 hrs)
Theory-Figured Bass Realization (.75 hr)
Transposition and Score Reading (1 hr)
Violin Fingering Drill (.5 hr)

(Contact: David Peters, 3004 Music Building, UIUC, Urbana, Illinois 61801,
217/333-3064 {peters of music})

Introduction to Pitch Sets (M12 Notation)
Music-Staff Display Generating Routine

(Contact: Gary Wittlich or Nathan Syfrig, Indiana University, Bloomington,
Indiana 47401, 812/337-1757 {wittlich of iu})
NURSING

Maternal-Child Nursing
Introduction to MCH Nursing
Anatomy: Review of Female Obstetrical Anatomy
Obstetrical Anatomy I and II
Vocabulary Quizzes for Obstetrical Anatomy
Mechanism of Labor in a Normal Delivery
Vocabulary Quiz for Mechanism of Labor
Fetal Circulation
Vocabulary Quiz on Fetal Circulation
Placental Transfer
Vocabulary Quiz on Physiology
Physiology of Reproduction

Pharmacology
Major Drug Categories

(Contact: Maryann Bitzer, 306 E. Colorado, Urbana, Illinois 61801, 217/328-2094 {mdb of cerl})

Body Temperature Balance
Introduction to Shock

(Contact: Chris Church, Indiana University School of Nursing, 1407 E. Tenth St., Bloomington, Indiana 47401, 317/337-7089 {church of iu})

Pediatric Pharmacology for Nurses
Lactation: A Review
Graphic Analysis of Labor
Simulated Clinical Encounters in Nurse-Midwifery
Postoperative Nursing Care
Patient Care Problems
Pediatric Medication Administration
Rehabilitation Nursing
Anxiety
Neurosis and the Treatment of Neurosis
Review of Anxiety and Neurosis
Affective Illnesses, Their Causes and Treatment
Concept of Dependence
Simulated Patient Care Problems
Anxious Patient
Depressed Patient #1
Depressed Patient #2

(Contact: Richard Trynda, Room 824, College of Nursing, UI Medical Center, 845 S. Damen, Chicago, Illinois 60680, 312/996-7937 {trynda of nursing})

Welcome to PIATO
Reproductive Anatomy Review (.5 hr)
Influence of Hormones on Reproduction (.5 hr)
Postpartum Involution (.75 hr)
Medications for Use in Obstetrics (1-1.5 hrs)
Introduction to the Labor Process (1.5-2 hrs)
NURSING -continued-

Fetal Circulation Game (1.5-2 hrs)
Infant Pulmonary Circulation (.5 hr)
Labor Case Study of a Multigravida (.5 hr)
Fetal Heart Rate Monitoring (.75 hr)
Complicated Labor (3 studies) (1.5 hrs)
Labor Case Study--Primagravida
Math Review for Nurses

(Contact: Pat Tymchysyn, Parkland College, 2400 West Bradley, Champaign, Illinois 61820, 217/351-2292 {tym of park})

NUTRITION

Basic Principles of Nutrition (4 hrs)
  Overview
  Digestive Organs and Functions
  Carbohydrates
  Lipids
  Proteins
  Energy
  Four Food Groups

(Contact: Frances LaFont, 351 Bevier Hall, UIUC, Urbana, Illinois 61801, 217/333-3936 {lafont of nutr})

PHARMACOLOGY, PHARMACY AND PHARMACAL SCIENCES

Factors Affecting Drug Solubility
Effect of pH on Partition Coefficient
Review of Graphical Methods
Kinetics of Aspirin Analysis
Interpreting Blood-Level Curves I
Quantitative Structure-Activity Relations
Organic Acid-Base Theory
Nomenclature of Aldehydes and Ketones
Carboxylic Acids Nomenclature I and II
Nomenclature of Amines
Clinical Methods of Analysis
Enzymatic Methods of Analysis
Pharmacy Calculation Exercises
Biochemistry of Scar Formation
Physiological Parameters Review
Medical Abbreviations Review
Medical Terminology Review
Parameters Following Review Game
Parameters Following Simulation
Amino Acid Metabolism Case Studies
Pharmacy Typing Exercises
Biochemistry of Obesity
Biochemistry of Scar Formation
Biochemistry of Vitamin C Deficiency
Pharmacy Percentage Calculations

(Contact: H. J. R. Weintraub, Purdue University School of Pharmacy and Pharmacal Sciences, West Lafayette, Indiana 47907, 317/749-2204 {weintraub of phar})

Introduction
Pharmacokinetics I: Drug Administration, Absorption, and Distribution
Pharmacokinetics II: Drug Action, Metabolism, and Excretion
Introduction to General Pharmacology I: Absorption and Distribution
Introduction to General Pharmacology II: Metabolism and Excretion
Introductory Pharmacology: Fetal Pharmacology
Pharmacokinetics I: Introduction to Absorption, Distribution, Metabolism and Excretion
Pharmacokinetics II
Introductory Pharmacology: Review

Autonomic Nervous System
Neurohumor Metabolism: Metabolic Pathways of Primary Neuromediators
Pharmacology of Adrenergic Agents
A Laboratory Experience in Pharmacology of the Autonomic Nervous System

Autonomic Pharmacology
General Introduction and Review
Synthesis and Biotransformation of Neurotransmitters
Cholinergic Mechanisms and Uses
Review
Adrenergic Mechanisms and Uses
Arterial Blood Pressure in the Dog

Central Nervous System
Sedatives and Hypnotics
The Pharmacology of Ethanol
Anticonvulsant Quiz
General Anesthesia
Anesthesia Case Study
Anesthesia Quiz
Antidepressant Quiz
Stimulants and Hallucinogens
Aspirin-type Analgesics and Anti-Inflammatory Agents
Analgesia Review
Review Quiz

Endocrine Drugs
Adrenal Steroids
Oral Contraceptives
Insulin and Oral Hypoglycemic Agents
Thyroid Agents
PHARMACOLOGY, PHARMACY AND PHARMACAL SCIENCES—continued—

Cardiovascular
  Case History: Management of Hypertension
  The Treatment of Cardiac Arrhythmias
  Drugs: Hematinic Agents

Chemotherapeutics
  Case Series: Antibiotics
  Antibiotics Consult I-V
  Review Questions

Vitamins
  Drugs: Introduction to Vitamins

Toxicology
  Case History: Emergency Admission from Unexpected Drug Reaction
  General Review
  Case Study I and II
  Review Quiz

Quizzes and Miscellaneous
  Structure Quiz: Structure Identification of Selected Pharmaceutical Agents
  Drugs
    Anti-Inflammatory Quiz
    Anti-Inflammatory Agents—Consult
    Local Anesthetic Agents
    Local Anesthetic Review
    Diuretics Quizzes, I and II

(Contact: Dr. Allen Levy, School of Basic Medical Sciences, UIUC, Urbana, Illinois 61801, 217/333-2507 {levy of mcl})

PHOTOGRAPHY

Basic Camera Operation
  F/stops and Shutter Speeds
  Choosing Camera Settings

(Contact: Janet Clegg Thiher, 2335 Woodbridge St. #239, St. Paul, Minnesota 55113)

Basic Camera Operation (1 hr)

(Contact: James Evans, 58 Mumford Hall, UIUC, Urbana, Illinois 61801, 217/333-4785)
PHYSICAL EDUCATION

The Eshkol-Wachmann Movement Notation System (3-4 hrs)

(Contact: Prof. Annelis Hoyman, 212 Freer Gymnasium, UIUC, Urbana, Illinois 61801, 217/333-0016 {hoyman of pea})

Projectile Motion in Biomechanics (1 hr)
Biomechanics of Running (1-2 hrs)
Visual Perception--Testing Figure-Ground Perception (.5 hr)
Attitudes Towards High School Physical Education (.5 hr)
Badminton Singles Strategy (.5 hr)
Introduction to Cross Country Running (1 hr)

(Contact: M. Reece, 201 Kenney Gymnasium, UIUC, Urbana, Illinois 61801, 217/333-2484 {reece of pea})

A Computer Simulation of the Planar Motion of the Human Body under Free-Fall Conditions
Stride Length vs. Stride Frequency

PHYSICS

General 'Service' Lessons (open-ended)
Calculator, Function Plotter, Root Finder, f(x)=0
Plotters: Polar, Intensity, Parametric
GRAFIT--Programmable Plotter {b sherwood of phys}
Mini-Calculator
Numerical Integration and Least Squares
Matrix Routines: Simultaneous Linear Equations, Eigenvalues and Negative Vectors
Matrix Inversion (open-ended) {shirer of vu}
3-D Plotter, Projections
Fourier Analysis and Synthesis {shirer of vu}

(Contact: Carol D. Bennett, 267 Physics Building, UIUC, Urbana, Illinois 61801, 217/333-7589 {bennett of phys})

Intermediate Light (2 hrs)
Ray Tracing Through a Single Spherical Refracting Surface
Optical Path Length as a Function of Displacement
Fermat's Principle

(Contact: David C. Sutton, 329 Physics Building, UIUC, Urbana, Illinois 61801, 217/333-4359 {sutton of phys})
Classical Mechanics (60 hrs)

Service Lessons
- Introduction to PLATO
- Comments on PLATO Physics Lessons
- Physics PLATO Classroom Schedule
- Calculator and Function Plotter
- GRAFIT Programming Facility

General Mechanics Lessons
- A Review of Classical Mechanics (50 min)
- 20 Multiple-Choice Mechanics Questions (25 min)
- Interterminal Problem Solving Contest
- Interterminal Game on Physics Formulas
- Games Involving Classical Mechanics
- Relative Motion: Boat on a River (15 min)

Vectors
- Introduction to Vectors (50 min)
- Drill on Vector Addition and Subtraction (45 min)
- Homework: Vectors
- Introduction to Relative Motion (15 min)

Kinematics
- One-Dimensional Kinematics I and II (130 min)
- Homework: One-Dimensional Kinematics
- Two-Dimensional Kinematics (170 min)
- Homework: Two-Dimensional Kinematics
- I Shot an Arrow into the Air...
- Graphical Kinematics I and II (180 min)

Dynamics
- Forces and Free-Body Diagrams (70 min)
- Free-Body Diagrams Without Rotation (80 min)
- Homework: Force and Simple Dynamics
- Homework: Dynamics
- Game Balancing Three Forces (15 min)

Work and Kinetic Energy
- Work and Kinetic Energy (70 min)
- Homework: Work and Kinetic Energy
- Work Done by Position-Dependent Forces (20 min)
- The Work-Energy Equation (70 min)
- Homework: Conservation of Energy
- Workout Games

Momentum
- Conservation of Momentum (45 min)
- Homework: Momentum and Collisions
- Drill on Momentum in Collisions (7 min)
- Center-of-Mass Drill (5 min)

Rotational Dynamics
- Moment of Inertia and Rotational Kinetic Energy (20 min)
- Torque and Angular Momentum (60 min)
- Homework: Rotational Dynamics
- Free-Body Diagrams (with Rotation) (70 min)
- Homework: Rotation Problems
- Homework: Torque and Angular Momentum
- Torque Game
PHYSICS -continued-

Classical Mechanics -continued-
Simple Harmonic Motion
Oscillations: Simple Harmonic Motion (110 min)
Homework: Simple Harmonic Motion
Gravitation
Homework: Gravitation
Laboratory
Combining Experimental Errors (20 min)

(Contact: Bruce Sherwood, 272 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-6210 {b.sherwood of phys})

Electricity and Magnetism
Elementary
Charge Game with Introduction to Electric Fields
Circuits
Faraday's Law
Advanced
Laplace's Equation--Relaxation
Laboratory Experiment Aids {gorey of o}

Waves, Optics, and Modern Physics (25+ hrs)
Wave Phenomena
Traveling Waves and the Wave Equation
Vibrating String Experiment
Shock Waves from an Airplane
Addition of Waves: \( \cos(k_1x) + \cos(k_2x) \), etc.
Resonances in Pipes plus an Experiment
E-M Radiation and Physical Optics
Polarizers
Doppler Effect
Slit Interference and Diffraction
Phase (Vector) Diagrams plus a Quiz
Spectroscope Apparatus Experiment
Geometric Optics
Snell's Law: Includes 2 Games
Thin Lenses: Ray Tracing Exercises
Plane Mirrors: Graphical Exercises
Spherical Mirrors: Numerical Exercises
Sign Conventions in Optics: Mirrors, Lenses, Surfaces
Homework Problems
Refracting Plane Surface: Ray Diagrams

Particles and Waves
Photoelectric Effect
Compton Effect
PHYSICS -continued-

Waves, Optics, and Modern Physics (25+ hrs) -continued-
Quantum Mechanics--Elementary
- Plots of Wave Packets
- Heisenberg Uncertainty Principle
- Infinite Square-Well Potentials
- Finite Potential Wells and Barriers
- Exercises with Potential-Well Wave Functions
- Quantum Mechanics Review Problems
- Nuclear Decay Processes, Half-Life
- Vibrations/Rotations in Diatomic Molecules
- Nuclear Reactions: alpha, beta decays

Quantum Mechanics--Intermediate
- Wavefunctions for 1-D Potentials
- Wavefunctions for Radially Symmetric Potentials
- Addition of Angular Momentum
- Matrix Algebra
- Helium Atom I and II

Review Questions
- Multiple Choice Questions from 1972-1973 Hourly Exams
- Quantum Mechanics Problems from 1973-1974 Hourly Exams

(Contact: Carol D. Bennett, 267 Physics Building, UIUC, Urbana, Illinois 61801, 217/333-7589 {bennett of phys})

Acoustics
- Vibrating Systems (60 min)
- Musical Acoustics
- Decibels I and II (1 hr)

Elementary Nuclear Physics
- Subnuclear Particles, Conservation Laws, Reactions (1.5 hrs)

Elementary Thermodynamics
- Thermal Equilibrium (30 min plus open-ended lab)

Special Theory of Relativity
- Introduction (20 min)
- High Speed Physics (50 min)
- Mass and Energy (50 min)

(Contact: Don Shirer, 125 Neils Science Center, Valparaiso University, Valparaiso, Indiana 46383, 219/464-5370 {shirer of vu})
PHYSICS -continued-

Quantum Mechanics—Intermediate and Advanced (10+ hrs)
Guided Exercises
  Addition of Angular Momentum
  Matrix Algebra
Guided Self-Consistent Calculation (2-5 hrs)
  Helium Atom—Electron Potential and Wave Function
Wave Functions (open-ended)
  Finite Well and Barrier Potentials
  Arbitrary Potentials, V(x)
  Radial Potentials, V(r), and Phase Shifts

(Contact: Carol D. Bennett, 267 Physics Building, UIUC, Urbana, Illinois
61801, 217/333-7589 {bennett of phys})

PHYSIOLOGY (see also BIOPHYSICS, MEDICINE, PHARMACOLOGY)

Simulation of Human Cardiovascular System

(Contact: Erik Jakobsson, Department of Physiology, UIUC, Urbana, Illinois
61801, 217/333-3918 {mckown of physio})

  Regulation of Body Fluids
  Introduction to Renal Function

Cardiovascular
  The Cardiac Cycle
    Direction of Flow and Basic Cardiac Anatomy
    Physical Parameters of the Cardiac Cycle
    Introduction to the Electrical Activity of Myocardial Tissue

Nervous System
  Action Potentials of Single Nerve Fibers
  Neurophysiology Review

(Contact: Dr. Allen Levy, School of Basic Medical Sciences, UIUC, Urbana,
Illinois 61801, 217/333-2507 {levy of mcl})

  Drill on Cat Muscles (30-40 min)

(Contact: Charles Guerra, College of Pharmacy, UIMC, Chicago, Illinois
60612, 312/996-7190 {guerra of uimc})
PILOT TRAINING

Primary Training
Private Pilot Test
Pre-flight Planning
Test on VOR Usage

Advanced Training
Holding Pattern Training

(Contact: Stanley Trollip, Aviation Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-3162 {trollip of arlc})

Aviation Index of Lessons
Sequence Reports (Weather) (30-40 min)

(Contact: David Lombardo, P.O. Box 2456, Station A, Champaign, Illinois 61820, 217/356-4939 {lombardo of ed})

POLITICAL SCIENCE

Congressional Candidates (.5 hr)
Congressional Committee Chairman and the Legislative Process (.5 hr)
Teacher Union Bargaining (.5 hr)
Issues, Public Opinion, and Candidate Strategy (.5 hr)

(Contact: Don Emerick, 359 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-6500 {don emerick of icbd})

The Ideological Spectrum (1.5 hrs)
Logic: Fallacies (1 hr)
Logic: Propaganda Methods (.8 hr)

(Contact: Errol Magidson, Kennedy-King College, 6800 S. Wentworth, Chicago, Illinois 60621, 312/962-3446 {errol of kka})

Multiple Choice Test on the U.S. Constitution (jr. high - college)
Multiple Choice Test on the Illinois Constitution (jr. high - college)

(Contact: Wm. Bloemer or Norman D. Hinton, Sangamon State University, Shepherd Road, Springfield, Illinois 62708, 217/786-6600 {hinton or bloemer of ssu})
POPULATION DYNAMICS

Population Programs
Population Projection by Country (1-3 hrs)
Historical Growth of Population (1 hr)
Regional Population Projection (1-2 hrs)
Two Sex Population Projection (1-2 hrs)
Migration and Urbanization (1 hr)
Contraceptive Coverage Model (1 hr)
General Purpose Model (1 hr)
Life Table Model (2 hrs)
How to Project a Population (1 hr)
Population Dynamics Seminar (1-2 hrs)

Energy Programs
Labor Force Analysis (1 hr)
Economic Development (1 hr)
Educational Costs and Enrollment (2 hrs)
Energy Demand Model (.5 hr)
Cereals Demand and Supply Projection (1 hr)
Food Supply Model (1 hr)
World Petroleum Trade (1 hr)
Energy Demand and Supply in the U.S.A. (1 hr)
Nation's Current Energy Conditions (2 hrs)

(Contact: C. Roh or P. Handler, 66 Coordinated Science Laboratory, UIUC, Urbana, Illinois 61801, 217/333-3827 (roh of pdg))

PSYCHOLOGY

Descriptive Statistics (14 hrs)
Moments, Transformations, Z-Scores, Normal Curves
Permutations and Combinations
Random Sampling and Probability
Binomial Distribution
Sampling Distributions with Demonstration of Central Limit Theorem
Hypothesis Testing and Power
Analysis of Variance
Correlation and Regression
Chi-Square
Matrix Algebra

General Psychology
Motivational Control System (1 hr)
Neural Network Demonstration (2 hrs)
Psychology Experiments--Short Term Memory Experiment (1 hr)
Reliability and Validity
Multitrait-Multimethod Procedure
PSYCHOLOGY -continued-

Social Psychology (6 hrs)
Theory: Defined and Evaluated
Attitude Theory and Measurement
Dissonance vs Self-Perception Theory
Asch Conformity Study
Personal Space Demonstration
Diffusion of Innovations
Subject Roles Demonstration
Social Choice Research Demonstration
Prisoner's Dilemma Explanation & Interactive Demonstration
Game Theory and the Prisoner's Dilemma Game
The N-Person Prisoner's Dilemma Game
Deutsch and Krass Tracking Game

(Contact: Jerry L. Cohen, 219D Psychology Building, UIUC, Urbana, Illinois 61801, 217/333-2578 {cohen of psych})

Operant Learning (open-ended, 5-6 hrs)

(Contact: R. A. Avner, 350 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-6500x20 {avner of s})

READING

[Instructional materials are in conceptual areas which are modular in structure, each activity designed to require no more than 15 minutes (average student completion time about 8 minutes). Most modules are 'free-standing.'] (30 hrs)

Start the Day Activities
Orientation Activities
Practice with "Next" and "Yes and No"
Practice with the "Help" Key
Practice Typing Your Name
Letter Name Super-Test
Visual Discrimination
Letters
Letters, Rotations and Reversals
Simple Word Forms
Word Detail
No Relationships and Complete Reversals
Add and Omit Letters
Final and Medial Substitutions
Final and Medial Reversals
Letter Names (A-Z)
Review Activities for Letter Names
Letter-to-Sound Correspondences
READING -continued-

Favorite Stories for Children
Paced Stories for Comprehension
Sight Words
(the, boy, is, happy, one, girl, was, sad, you, and, I, run, we, are, not, open,
they, will, be, closed, did, she, run, fast)
Auditory Discrimination

(Contact: Priscilla Obertino, 200E Engineering Research Laboratory, UIUC,
Urbana, Illinois 61801, 217/333-7409 {cill o of reading})

RUSSIAN

Cyrillic Alphabet
Alphabet Order (4 hrs)
Russian Reading Lessons (89 hrs) (2 semesters).
(based on Dewey-Mersereau, Reading and Translating Contemporary
Russian)
Laboratory Drills for Russian 101, 102 (47 hrs) (2 semesters)

(Contact: Constance Curtin, 355 Engineering Research Laboratory, UIUC,
Urbana, Illinois 61801, 217/333-6500x45 or 217/333-8203 {curtin of mfl})

Translations of Some PLATO Lessons (used for demonstration in Russia
in 1973)
Russian Typing Lesson (2 hrs) {a appel of mc1}

(Contact: Peter Maggs, 141 Law Building, UIUC, Urbana, Illinois 61801,
217/333-6711 {maggs of law})

Syntax (8 hrs)
Vocabulary for Tourists (8 hrs)

(Contact: Fernand Marty, 670c Foreign Languages Building, UIUC, Urbana,
Illinois 61801, 217/333-9776 {marty of mfl})

SOCIAL WELFARE

Poverty Lines
English Poor Laws (to 1601)
Charity Organization Society and Neighborhood Movements
Overview of the Social Welfare System
Determining Eligibility in Public Assistance
Negative Income Tax

(Contact: Marilyn Flynn, 1207 W. Oregon, UIUC, Urbana, Illinois 61801,
217/333-1638)
SOCIOLOGY

Sociological Statistics--Laboratory Exercises (5+ hrs)

(Contact: Phyllis Ewer, Sociology Department, UICC, Chicago, Illinois 60680, 312/996-3009 {ewer of uicc})

SPANISH

Vocabulary
Spanish Vocabulary via Cognates
Multilingual Drill
Introduction to Spanish via the "GLOPAR" Method (15-18 hrs)
Verb Conjugation Drills (4 hrs)
Beginning Spanish
Cultural History of Spain for Beginners

(Contact: Armando Armengol, 4080 Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-3390)

Syntax (14 hrs)

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 {marty of mfl})

SPEECH and HEARING SCIENCE

Phonetics and Phonology
Simple Reading Drill (20 min)
Consonant Transcription (20 min)
Vowel and Diphthong Transcription (25 min)
Syllable Transcription (40 min)
Simulation of Speech Sound Production (open-ended)
Organogenetic Feature Drill (open-ended)
Distinctive Feature Reasoning (open-ended)
Phonetic Crossword Puzzles
Hangman Phoneticians

Finger Spelling
Simulation of Audiological Testing
Anatomical Terminology

(Contact: Elaine Paden, 335 Illini Hall, UIUC, Urbana, Illinois 61801, 217/333-3050 {j wilson of unidel})
STATISTICS (see also PSYCHOLOGY)

Statistical Laboratory (open-ended, 5 hrs typical use)
Statistical Service Package (open-ended, 8 hrs typical use)

(Contact: R. A. Avner, 350 ERL, UIUC, Urbana, Illinois 61801, 217/333-6500 {avner of s})

Matrix Algebra for Multivariate Statistics
  Diagnostic Test (60 min)
  Definitions and Simple Operations (20 min)
  Matrix Multiplication (40 min)
  Matrix Inversion: Determinant, Adjoint, Cofactor and Inversion (60 min)
  Transformation: Axis Rotation, Orthogonal Transformation, SSCP
    Matrix and Covariance Matrix (60 min)
  Eigenvalues and Eigenvectors (60 min)
  Statistical Package (open-ended)

(Contact: Kumi Tatsuoka, 350 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-6500 {kumi of peer})

Factor Analysis (2 hrs)

(Contact: Larry Francis, MTC Project, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 {larry francis of mtc})

SWEDISH

Syntax (in preparation)
  Translations of a PLATO Mathematics and a Biology Lesson

(Contact: Fernand Marty, G70c Foreign Languages Building, UIUC, Urbana, Illinois 61801, 217/333-9776 {marty of mfl})

URBAN STUDIES

Social Policy Impact Model (2 hrs)
  Education Budget Allocation

(Contact: Carl Patton, Urban and Regional Planning, 909 W. Nevada, UIUC, Urbana, Illinois 61801, 217/333-3020 {patton of cer1})
VEHICULAR TRAINING

Vehicular Training Course (60 hrs) (Chanute Air Force Base)
Basic Electricity
Electrical Current, Voltage, Resistance
Series and Parallel Circuits
Electrical Schematics
Electromagnet--Magnetism
Battery Ignition Systems
Battery Hydrometer Drill
Auto Lighting and Warning Systems
Electronic Ignition/Components and Operation
Ignition Game
DC Generators
DC Regulators
Automotive Oscilloscope
Introduction to Engine Fundamentals
Principles of Gas Engines
Engine Classification
Evaporative Emissions
Cooling Systems
Crank-Motor Diagnosis
Cranking Motors
Crankcase Ventilation
Fuel Pump Volume and Pressure Tests
Automatic Transmissions/Torque Converters/Fluid Coupling
Valve Train Assembly
Carburetor Drill
Power Steering
Clutches
Differentials
Wheel Alignment
Suspension Systems
Propeller Shafts, Uni-Joints
Lubrication/Oil System Components and Oil Flow
Air and Exhaust Systems
Basic Hydraulics
Hydraulic Schematics
Brake Systems
Hydraulic Brake System
Air Brake Systems
Diesel Engines
Transfercase and Power Take Offs
Measurements
Soldering

(Contact: Larry D. Francis, MTC Project, 361 Engineering Research Laboratory, UIUC, Urbana, Illinois 61801, 217/333-7465 {larry francis of mtc})
VETERINARY MEDICINE

Anatomy
Veterinary Terminology Program (6 hrs)
Anatomical Terminology (Directions, Locations and Motions) (2 hrs)
Veterinary Cytology (5 hrs)
Principles of Circulation (3 hrs)
Histology of the Skin (4 hrs)
Histology Superquiz (6 hrs)
Self-Assessment Program in Histology (4 hrs)
Neuroanatomy of Spinal Reflex Loops (3 hrs)
Innervations of the Thoracic and Pelvic Limbs (10 hrs)
Nervewar (10 hrs)
Termwar (10 hrs)
Eye Anatomy Quiz (3 hrs)

Applied Anatomy
The Pupillary Light Reflex (2 hrs)

Clinical and Laboratory Practice
Heart Valve Locations (1 hr)
Identification of Normal and Abnormal Heart Sounds (4 hrs)
Canine Cardiac Conditions (5 hrs)
EKG Interpretation (6 hrs)
Canine Eye Diseases (16 hrs)
Canine Neurological Diagnosis (15 hrs)

Clinical Pathology
Clinical Pathology Exercises on Anemia (2 hrs)
Cases in Clinical Pathology (9 hrs)
White Blood Cell Counts and Differentials: An Exercise in Interpretation (4 hrs)
Clinical Renal Pathology (1 hr)
Fundamentals of Leukocyte Functions (1 hr)

Diseases of Poultry
Poultry Diseases (15 hrs)
Slide Review--Poultry Diseases (2 hrs)

Food Hygiene and Public Health
Exotic Diseases (5 hrs)
Antemortem Inspection Procedures and Humane Slaughter (3 hrs)
Postmortem Inspection Procedures (5 hrs)
Simulated Antemortem and Postmortem Inspections (6 hrs)
Veterinary Public Health Aspects of Milk and Dairy Products (3 hrs)
Pasteurization of Milk and Dairy Products (2 hrs)
Foodborne Disease Investigation (2 hrs)
Transmission of Zoonoses (2 hrs)
Computer-managed Instruction in Veterinary Public Health (6 hrs)
VETERINARY MEDICINE -continued-

Medicine (Veterinary Diagnostic Cases)
   Veterinary Diagnosis Program (39+ cases, 15–45 min each)
   Bovine Diagnostic Cases (6 hrs)
   Canine Diagnostic Cases (10 hrs)
   Equine Diagnostic Cases (6 hrs)
   Porcine Diagnostic Cases (3 hrs)
   Feline Diagnostic Cases (1 hr)
   Laboratory Animal Diagnostic Cases (1 hr)

Microbiology
   Laboratory Characteristics of Individual Bacteria (24 hrs)
   Identification of Bacteriological Unknowns (12 hrs)
   Veterinary Mycology Program (10 hrs)
   Identification of Viral Unknowns (11 hrs)
   Self-Assessment Program—Microbiology (5 hrs)
   Fundamental Bacteriology (5 hrs)

Nutrition
   Nutrition Problems (10 hrs)
   The Pearson Square (5 hrs)

Parasitology
   Identification of Arthropods Important in Veterinary Medicine (7 hrs)
   Quiz on Internal Parasites of Domestic Animals (2 hrs)
   Protozoa of Veterinary Importance (4 hrs)
   Life Cycles of Protozoa (2 hrs)
   Student Self-Assessment Program in Parasitology (1 hr)

Pathology
   Common Canine Tumors (4 hrs)
   Student Self-Assessment Program in Pathology (3 hrs)

Pharmacology
   Quiz on Drugs Used in Veterinary Medicine (6 hrs)
   Formulation of Drug Dosage Regimens (A Simulation) (4 hrs)

Physiology
   The Bioelectric Properties of Cell Membranes (2 hrs)
   Electrocardiography (1 hr)
   Hormonal Control of Carbohydrate and Lipid Metabolism (2 hrs)
   Essentials of Endocrinology (5 hrs)
   Review of Endocrinology (4 hrs)
   Identification of Hormone Unknowns (10 hrs)
   Fundamentals of Urine Formation (2 hrs)
   The Cardiac Cycle (2 hrs)
   Pulmonary Volumes and Capacities (3 hrs)
   Student Self-Assessment Program in Physiology (2 hrs)
VETERINARY MEDICINE —continued—

Radiology and Nuclear Medicine
Formulation of a Radiographic Technique Chart (3 hrs)
Fundamentals of Radiology (6 hrs)
Diagnosis of Canine Hip Displasia (2 hrs)
Diagnostic Radiology (5 hrs)
Gamma Ray Spectrometer (1 hr)
Basics of Radioisotope Counting (2 hrs)

Surgery
Operation of Anesthetic Equipment (10 hrs)
Surgical and Clinical Instruments (10 hrs)
Acid Base Balance in Anesthesiology (1 hr)

Theriogenology
Student Self-Assessment Program in Theriogenology (3 hrs)
Anatomy and Physiology of Reproduction (3 hrs)
Gestation and Parturition (4 hrs)
Complications of Parturition (4 hrs)
Pregnancy Diagnosis and Infertility (4 hrs)

Veterinary Economics and Business Management
Financial Analysis of a Veterinary Practice (Case Studies) (9 hrs)

Miscellaneous
CVM Medical Library (1 hr)
Veterinary Cartoons
Vetmed Calculator (3 hrs)
See and Make Comments About CVM PLATO (2 hrs)

(Contact: John Silver, 161 Vet Med, UIUC, Urbana, Illinois 61801, 217/333-7467 {silver of vm})