IBM Education
A course of action

1800 Data Acquisition
and Control System

For the IBM 1800 user, IBM offers a balanced program of education taught at Education and at Data Acquisition and Control System Centers.

With IBM's comprehensive curriculum, you can develop your own people, and you can build on their professional and scientific skills and knowledge of your business.

You can use the "skills inventory" approach to design your Education Plan-comparing present capabilities to the skills required to perform each function and task.

An "in-depth" Education Plan can help ensure that those who carry out your management, programming, systems analysis and operation functions have the essential skills to implement planned projects while maintaining and upgrading existing applications.

Your IBM marketing representative stands ready to work with you in drawing up a profile of capabilities and requirements, and a detailed Education Plan...to help bring your system to the full measure of its processing potential.

IBM Education offers you the key to successful data processing.

Courses for users of the 1800 Data Acquisition and Control System cover the full range of system requirements from computer fundamentals to application programming.

They include survey and overview courses for executives, courses on components and features, as well as special courses for managers and supervisors.

They teach systems analysis, system operations, and data and file management. They provide a complete program of education for your job functions and tasks.

For corporate executives, there are specially tailored courses to help them relate their knowledge to the disciplines and capabilities of the computer. The courses introduce computer and control system components and techniques, and examine their full potential.

For professionals and managers, there is a full range of courses to help them gain a thorough understanding of data processing and how to apply it to the control of complex processes or systems. They learn to plan for, manage and control the 1800, and successfully apply its full potential to their needs.

For programmers and systems analysts, there are courses in systems programming, the use of monitors and executive routines, the definition and preparation of core-loads, and system installation. Taking only the courses they need, programmers and systems analysts gain the skills to move projects ahead, to work intelligently with user departments to shape the system, and to improve overall efficiency through better use of features and options.

Behind this spectrum of courses, there is a guiding principle: 1800 Education is aimed at giving you and your organization the skills to make the most efficient use of the computer and to extract a full and profitable return on your investment of money, time and manpower.
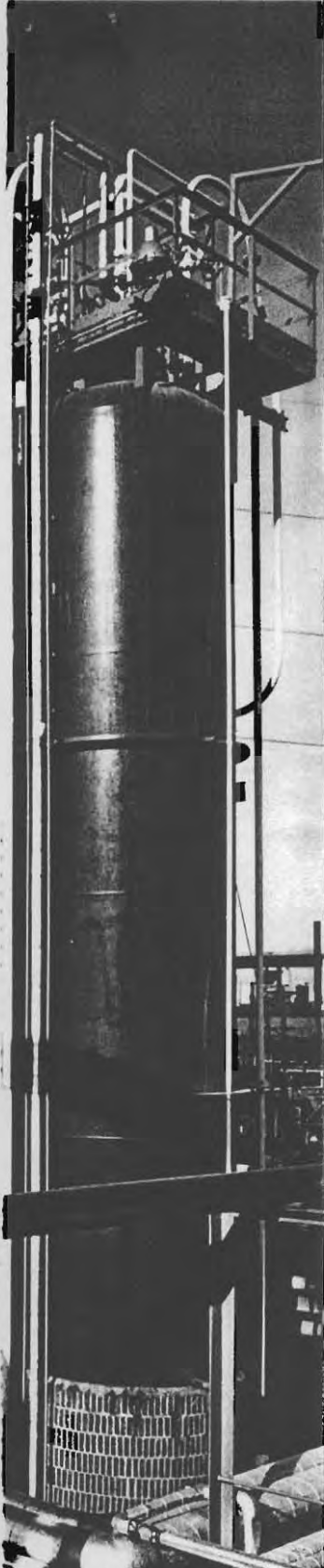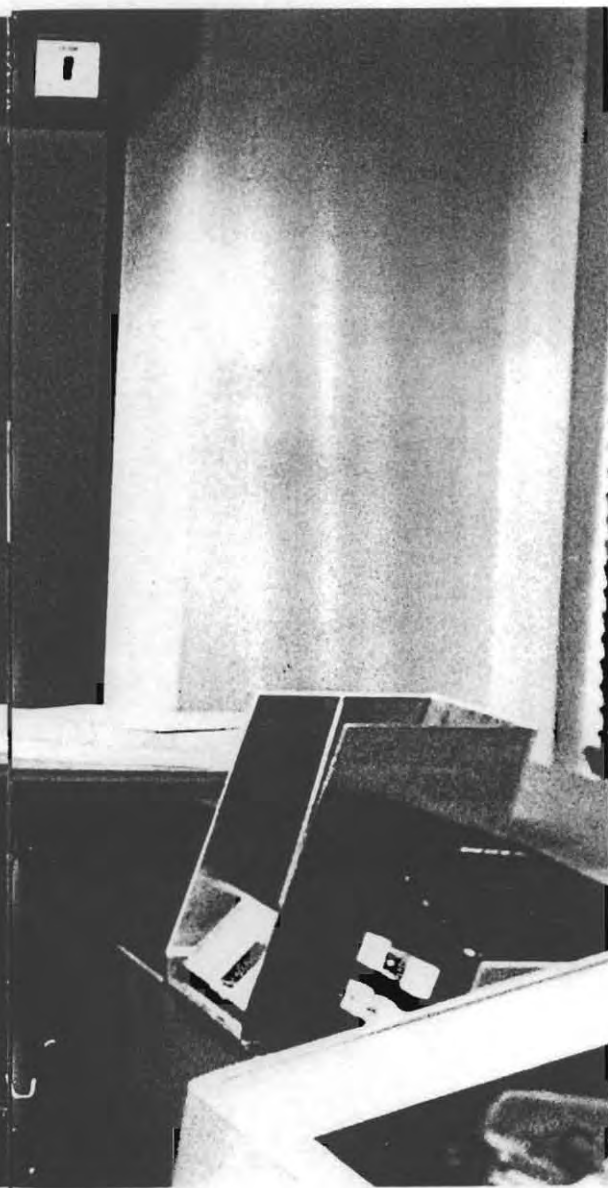
IBM Education is rooted in educational research and development, in many years of experience, and in training more than a million men and women in the techniques of data processing.

It is taught by data processing professionals using the newest educational methods and technologies. It is based on the presentation of essential academic concepts and fundamentals while emphasizing practical applications and operations. It provides an opportunity to learn data processing as it is being practiced every day by experts.

IBM teachers are also doers. The average staff member has had from six to eight years of practical experience in his specialty of data processing. Each is specially selected to teach, and is given an intensive training program on the concepts of education and the methods of effective teaching. Each periodically undergoes further education to keep abreast of changing technology, and regularly returns to the field to practice again what he teaches.

It is of the greatest importance, therefore, that man be educated to harness this electronic servant, for only then will he more universally be free to develop and fulfill himself creatively.

Daniel V. De Simone

On one occasion Aristotle was asked how much educated men were superior to those uneducated: "As much," said he, "as the living are to the dead."

Diogenes Laertius

Proper use of this new electronic tool presents a challenge to the educational community to train men and women to design and use the new systems. This training must go beyond instructing future managers in the use of computers as accounting tools, and must develop managers who can take full advantage of all aspects of the new information sciences.

David Rockefeller

In the conditions of modern life, the rule is absolute: the race which does not value trained intelligence is doomed...there will be no appeal from the judgement which will be pronounced on the uneducated.

Alfred North Whitehead

IBM's Department of Education Research
and Development, with more than 90
full-time professionals, seeks out new
ways to cut both the costs and length
of education while increasing its effective-
ness. The Department creates new
courses, tests and proves them, and con-
tinually updates current courses.

Education teams work alongside groups
developing new products and pro-
grams. They create educational materials,
design and then implement courses.
Every course produced goes through a
testing and evaluation procedure similar
to that used for IBM hardware and pro-
gram products.

The Department includes groups located
at educational complexes across the
country. They maintain standards and
guidelines, create services and programs,
and develop and produce publications.
There is an audio-visual services depart-
ment, a testing and evaluation department,
a task and audience analysis group, and
a special development group for each
general program of education. There is an
education development team devoted
exclusively to IBM 1800 Education.
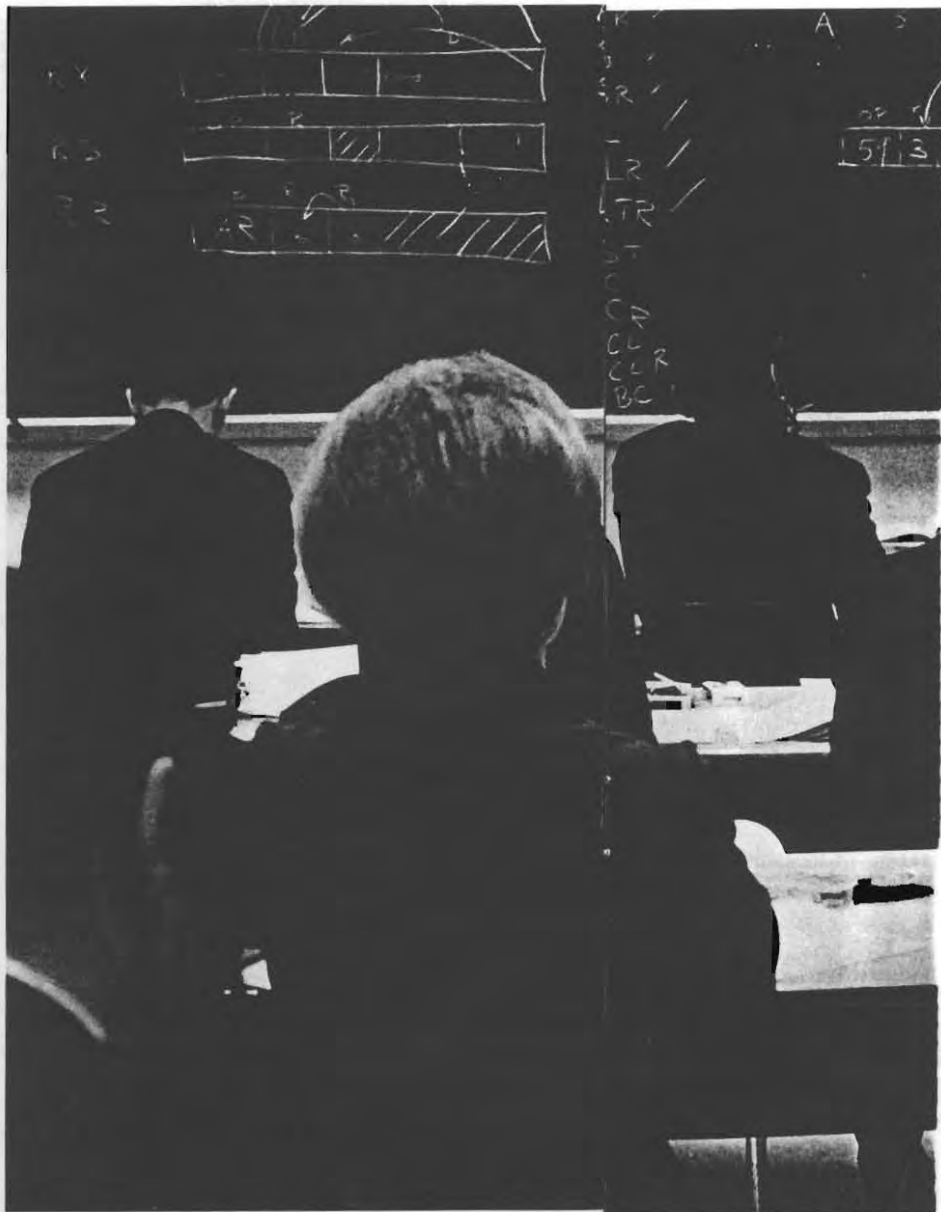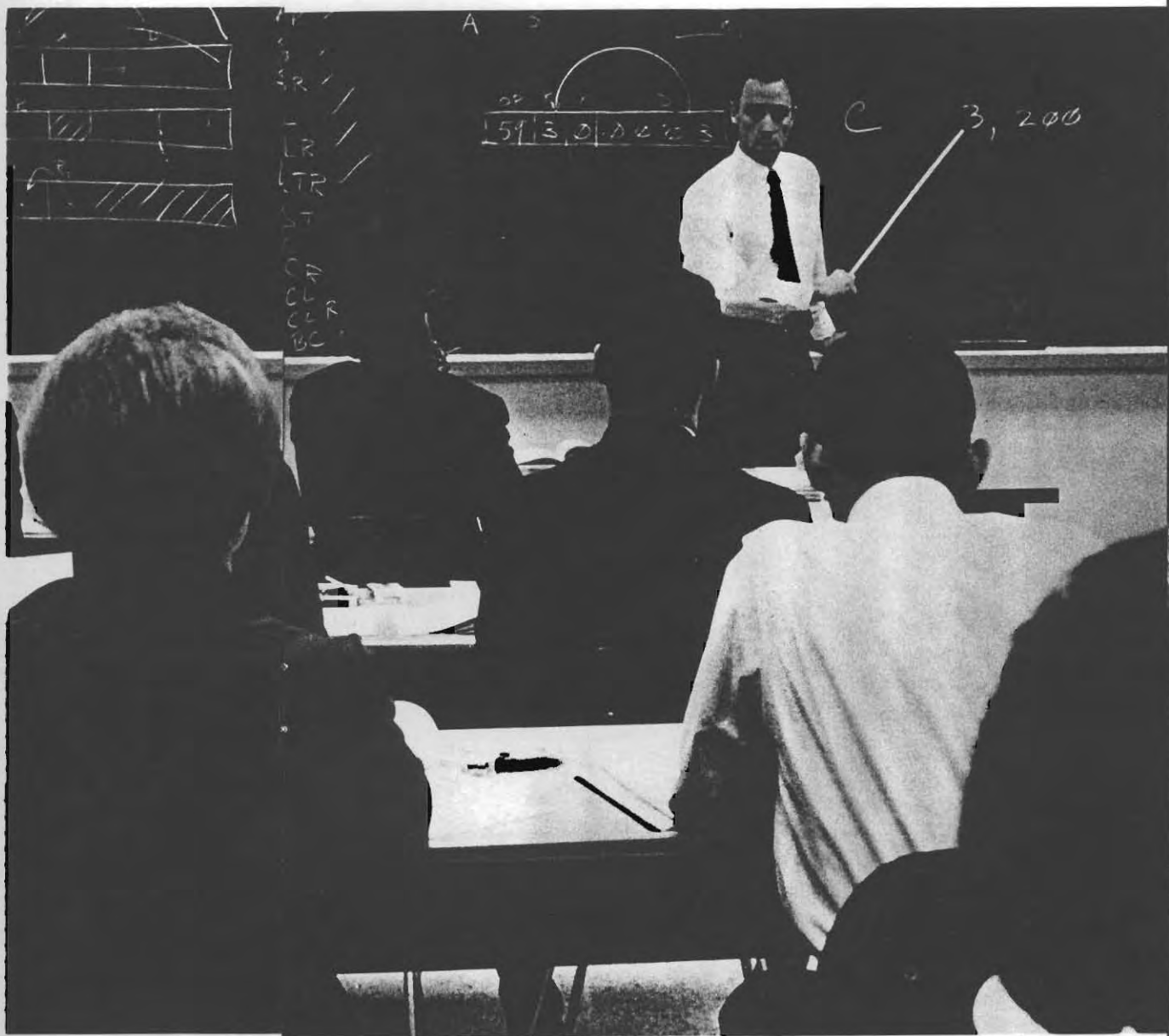
IBM Education is geared to your needs. Through programmed instruction and concentrated courses, your key professionals and staff members lose the least possible productive time—yet they get urgently needed education.

Each method of education is selected for efficiency in teaching, comprehension and ease of use by students. Fundamentals and basic rules of data processing are taught through programmed instruction, which turns the nearest quiet corner into a convenient classroom.

The major part of 1800 Education is conducted at special IBM Data Acquisition and Control System Centers located in industrial areas across the country. The DACS Centers provide a realistic operating environment for maximum learning and practical experience with minimal time away from the job. Other classes are held at IBM Education Centers located in principal cities.

Classroom instruction is still the most effective method for teaching many data processing subjects, particularly complex new material and the molding of related skills and experience into a coherent approach. Specially trained teachers at DACS Centers use a wide range of techniques, including intensive hands-on practice with an 1800, audio-visual aids of many kinds, lectures, case problems, special quizzes, individual counseling, student classroom presentations and supplemental reading.

Programmed instruction courses effectively teach specific subjects, logical rules and procedures. Programmed instruction is an ideal way to learn a wide variety of data processing subjects. Using a question-and-answer text, the student learns at his own pace, at any convenient time and place. Course material is broken into small, easily learned steps. Each step includes a new idea or fact, and then a question that enables the student to apply his knowledge by interpreting and using the idea or fact.

Workshops reinforce and expand materials learned in programmed instruction courses. Students use and explore the new skills on practice problems, on machines and in classroom exercises. IBM counselors provide constant assistance, constructive criticism and comment.

The Customer Executive Program uses a variety of techniques to meet the particular needs of executives and middle managers. These include lectures, audio-visual presentations and specific computer problems so executives can develop the broad knowledge essential to understanding, managing and using data processing.
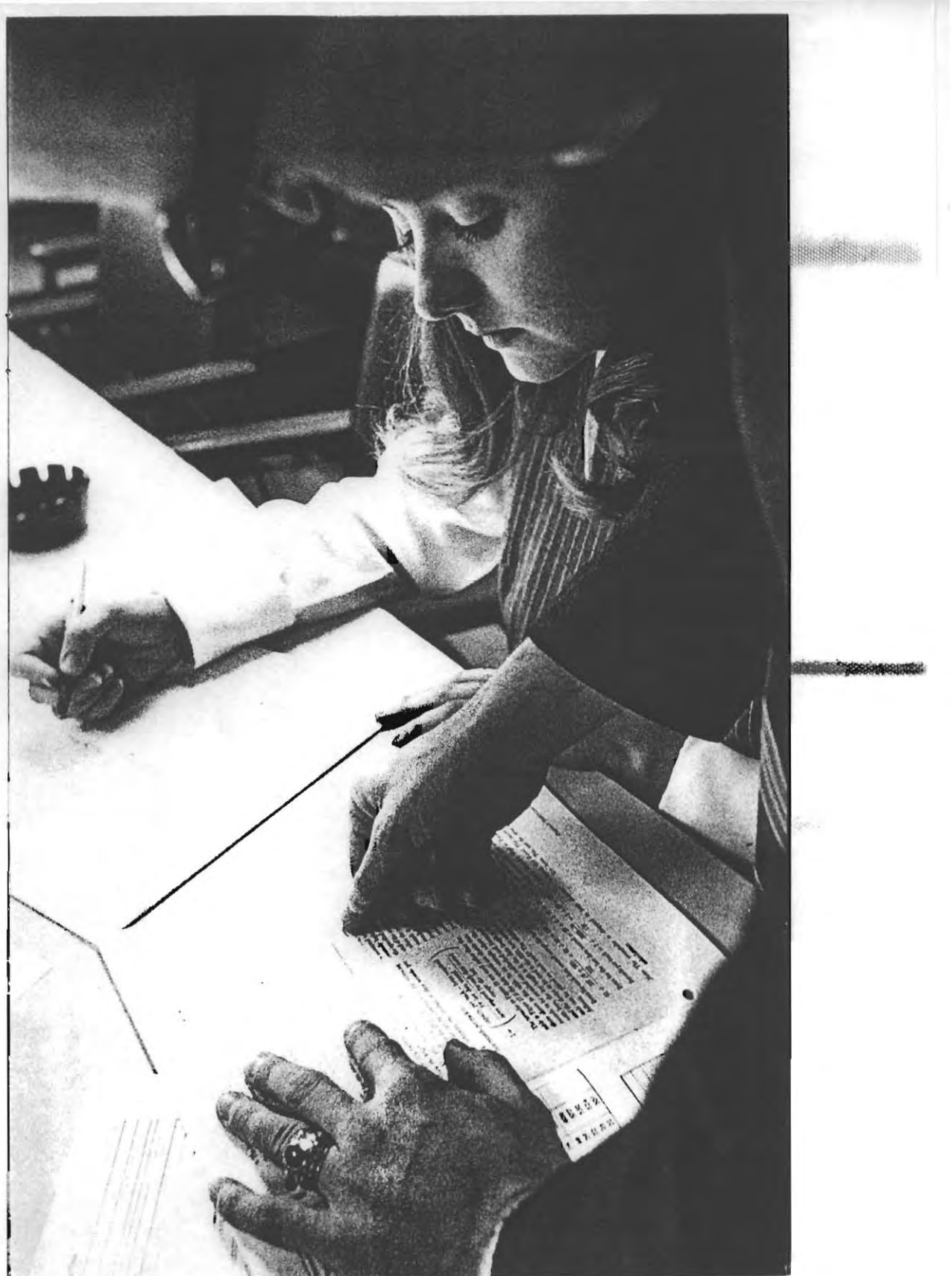
For more on IBM Education, talk with
your local IBM marketing representative.
He will give you specific information on
IBM 1800 Education, individual course con-
tent, enrollment dates and tuition fees.
He will work with you to develop an Educa-
tion Plan tailored to the specific goals
and requirements of your installation.

Computing Systems Fundamentals— Overview	Computing tools and techniques for efficient understanding and use of data processing. Introduces the components of a computer and their functions, numbering systems, programming systems, languages. Programmed instruction of about three hours.
Plant Site and Education Center Special Courses	Application of the 1800 to specific company or departmental goals. One or more courses tailored to the specific needs of the company and industry. Special customer executive courses of from one to seven days.
Introduction to Small Binary Computers	Smaller binary systems for actual operation and programming of an installation. Covers organization of a computer and functions of all components: the binary numbering system, the preparation and use of flowcharts, and the application of a computer as a problem-solving tool. Classroom instruction, two days.
1130/1800 Basic FORTRAN IV for Scientific Users	Programming in IBM 1130/1800 basic FORTRAN IV. The student learns to use algebraic statements containing arithmetic functions and exponentiation problem logic, subprograms, and non-disk, input-output statements. The course requires a useable knowledge of algebra. Programmed instruction about 20 hours.
1130/1800 FORTRAN IV Workshop	Workshop to reinforce and expand programmed instruction material. Emphasis is on coding compiling, testing and debugging simple FORTRAN programs for the IBM 1130/1800. The student practices fundamental skills such as problem definition, flowcharting and documentation, and is introduced to disk read and write statements Workshop, three days.
1800 System Hardware	Components of the IBM 1800, their use and configurations, including the CPU and console, data processing and analog-digital input-output devices, input channels, the interrupt system, data flow, and Assembler Language subroutines. Frequent practice problems and class exercises. Classroom instruction at IBM Regional DACS Centers, five days.
1800 TSX Specifications	Understanding and use of the 1800 Time-Shared Executive System. The student learns to write FORTRAN programs using TSX Call statements including all types of input-output Calls. He learns to use the three main executive programs, TASK the System Director, and Nonprocess Monitor, and to write programs using arithmetic, conversion and functional subroutines. Classroom instruction at IBM Regional DACS Centers, five days.
1800 TSX System Training	Implementing an 1800 Time-Shared Executive System, including off-line operation, generation of a process or non-process system, real-time operation, and maintenance of an operational system. Hands-on experience helps the student learn to define and prepare control and system equate cards to write programs to build, replace and add coreloads, and to use the TSX system on a continuing basis Classroom instruction at IBM Regional DACS Centers, ten days
1800 MPX Specifications	Using an IBM 1800 Multiprogramming Executive System. The student learns to write FORTRAN programs using MPX Call statements, including input-output Calls, and to understand and use Executive programs, the three types of input-output exits, and the basics of input-output queuing. Hands-on experience. Classroom instruction at IBM Regional DACS Centers, five days.
1800 MPX System Training	Implementing an 1800 Multiprogramming Executive System. Major topics include off-line operation generation of a real-time or off-line system, real-time operation, and maintenance of an operational MPX system. Hands-on experience helps the student learn to define and prepare control and system equate cards, to write programs to build, replace and add coreloads, and effectively use an MPX system on a continuing basis Classroom instruction at IBM Regional DACS Centers, ten days
1800 MPX Conversion	Converting from TSX to MPX operation. The course builds upon the student's knowledge and experience in system generation, programming, and maintenance of an on-line TSX system. Major topics include real-time operation of an MPX system, use of the MPX subroutine library, and generation and maintenance of an on-line MPX system Classroom instruction at IBM Regional DACS Centers, five days.

Note: Course flow considers prerequisites

IBM 1800 System
Education Planning Guide

Executive or User Dept Mgr — No / Yes

Computing Systems Fundamentals—Overview
Y2000

Computing tools and techniques for efficient understanding and use of data processing. Introduces the components of a computer and their functions, numbering systems, programming systems, languages. Programmed instruction of about three hours.

Previous Computer Exp — Yes / No

Plant Site & Education Center Special Courses

Application of the 1800 to specific company or departmental goals. One or more courses tailored to the specific needs of the company and industry. Special customer executive courses of from one to seven days.

Introduction to Small Binary Computers
T1130

Smaller binary systems for actual operation and programming of an installation. Covers organization of a computer and functions of all components; the binary numbering system, the preparation and use of flowcharts, and the application of a computer as a problem-solving tool. Classroom instruction, two days.

1130/1800 Basic FORTRAN IV for Scientific Users
N1130

Optional for Data Processing and User Department Managers and Operation Functions

Programming in IBM 1130/1800 basic FORTRAN IV. The student learns to use algebraic statements containing arithmetic functions and exponentiation, problem logic, subprograms, and non-disk, input-output statements. The course requires a useable knowledge of algebra. Programmed instruction, about 20 hours.

1130/1800 FORTRAN IV Workshop
N1133

Recommended for Programmers and Systems Analysts with no previous computer experience

Workshop to reinforce and expand programmed instruction material. Emphasis is on coding, compiling, testing and debugging simple FORTRAN programs for the IBM 1130/1800. The student practices fundamental skills such as problem definition, flowcharting and documentation, and is introduced to disk read and write statements Workshop, three days.

1800 System Hardware
T1604

Last course for all but Programmers and Systems Analysts

Components of the IBM 1800, their use and configurations, including the CPU and console, data processing and analog-digital input-output devices, input channels, the interrupt system, data flow, and Assembler Language subroutines Frequent practice problems and class exercises. Classroom instruction at IBM Regional DACS Centers, five days.

TSX or MPX — TSX / MPX

1800 TSX Specifications
S1802

Understanding and use of the 1800 Time-Shared Executive System. The student learns to write FORTRAN programs using TSX Call statements, including all types of input-output Calls. He learns to use the three main executive programs, TASK, the System Director, and Nonprocess Monitor, and to write programs using arithmetic, conversion and functional subroutines. Classroom instruction at IBM Regional DACS Centers, five days.

1800 TSX System Training
H1800

Implementing an 1800 Time-Shared Executive System, including off-line operation, generation of a process or non-process system, real-time operation, and maintenance of an operational system. Hands-on experience helps the student learn to define and prepare control and system equate cards, to write programs to build, replace and add coreloads, and to use the TSX system on a continuing basis. Classroom instruction at IBM Regional DACS Centers, ten days.

1800 MPX Specifications
S1803

Using an IBM 1800 Multiprogramming Executive System. The student learns to write FORTRAN programs using MPX Call statements, including input-output Calls, and to understand and use Executive programs, the three types of input-output exits, and the basics of input-output queuing.

Hands-on experience Classroom instruction at IBM Regional DACS Centers, five days.

1800 MPX System Training
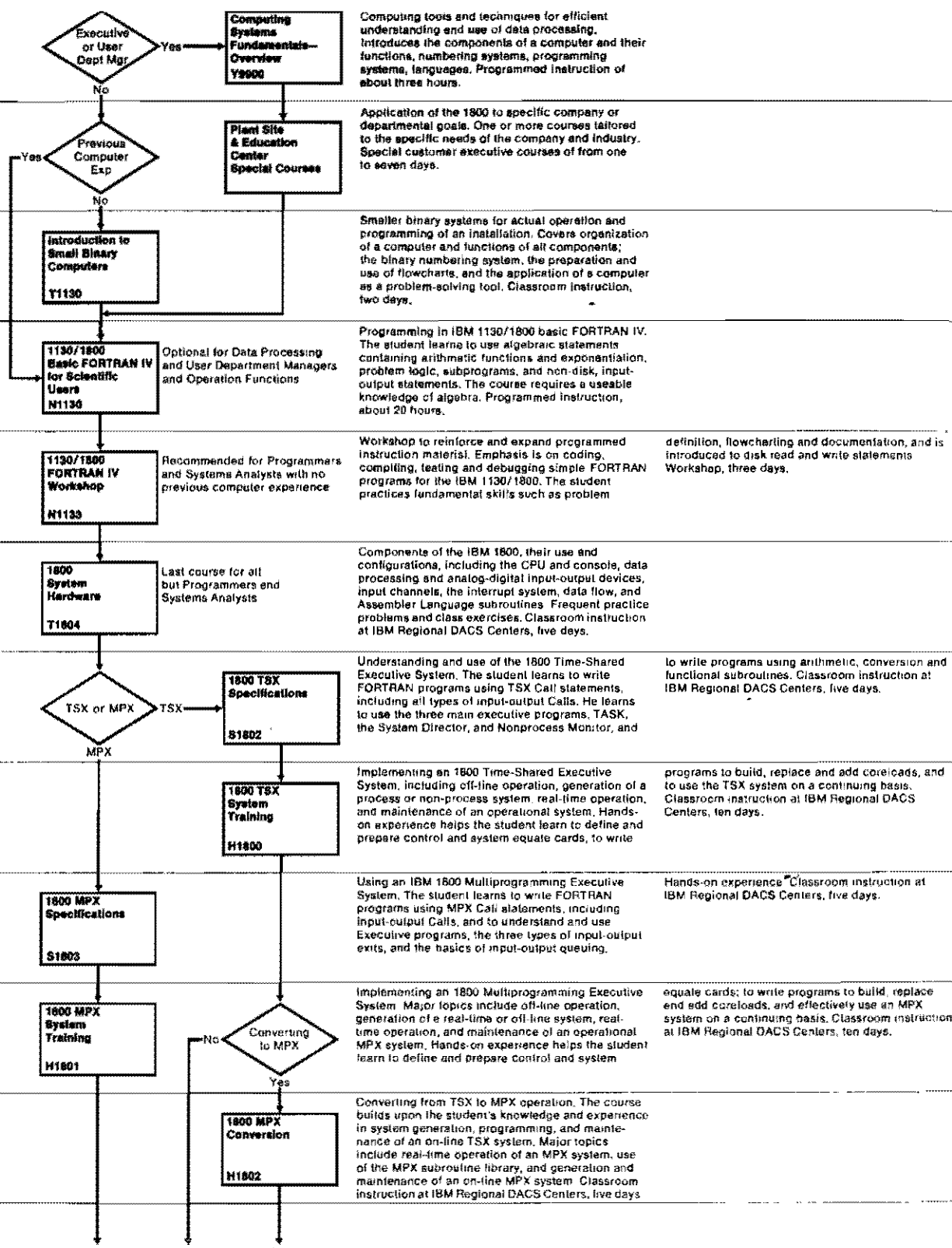H1801

Converting to MPX — No / Yes

Implementing an 1800 Multiprogramming Executive System. Major topics include off-line operation, generation of a real-time or off-line system, real-time operation, and maintenance of an operational MPX system. Hands-on experience helps the student learn to define and prepare control and system equate cards; to write programs to build, replace and add coreloads, and effectively use an MPX system on a continuing basis. Classroom instruction at IBM Regional DACS Centers, ten days.

1800 MPX Conversion
H1802

Converting from TSX to MPX operation. The course builds upon the student's knowledge and experience in system generation, programming, and maintenance of an on-line TSX system. Major topics include real-time operation of an MPX system, use of the MPX subroutine library, and generation and maintenance of an on-line MPX system Classroom instruction at IBM Regional DACS Centers, five days.

End   End   End

Note: Course flow considers prerequisites

The IBM 1800 provides effective, efficient control of processes with minimum operator intervention.

But no matter what the system's potential, it takes skilled people to manage it and control it, and to design and program new applications for increasing efficiency and effectiveness.

With this guide, you and your IBM marketing representative can plan education to meet the opportunities as well as the problems of the future. You can choose the courses you need. You can plan an 1800 education program tailored to the plans of your organization.

And you can ensure that your executives, system personnel, programmers and operators will continually get more out of your IBM 1800 Data Acquisition and Control System.

IBM education is carefully designed and proven through extensive research and use. Most important, it is relevant to real data processing needs.

Executives and managers gain greater understanding through general survey and application courses. Professionals get the skills to move the work ahead through detailed courses in the specifics of data processing.

Teachers are experienced and specially trained. Students learn with and from others with knowledge in many areas of business, industry, science and education.

Each program of education, and each course, is carefully developed, tested and proven in use. Each course uses the teaching method best suited to its particular content, objectives and students.
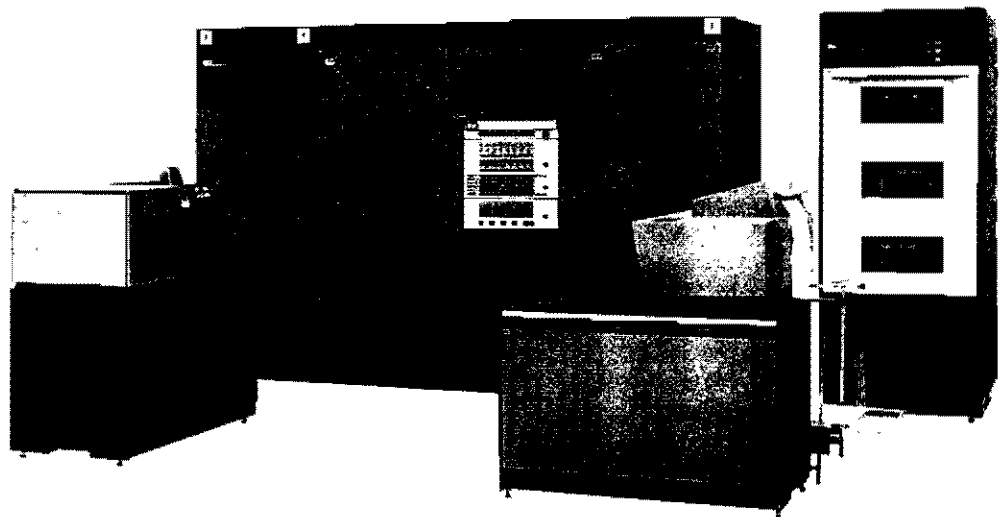
Four major methods of instruction are used, many of them combined in different ways for the most efficient educational mix.

Classroom Instruction is conducted by specially trained, experienced IBM instructors at IBM Centers. The traditional face-to-face interchange between student and teacher is augmented by hands-on machine exercises, class problems and demonstrations.

Workshops help students learn rapidly and dramatically through hands-on machine exercises and problems. Workshops are given at IBM Centers by highly skilled IBM instructors.

Programmed Instruction has proven an ideal way to learn logical rules, procedures and facts. In the self-study courses, content is broken into hundreds of small, easily absorbed question-and-answers. The student learns at his own pace, and at a convenient place and time.

Special Customer Executive Courses are tailored to the needs of executives and middle managers. They show how computers can be used to help solve the day-to-day information and operational needs of your company.

IBM 1800 System
Education Estimate

		Y9900 Computing Systems Fundamentals-Overview Three hours average	Plant Site & Education Center Special Courses One to seven days	T1130 Introduction to Small Binary Computers Two days	N1130 1130/1800 Basic FORTRAN IV for Scientific Users 20 hours average	N1133 1130/1800 FORTRAN IV Workshop Three days	T1804 1800 System Hardware Five days
		Tuition	Tuition	Tuition	Tuition	Tuition	Tuition
Student name	Student title	Class date	Class date	Class date	Class date	Class date	Class date

Student Enrollment Application Pocket

S1802 1800 TSX Specifications Five days	H1800 1800 TSX System Training Ten days	S1803 1800 MPX Specifications Five days	H1801 1800 MPX System Training Ten days	H1802 1800 MPX Conversion Five days					
Tuition	Tuition	Tuition	Tuition	Tuition	Tuition	Tuition	Tuition	Tuition	Tuition
Class date	Class date	Class date	Class date	Class date	Class date	Class date	Class data	Class data	Class data

	___Qtr 19___	___Qtr 19___	___Qtr 19___	___Qtr 19___	___Qtr 19___	___Qtr 19___	___Qtr 19___	___Qtr 19___	Total
Estimate of Total Education									

I am in agreement with the Education Plan as outlined above, and further understand that actual enrollment in the agreed upon courses can only be made by submission of the Student Enrollment Application (IBM Form No. 120-2043-1), and will be subject to the terms and conditions on that form.

Customer Executive _____ Date _____

Account Name _____

Marketing Representative _____ Date _____