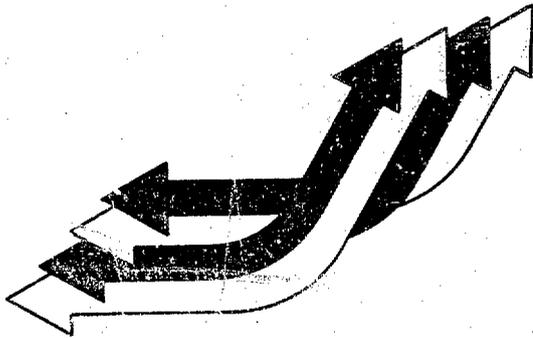# Contractor Report

Development of a Classification System for Postsecondary Courses (CSPEC)

OERI

Office of Educational
Research and Improvement
U.S. Department of Education

Center for Education Statistics

Development of a Classification System for
Postsecondary Courses (CSPEC)

Applied Systems Institute, Inc.

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Center for Education Statistics

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APPENDIX

ACKNOWLEDGEMENTS

1.0 INTRODUCTION

This final report summarizes the objectives, activities and results of the project entitled "Development of a Classification System for Postsecondary Courses", carried out by Applied Systems Institute, Inc. (ASI) under Contract No. 300-84-0261 for the Center for Education Statistics (CES) of the U.S. Department of Education. In addition to this report, the final deliverables of the project include a computer tape and hard copy printout of the final course classification.

This project is an outgrowth of the ongoing efforts of CES to develop more comprehensive survey tools to gather and report on increasingly complex and diverse postsecondary education experiences in the United States. As specifically required by CES in its Request for Proposals, the Classification System for Postsecondary Education Courses (CSPEC) developed by ASI builds upon Classification of Instructional Programs (CIP) published by the Center for Education Statistics in 1981. CIP's six-digit coding system classifies essentially all levels and types of instructional programs. It is not designed, however, to identify the individual courses which make up any one instructional program.

The specific impetus to extend the CIP stems from the current research needs of two major CES-sponsored projects which are following the progress of respondents who participated in the National Longitudinal Study of the High School Class of 1972 (NLS-72), and in High School and Beyond (HS&B) in 1980. Postsecondary undergraduate transcripts of these participants have been collected for analysis, as have the catalogs of the schools they have attended. In order to maximize the capability of CES analysts to interpret and compare transcript data, standard identifications for courses of similar content are required.

Hence, the primary objective of this project was to adapt CIP for course identification by expanding its six-digit code to eight digits, using the additional two digits to identify a unique postsecondary undergraduate course. Also, in anticipation of the use of the ASI-developed Classification System for Postsecondary Education Courses in follow-up studies for NLS-72 and HS&B, the field of courses on which the expanded coding system was based were those comprising the curricula of a sample of postsecondary institutions in which the participants of these studies had been enrolled. The original sample of 120 institutions was reduced within the first few months of the contract to 60 due to time and budgetary constraints. The validity of the sample was nevertheless retained insofar as representation by location, level (two-year or four-year) and control (whether public, independent, proprietary or religious) of the schools.

2.0 METHODOLOGY

In order to develop CSPEC, it was necessary to identify the majority of undergraduate courses offered at the postsecondary level from a sample of college catalogs and determine which instructional program within CIP each belonged to. Once this determination was made, each course was assigned a unique eight-digit code.

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A series of tasks was performed to create the desired classification. These are described in the following sections.

2.1 Identification of a Sample of School Catalogs

The overall objective of the project was to classify higher education undergraduate courses into categories consistent with CIP and further break that classification system into one with a greater level of detail for course titles. Most institutions publish a description of courses offered to their students. Hence, to identify the majority of types of courses offered, ASI analyzed a sample of catalogs. A sample of 120 institutions was originally selected and their current course catalogs obtained. As previously indicated, however, given time and budgetary restraints, a subsample of 60 institutions was finally utilized for the development of the Postsecondary Course Classification.

The aim of ASI's sampling scheme was to provide a selection of schools offering the greatest variety of courses. That selection was made from the Education Directory of Colleges and Universities 1981-82 (Ed Directory) and the 1982 Directory of Schools Offering Occupational Programs (DSOOP), both published by the Center for Education Statistics. These represented the most current publications with information about program offerings in post-secondary institutions at the commencement of this project. (A more recent Ed Directory was available at the time, but program offerings would have had to have been determined from the corresponding Earned Degrees and Other Formal Awards Conferred (EDC) file, the most recent of which is 1981-82.) From these Directories, ASI identified those institutions attended by students in the NLS and HS&B studies, which formed the basis of the sample.

We note that our sample was not statistically representative of the population of institutions nor of the courses offered because our interest was not in the number of courses offered or the frequency of course availability, but rather to determine the variety available to students in the NLS and HS&B studies, regardless of popularity. ASI utilized a multi-matrix type design for sample selection in order to assure that institutions were appropriately represented on the dimensions of control (public, private independent, private religious, and proprietary), level (four-year and two-year), and geographic region. That is, the sample was selected in such a way as to be representative of institutions on any one dimension, but not on all dimensions at once.

This type of methodology has been suggested by William G. Cochran (Sampling Techniques, John Wiley & Sons: New York, 1977) and others as a method for increasing the assurance or adequacy of representation on any one characteristic of interest when sample size is not adequate to support a completely crossed design. While a statistically representative sample was not a criterion for this sample, a scheme such as the one used helped to assure representation for all sectors and on other limited dimensions of interest.

The final list of schools included in the sample of catalogs selected and the cells to which they belong are presented below. (Control and level categories were constructed from HEGIS data and the region categories were the Census divisions collapsed to the form categories shown.)

ID	NAME	CONTROL	LEVEL	REGION
209013	Griffin-Spalding Co. Vo-Tec Sch.	Public	Voc.	South
7468	School of Visual Arts	Proprietary	4-Yr	Northeast
10195	Art Institute of Ft. Lauderdale	Proprietary	2-Yr	South
1625	Ricks College	Religious	2-Yr	West
2605	Fairleigh Dickenson-Edw. Wms.	Independent	2-Yr	Northeast
2296	Muskegon Business College	Independent	2-Yr	Midwest
2171	Mass. Bay Cmty. College	Public	2-Yr	Northeast
10051	CUNY La Guardia	Public	2-Yr	Northeast
2879	Sullivan Co. Cmty. College	Public	2-Yr	Northeast
2864	Dutchess Cmty. College	Public	2-Yr	Northeast
5753	Michael J. Owens Tech. College	Public	2-Yr	Midwest
1773	Triton College	Public	2-Yr	Midwest
2339	Brainerd Cmty. College	Public	2-Yr	Midwest
2370	N. Hennepin Cmty. College	Public	2-Yr	Midwest
1543	Albany Jr. College	Public	2-Yr	South
3727	Northern Va. Cmty. College	Public	2-Yr	South

ID	NAME	CONTROL	LEVEL	REGION
3999	Cleveland State Cmty. College	Public	2-Yr	South
5449	Cen. Carolina Tech. College	Public	2-Yr	South
3643	Texas Southmost College	Public	2-Yr	South
3593	Navarro College	Public	2-Yr	South
3772	Centralia College	Public	2-Yr	West
1222	East Los Angeles College	Public	2-Yr	West
3368	Saint Vincent College	Religious	4-Yr	Northeast
2823	St. John's University	Religious	4-Yr	Northeast
3035	Ohio Dominican College	Religious	4-Yr	West
3839	Cathage College	Religious	4-Yr	West
2383	St. Paul Bible College	Religious	4-Yr	West
3491	Free Will Baptist College	Religious	4-Yr	South
2433	Rust College	Religious	4-Yr	South
3457	Wofford College	Religious	4-Yr	South
3623	St. Mary's Univ. of San Antonio	Religious	4-Yr	South
1379	Connecticut Coll.	Independent	4-Yr	Northeast
1456	Southeastern Univ.	Independent	4-Yr	Northeast
4804	New York Insti. of Technology	Independent	4-Yr	Northeast
3282	King's College	Independent	4-Yr	Northeast
1444	George Washington University	Independent	4-Yr	Northeast

ID	NAME	CONTROL	LEVEL	REGION
1727	Moody Bible Institute	Independent	4-Yr	Midwest
2279	Lawrence Inst. of Technology	Independent	4-Yr	Midwest
1252	Pacific Christian	Independent	4-Yr	West
2866	Fashion Institute of Technology	Public	4-Yr	Northeast
2847	SUNY College at Oneanta	Public	4-Yr	Northeast
2013	Univ. of Maryland College Park	Public	4-Yr	Northeast
9092	Univ. of Michigan Ann Arbor	Public	4-Yr	Midwest
3459	Black Hills State College	Public	4-Yr	Midwest
1585	North Georgia College	Public	4-Yr	South
1005	Alabama State University	Public	4-Yr	South
3487	East Tenn. State University	Public	4-Yr	South
1999	University of Louisville	Public	4-Yr	South
10366	Oklahoma State University, Main	Public	4-Yr	South
3932	University of Wyoming	Public	4-Yr	West
1314	Univ. of Calif. Irvine	Public	4-Yr	West

We note that our sample contained only one Voc-Tec school. Our investigations indicated that courses offered at such institutions were the same as those offered in any two-year vocational school. Nevertheless, we did acquire and review additional Voc-Tec catalogs in order to be certain those types of courses were well covered.

2.2 Establishment of an Advisory Panel

In order to place specific courses accurately in the proper CIP curriculum group and resolve problems of dual placement and duplicate course content, an advisory panel was formed of persons expert in a broad range of postsecondary areas to assist ASI personnel in the development of CSPEC and to review the final product prior to submission to the Center for Education Statistics.

Due to budgetary constraints, ASI limited its panel selection to persons based within commuting distance of Washington, D.C. area and knowledgeable in those postsecondary fields in which ASI could not provide its own inhouse expertise. Selection was further based on recommendations from national associations responsible for accreditation of educational programs (e.g., American Psychological Association, the Association of American Universities, and so forth).

The following presents the members of our Advisory Panel for Postsecondary Course Classification. Their specific comments regarding this classification project and the CIP as a basis for it are addressed in Section 3.0.

Panel Member	Title	Area Reviewed
Dr. Louis Albert	Director of Special Projects American Association for Higher Education	(17) Allied Health (18) Health Sciences
David L. Atkins	Professor and Department Chairman of Biology (The George Washington U.)	(26) Life Sciences
Dr. Richard H. Austing	Associate Professor of Computer Science Center for Adult Education (U. of Maryland)	(11) Computer and Information Sciences
Dr. John R. Beaton	Dean of the College of Human Ecology (U. of Maryland)	(19) Home Economics (20) Vocational Home Economics (32) Basic Skills (33) Citizenship/ Civic Activities (34) Health-Related Activities (35) Interpersonal Skills (36) Leisure and Recreational Activities (37) Personal Awareness

Panel Member	Title	Area Reviewed
Dr. Philip L. Brach	Dean, College of Physical Science, Engineering, and Technology (U. of the District of Columbia)	(15) Engineering and Engineering Related Technologies
Naomi Broering MLS, MA	Medical Center Librarian (Georgetown U.)	(25) Library and Archival Sciences
Dr. Dorothy Brown	Department of History (Georgetown U.)	(45.0801) History
Dr. Robert F. Carbone	Professor of Education Policy, Planning and Administration (U. of Maryland)	(13) Education
Dr. Valery Earle	Professor of Government (Georgetown U.)	(44.0101-44.0699) Public Affairs (45.0901) International Affairs (45.1001) Political Science and Government
Dr. Don Gallehr	Department of English (George Mason U.)	(23) Letters
Dr. Robert L. Gluckstern	Professor of Physics and Astronomy (U. of Maryland)	(27) Mathematics (40.0201) Astronomy (40.0301) Astro-Physics (40.0801-40.0899) Physics
Dr. Helen Grove		(19) Home Economics (20) Vocational Home Economics
Dr. James L. Hoerner	Associate Professor (Virginia Polytechnic and State U.)	(14) Engineering (15) Engineering and Related Technologies
Dr. Robert Holland	Associate Professor of Business Administration (The George Washington U.)	(06) Business and Management (07) Business and Office (08) Marketing and Distribution

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Panel Member	Title	Area Reviewed
Dr. Donald Maley	Professor and Department Chairman of Industrial Education (U. of Maryland)	(21) Industrial Arts
Dr. Jesse Mann	Professor of Philosophy (U. of Maryland)	(38) Philosophy and Religion (39) Theology
Dr. C. Joseph Nuesse	Provost Emeritus of Sociology	(44.0701-44.0799) Social Work (45.1101) Sociology
Dr. Charles O'Rear	Professor and Department Chairman of Forensic Sciences (The George Washington U.)	(01) Agribusiness and Agricultural Production (02) Agricultural Sciences (03) Renewable Natural Resources
Dr. Theodore P. Perros	Chairman of Department of Chemistry	(40.0501-40.0599) Chemistry
Dr. C. James Scheirer	Health Science Administrator National Institutes of Health	(42) Psychology

2.3 Development of an Eight-Digit Coding Scheme

Utilizing the catalogs selected through the sampling plan described in Section 2.1, ASI staff began entering course titles, a brief description of course content for each title, and the appropriate six-digit placement of the course within CIP, into a Dbase II format on IBM PC floppy diskettes. It was quickly realized, however, that the a personal computer could not accommodate the sorting and merging of the large number of courses that would ultimately be involved in the classification (estimated near 26,000). Hence, an additional step was added. After completion of data entry on diskettes, the information was then uploaded into a file within ASI's VAX 11/750 minicomputer for further data manipulation.

The large volume of courses found in the sample of 60 school catalogs also necessitated that time be utilized as efficiently as possible. Thus, ASI personnel initially reviewed and entered data on fifteen catalogs from the sample. The VAX file of these coded courses and their descriptors was then sorted by their CIP six-digit code, and by title alphabetically within each CIP code and printed. Then, individual staff were assigned CIP sections, to be completed one at a time. The staff member would review the initial printout of that section, eliminating duplicate titles (which would

be later entered into a separate VAX file of "Alternate Titles" and given the same eight-digit code as the main course for which it was a duplicate). At the same time, they would correct any miscoded courses and any typographical errors in course titles.

Following this cleaning up of the preliminary CIP curriculum section, the staff member would then proceed to review the remaining catalogs for courses to be entered in that particular section only. Again, any alternate title was noted for later entry into the Alternate Title File.

Upon completion of a CIP section, ASI personnel mailed to the appropriate panel member a printout of that completed section, along with a detailed cover letter pinpointing questions as to correct coding and duplicate titles. Panel members were also asked to provide titles and course content of any missing courses as well as their general assessment of the classification effort and the CIP as a coding scheme for postsecondary courses.

Following panelist submission of their recommended revisions to the printout and other comments, ASI staff made final corrections to that CIP section. A final sort of that section on six-digit CIP code and alphabetically by course title within each of these CIP codes was made. The final two digits, which distinguished each unique course, was automatically assigned by the computer based on the alphabetical order of courses under each six-digit CIP code. Based on that assignment, alternate titles were coded with the same eight-digit code as the main course it was duplicating and both alternate title and its code were entered directly into a separate VAX file.

While each CIP section was being finalized in this way, an ASI Research Assistant entered into a third VAX file all CIP instructional program titles and their codes and descriptors. These were entered in capital letters to distinguish them from course titles and descriptors. The addition of the CIP data was done to assist the users of CSPEC in identifying the instructional program area in which various courses were placed.

Once all CIP sections were completed and reviewed by our Advisory Panel, several weeks were set aside for a final proofing of course descriptors and titles for correction of typographical errors.

The steps taken just prior to a final printout were essentially programming tasks. These involved the merging of the three VAX files already described (main file with course CIP code, title and descriptor; alternate title file; and CIP section file) and a final sorting based on the eight-digit CIP code. To facilitate the use of this large classification, ASI's final product provides two sections to the CSPEC. The first presents postsecondary undergraduate course titles in order of their eight-digit CIP code. A brief course description and all alternate titles are given under each code and title. The format of this presentation is as follows:

CIP CODE   COURSE TITLE

            DESCRIPTION

            LISTING OF ALTERNATE TITLES (in alphabetical
            order)

     In addition to the above listing based on eight-digit CIP codes, ASI
is also providing an index which simply lists all course titles (main
courses and alternate titles) alphabetically with their eight-digit CIP
code. It is anticipated that this index will facilitate the coding of
transcripts by allowing the coder to locate a course title and its code
quickly. Only if that title could not be found in the Index would the
coder then proceed to the more time-consuming process of finding that
course based on its appropriate placement within the CIP and a review of
courses and their descriptors under that CIP section to make a final
selection of an eight-digit code. We note that ASI has set aside 99 (the
final two digits possible under the system) for "Miscellaneous Courses"
under any six-digit CIP section to cover unusual courses not provided in
our project sample.

2.4 Try-Out of the Coding System on a Sample of Transcripts

     The testing of a coding system was the essential last step in flagging
problems in the system's usefulness to potential applications. That is, is
it a workable tool in interpreting transcripts in order to analyze course-
taking behavior? Utilizing catalogs of the 60 postsecondary institutions
not coded from the original sample of 120 schools, ASI selected fifteen
representing to the extent possible the control, level and geographic cells
which formed the basis of our sampling plan. ASI requested that CES
provide 40 transcripts from at least ten of these institutions for testing
purposes.

     ASI's experience in the project's coding efforts indicated that the
type of coder who could best use the CSPEC would be someone with a college
education. Hence, three coders we selected, all of whom were currently
graduate students, to code the 40 transcripts provided by CES over a
four-day period following one day of training. Details regarding test
procedures, results and evaluation are presented in Section 4.0.

3.0 ADVISORY PANEL EVALUATION

     The project's Panel of Advisors provided the input to ensure the
consistency in approach and level of quality of the CSPEC. Specifically,
they were asked to address the following questions in reviewing their
particular CIP instructional program area:

(1) **Correct Coding** - Based on their interpretation of CIP
    sectional descriptors, were courses placed under the most
    appropriate CIP code?

(2) **Duplicate Courses** - Were any two courses treated as
    unique entries although their course contents were
    substantially the same?

(3) **Missing Courses** - Were any significant courses not
    included under each CIP category?

(4) **Evaluation of CIP** - How appropriate is the CIP in
    classifying the large number of highly diversified
    postsecondary course offerings?

In overall terms, the major coding problems requiring Panelist
guidance fell into two categories. The first centered on the interpreta-
tion of certain CIP sections which proved troublesome to ASI coders because
their descriptors were nonspecific. Based on the input of the Panel of
Advisors and the expertise of inhouse staff, a clearer meaning was developed
for those CIP sections presenting problems for consistent and appropriate
coding. These clarifications are detailed by section in the following
pages.

The second difficulty reflected a characteristic of college curricula;
that is, courses of similar titles may be common to multiple instructional
programs or similar general courses may be offered by different departments
within an institution. An example of the latter would be an introductory
statistics course. Such a course with similar content and title, but
different emphasis might be offered by the business, psychology and
education departments. ASI determined that the best approach in working
around this dilemma was to distinguish these duplicate-titled courses by
adding the section in which they should be placed within the title, itself.
Again, with regard to our example, we might have "Introduction to
Statistics in Business", "Introduction to Statistics in Psychology", or
"Introduction to Statistics in Education". This approach, of course,
requires that the coder refer first to the school catalog to learn which
department or instructional program area is offering a particular course on
the transcript before making a coding decision.

The focus of the pages which follow will be on how ASI's general
approach to these two major problems were applied to the individual
sections of the CIP. In addition, special note has been made of Panelist
comments regarding other issues relating to the coding effort. Our
objective here is not only to lay out our methods of coding the various CIP
instructional program areas, but also to provide useful guidelines for
future coders using the CSPEC.

Those CIP sections not presenting any unusual coding problems have not been included in the following section-by-section review. These comprise:

Section	Number	Panelist, if Any
Renewable Natural Resources	03	Dr. Charles O'Rear
Military Sciences	28	
Military Technologies	29	
Parks and Recreation	31	
Citizenship/Civic Activities	33	
Interpersonal Skills	35	
Personal Awareness	37	
Archeology	45.03	
Demography	45.05	
Geography	45.07	
Sociology	45.11	Dr. C.Joseph Nuesse
Urban Studies	45.12	
Construction Trades	46	
Transportation and Moving Materials	49	

We also reiterate that this project confined itself to undergraduate courses only. Hence, course listings under such areas as Law (22) and Health (18) were limited.

CIP SECTION: Agribusiness and Agricultural Production (01)

PANELIST: Dr. Charles O'Rear
            Professor and Chairman of Forensic Sciences
            The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o The distinction between **Agribusiness and Agricultural:
      Production (01)** and **Agricultural Sciences (02)** is drawn
      as follows: Emphasis in Section 01 is on the application of
      business principles and operations in agriculture, while
      Section 02 deals with the scientific aspects of agriculture.

Similar Courses in Two or More CIP Sections

   o Same-titled courses are found among the following CIP sections
      dealing with agriculture: **Agribusiness and Agricultural
      Production (01)**, **Agricultural Engineering (14.03)**, and
      Agricultural Education (13.1301). The section in which these
      courses should be placed is identified in the course title to
      assist coders. Coders should refer to the school catalog to
      ascertain which department or instructional program area is
      offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

      None.

CIP SECTION: Agricultural Sciences (02)

PANELIST: Dr. Charles O'Rear
           Professor and Chairman of Forensic Sciences
             The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o The distinction between Agribusiness and Agricultural
      Production (01) and Agricultural Sciences (02) is
      drawn as follows: Emphasis in Section 01 is on
      the application of business principles and operations
      in agriculture, while Section 02 deals with the
      scientific aspects of agriculture.

Similar Courses in Two or More CIP Sections

   o Same-titled courses are found among the following CIP
      sections dealing with agriculture: Agricultural Sciences
      (02), Agricultural Engineering (14.03), and Agricultural
      Education (13.1301). The section in which these courses
      should be placed is identified in the course title to
      assist coders. Coders should refer to the school catalog
      to ascertain which department or instructional program
      area is offering the course prior to making a coding
      selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

      None.

CIP SECTION: Architecture and Environmental Design (04)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The descriptor given for the CIP section entitled
    Environmental Design (04.0401) will present a problem to
    coders because it's meaning is unclear. Hence, for the
    purposes of this classification, ASI staff has arbitra-
    rily interpreted the section as including courses dealing
    with building environmental systems such as illumination
    and temperature control.

Similar Courses in Two or More CIP Sections

o   There are three CIP sections which relate to Architecture
    may include very similar basic courses. These are
    Architecture (04), Architectural Engineering (14.04), and
    Architectural Technologies (15.01). In general, archi-
    tecture courses in the engineering curricula are more
    technical or mathematical oriented. If possible confusion
    existed in the title as to correct coding, the name of
    the section was added to the title. Coders should refer
    to the school catalog to ascertain which department or
    instructional program area is offering the course in
    question prior to making a coding decision.

o   Coding architectural drafting courses proved most
    difficult to coders because in addition to the three
    related CIP sections in Architecture specified above,
    a fourth option in Architectural Drafting (48.0102)
    is presented in the CIP. ASI interpreted the latter
    section as encompassing simply instruction in reading
    blueprints, not in drafting blueprints. Again, the
    coder is cautioned to reference the school catalog to
    pinpoint the department offering the drafting course.
    As in other cases of similar courses coded in different
    sections, ASI has added to the title the instructional
    program section under which the course would fall.

CIP SECTION: Area and Ethnic Studies (05)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

       None.

Similar Courses in Two or More CIP Sections

o Similarly-titled courses are found among the following
   CIP sections: Area and Ethnic Studies (05), History
   (45.08), and Languages (16). The courses most often
   falling in this category are "History" and "Civilization"
   for particular regions or countries of the world. The
   section in which such courses should be placed is iden-
   tified in the course title. Coders should refer to the
   school catalog to ascertain which department or instruc-
   tional program area is offering the course prior to
   making a coding selection.

CIP SECTION: Business (06)

PANELIST: Dr. Robert Holland
             Associate Professor of Business
             The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o The distinction drawn between **Banking and Finance**
   (06.03) and **Business Economics** (06.05) is based on
   coding quantitative business courses under Banking
   and Finance, while placing theoretical economic business
   courses under Business Economics. A course in Cost
   Benefit Analysis, although encompassing some theoretical
   aspects, is placed under Banking and Finance because its
   emphasis is on the quantitative. At present, only one
   course entitled "Business Economics" is coded under the
   Business Economics Section.

o The distinction drawn between **Human Resources Management**
   (06.06) and **Personnel Management** (06.16) is based on the
   following: broad courses pertaining to the training and
   career development of employees, such as "Issues in
   Employee Relations", are placed under Human Resources
   Management; courses dealing with more specific areas in
   personnel management, such as "Employee Compensation
   Systems: Theory and Practice", were coded under Personnel
   Management.

o The CIP section on **Institutional Management** (06.07) is
   divided into five subsections (Hotel Management, Restau-
   rant Management, etc.). When an individual course covers
   more than one institutional management area (as, for
   example, "Hotel-Restaurant Management", it is coded
   under the subsection that appears first in its title. If
   a course does not relate to any of the subsections, it is
   placed under **Institutional Management, Other** (06.0799).

o Under **Business Management, Other** (06.9999) are coded
   business classes which are not appropriate to any of the
   specific CIP sections under Business. These include such
   courses as "Business Algebra" and "Business Law".

Similar Courses in Two or More CIP Sections

o   Varying types of management courses are found in numerous
     CIP Instructional Programs. These may range from "Parks
     Recreation Management" to "Arts Management". Management
     courses which are geared toward the management profes-
     sion as a whole, rather than to a specific area, are
     placed in the Business and Management (06).

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   **Recommendation to Merge Certain CIP Sections**

     Dr. Holland suggested that the CIP would be more appro-
     priate for the Business and Management Curriculum if the
     following combinations were made:

     -   **Contract Management and Procurement/Purchasing**
         (06.0402) should be eliminated and its courses
         coded under **Purchasing** (08.0704).

     -   **Investments and Securities** (06.10) and **Securities
         and Commodities Marketing** (08.0406) should be
         eliminated and their courses coded under **Banking
         and Finance** (06.03).

     -   **Management Information Systems** should be elimi-
         nated and its courses coded under **Business Systems
         Analysis** (07.0306).

     -   **Banking and Related Financial Programs** (07.02)
         should be eliminated and its courses placed under
         Financial Services Marketing (08.04).

o   **Placement of Distribution Courses**

     Dr. Holland indicated that some schools place Distribu-
     tion courses in their Marketing Departments, whereas his
     preference would be in a department for Production and
     Operations (not included in the CIP).

o   **Placement of Money and Banking Courses**

     Dr. Holland cautioned that the department offering Money
     and Banking Courses varied by college. In some, the
     course is found in the Economics Department; in others,
     the Finance Department. This variation among schools
     holds true for a number of business courses.

CIP SECTION: Business and Office (07)

PANELIST: Dr. Robert Holland
             Associate Professor of Business
             The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The distinction drawn between **Business and Office (07)**
    and **Business (06)** or **Computer and Information Sciences**
    (11) is as follows: courses coded in Section 07 are
    extracted almost exclusively from two-year schools. The
    curriculum under **Business and Office** represents prepara-
    tion for support staff in business or financial organiza-
    tions, rather than management training. Secretarial
    Sciences, for example, fall into this section.

o   As an exception within the **Business and Office** Section
    (07), the subsection, **Business Data Processing (07.03)**
    does contain courses from both two-year and four-year
    institutions pertaining to basic computer programming and
    data processing as used in the office environment. The
    distinction drawn between this subsection and **Data**
    Processing (11.03) under the Computer Science curriculum
    is based simply on whether the course is offered under
    the school's Business or Computer Science department.
    The assumption here is that each department would
    approach the area of data processing differently.

o   The distinction drawn between **Office Supervision and**
    Management (07.04) and **Personnel Management (06.16)** or
    Human Resource Management (06.0601) is as follows:
    Office Supervision and Management courses cover those
    geared toward secretaries and office managers.

o   No courses were found within our sample for **Personnel and**
    Training Programs (07.05).

o   All secretarial cooperative programs are coded under
    Secretarial and Related Programs, General (07.0601).

o   The distinction drawn between **Executive Secretarial**
    (07.0603) and **Secretarial (07.0606)** is drawn as follows:

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only courses with "executive secretary" within its title
are coded under Executive Secretarial (for example,
"Specialized Secretarial Training: Executive"). All other
secretarial courses, with exception of those in specia-
lized areas such as medical or legal, are placed under
Secretarial.

o Few courses were coded under Typing, General Office and
Related Programs (07.07) because of the overlap with,
secretarial courses under Section 07.06. The subsections
on Typing (07.0710) and Clerk-Typist (07.0702), however,
do contain courses and should, therefore, not be over-
looked by coders.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

Refer to CIP Section 06 (Business).

CIP SECTION: Marketing and Distribution (08)

PANELIST: Dr. Robert Holland
             Associate Professor of Business
             The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o The section on **Marketing and Distribution** (08) breaks
      down the general curriculum into many specialized sub-
      sections. This level of specialization did not reflect
      the programs offered by the sample of schools utilized.
      Hence, many of these subsections contain no courses.

Similar Courses in Two or More CIP Sections

   · None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

      Refer to CIP Section 06 (**Business**).

CIP SECTION: Communications (09)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

  o Courses dealing with the business-side of advertising
     are coded under Advertising (09.02), while those
     addressing advertising illustration are placed under
     Commercial Art (48.0203).

Similar Courses in Two or More CIP Sections

     None.

CIP SECTION: Communications Technology (10)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

    None.

Similar Courses in Two or More CIP Sections

   o   The distinction drawn between Photographic Technology
       (10.0103) and Commercial Photography (48.0204) or
       Photography (50.0605) is based on the objective of
       the specific curriculum. Courses under Photographic
       Technology prepare technicians for uses of photography
       in specialized communication fields; courses in the
       two other curricula are oriented toward the artistic
       uses of photography.

CIP SECTION: Computer and Information Sciences (11)

PANELIST: Dr. Richard Austing
           Associate Professor of Computer Science
           Center for Adult Education
           University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The descriptors provided by CIP for the section on
    Computer and Information Sciences (11) were not
    representative of the breakdown of courses found in the
    sample of schools. Dr. Austing's interpretations of the
    descriptors to conform more closely with actual college
    curricula in this area are given below.

o   Computer and Information Sciences, General (11.01) is
    interpreted as covering four-year computer science
    curriculum to include artificial intelligence, graphics,
    organization and architecture of computer systems,
    programming languages and software engineering, theory
    of computing, data base design, and numerical analysis.

o   Computer Programming (11.02) includes courses whose
    primary goal is programming (often lower-level courses
    in the computer science curriculum--reference Section
    11.01).

o   Courses under Data Processing (11.03) are found in one-
    or two-year programs leading to entry-level programming,
    data entry, computer operation, and other business-
    related areas.

o   Courses coded under Information Sciences and Systems
    (11.04) lead to a four-year degree in business informa-
    tion systems and include systems analysis, system design,
    data base implementation, management, organizational
    concerns, and office automation.

o   Systems Analysis (11.05) would include advanced courses
    leading to an information systems degree (reference
    Section 11.04). This section is left empty because
    in CSPEC course level as not a coding factor.

Similar Courses in Two or More CIP Sections

o Similarly-titled courses are found in both **Computer
and Information Sciences (11)** and **Computer Engineering
(14.09)**. As a general rule of thumb, the courses coded
in the **Computer Engineering** Section are more technically-
oriented. To further assist coders, however, the section
in which such courses should be placed is identified in
the course title. Coders should refer to the school
catalog to ascertain which department or instructional
program area is offering the course prior to making a
coding decision.

o Similarly-titled courses are also found in **Computer and
Information Sciences (11)**, **Business (06)**, **Business and
Office (07)**, and **Marketing and Distribution (08)**. The
section in which these courses should be placed is
identified in the course title. Coders should refer to
the school catalog to ascertain which department or in-
structional program area is offering the course prior to
making a coding decision.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Consumer, Personal and Miscellaneous Services (12)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o The distinction drawn between Umpiring (12.0204) and
      Coaching (13.1314) is as follows: Umpiring prepares
      individuals to officiate athletic games, while coaching
      prepares an instructor to improve game performance of
      athletes.

Similar Courses in Two or More CIP Sections

      None.

CIP SECTION: Education (13)

PANELIST: Dr. Robert F. Carbone
Professor of Higher and Adult Education
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The distinction between **Curriculum and Instruction**
(13.03), **Teacher Education, General Programs** (13.12),
and **Teacher Education, Specific Subject Areas** (13.13)
is drawn as follows: Courses under **Curriculum and
Instruction** cover ways of developing actual curricula;
Teacher Education courses, on the other hand, emphasize
how to teach rather than the material or planned curri-
cula used to teach.

o   Courses preparing students to work as extension agents
are coded under **Agricultural Education** (13.13). Coders
should note that not every school offers extension educa-
tion courses in the education department. Some offer the
program in the agriculture department.

o   Many educators make a distinction between junior high
education and middle school education. Junior high
schools typically offer instruction to students in grades
seven through nine, while middle schools educate students
in grades five through nine. Since CIP does not make
such a distinction, courses related to both types are
coded in **Junior High Education** (13.1203).

o   The distinction among Industrial Arts Education
(13.1309), Technical Education (13.1319), and Trade and
Technical Education (13.1320) is as follows: The
Industrial Arts Education program is typically meant
to prepare instructors to teach students skills for
personal use rather than for career training. The
differences between **Technical Education** and **Trade and
Technical** is more nebulous and, under CSPEC, courses
are coded according to whether they emphasized specific
technical training or more general industrial/occupa-
tional training. Coders are advised to check the school
catalog for course descriptions and the department
offering the course prior to making a final coding
decision.

Similar Courses in Two or More CIP Sections

None.

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ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Dr. Carbone considered many of the courses in the sample to be on the graduate level, although they were found in undergraduate programs. It would appear, therefore, that what at one school would be considered a upper-level undergraduate course would at another be a graduate course.

o   **Education and Research (13.06)** is not an area typical to undergraduate programs.

o   Dr. Carbone did not view **Education, General (13.01)** useful for coding purposes.

CIP SECTION: Engineering (14)

PANELIST: Dr. James L. Hoerner
            Associate Professor of Education
            Virginia Tech Graduate Center
            Virginia Polytechnic Institute and State University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o   It is important that the coder reference the school
        catalog to ascertain which engineering department is
        offering the course to be coded. Given the highly
        technical nature of engineering courses, it is difficult
        for a coder with a non-engineering background to code
        courses in this area based on course title or description
        alone.

Similar Courses in Two or More CIP Sections

   o   Similarly-titled courses may be found across the follow-
        ing CIP Sections:

             -   Among the subsections under **Engineering** (14).

             -   Between **Engineering** (14) and **Engineering
                 Technology** (15).

             -   Between **Engineering** (15) and other non-
                 Engineering CIP Sections. (A prime example of
                 this would be those sections dealing with
                 Architecture, including Architectural Engineer-
                 ing (14.04), Architectural Technologies
                 (15.01), Architectural Drafting (48.0102), and
                 Architecture (04.02).)

        In all such cases, the section in which these courses
        should be placed is identified in the course title to
        assist coders. Coders should refer to the school catalog
        to ascertain which department of instruction is offering
        the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

   o   Dr. Hoerner commented that the current breakdown of
        coding areas in CIP (and thus the CSPEC) appears to be
        adequate, and that a national sample would fill those
        areas currently having a low number of courses. He esti-
        mated, however, that as new technologies are developed,
        there will be a need for new categories.

CIP SECTION: Engineering and Engineering-Related
                Technologies (15)

PANELISTS: Dr. Philip L. Brach
                Dean, College of Physical Science,
                Engineering and Technology
                University of the District of Columbia

                Dr. James L. Hoerner
                Associate Professor of Education
                Virginia Tech Graduate Center
                Virginia Polytechnic Institute and State University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   It is important that the coder reference the school
       catalog to ascertain which engineering department is
       offering the course to be coded. Given the highly
       technical nature of engineering courses, it is difficult
       for a coder with a non-engineering background to code
       courses in this area based on course title or description
       alone.

Similar Courses in Two or More CIP Sections

o   Similarly-titled courses may be found in Engineering and
       Engineering-Related Technologies (15) and Engineering
       (14) or other non-engineering CIP sections. In such
       cases, the section in which these courses should be
       placed is identified in the course title to assist
       coders. Coders should refer to the school catalog to
       ascertain which department of instruction is offering
       the course prior to making a coding decision.

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Dr. Hoerner commented that the current division of
       Engineering Technology areas in the CIP (and thus the
       CSPEC) is adequate and that a national sample would fill
       those areas that currently have low numbers of courses.
       He estimated, however, that with the development of new
       technologies, new categories will have to be added.

CIP SECTION: Foreign Languages (16)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

        None.

Similar Courses in Two or More CIP Sections

  o   Civilization courses are found under Foreign Languages
       (16), Area and Ethnic Studies (05), and History (45.08).
       The section in which such courses should be coded are
       identified in the course title. Coders should refer to
       the school catalog to ascertain which department is
       offering the course prior to making a coding decision.

  o   Literature courses appear under both Foreign Languages
       (16) and Letters (23). The section in which such courses
       should be coded are identified in the course title.
       Coders should refer to the school catalog to ascertain
       which department is offering the course prior to making
       a coding selection.

CIP SECTION: Allied Health (17)

PANELIST: Dr. Louis Albert
Director of Professional Services
American Association for Higher Education

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The section entitled Animal Technology (17.0501) contains
courses which, at some schools, might fall under programs
in Veterinarian Assisting (17.0512), Veterinarian Aide
(17.0511), or Clinical Animal Technology (17.0303). The
courses found in the CSPEC sample were not adequately
specialized to warrant individual categories and all such
courses are coded under Animal Technology.

o   Courses coded under Occupational Therapy (17.0807)
include those which, at some schools, might be under
instructional program areas called Occupational Therapy
Assisting (17.0808) or Occupational Therapy Aide
(17.0809).

o   Courses coded under Physical Therapy Assisting (17.0815)
include those which, at some schools, might be under
instructional program areas called Physical Therapy
(17.0813) or Physical Therapy Aide (17.0814).

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Dr. Albert noted that the CIP distinction between Allied
Health and Health Sciences is vague and makes coding
postsecondary courses difficult.

o   Dr. Albert suggested that Speech Pathology (18.0103) and
Nursing (18.11) would be more appropriately placed under
the Allied Health area (17) than under Health Sciences
(18).

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CIP SECTION: Health Sciences (18)

PANELIST: Dr. Louis Albert
           Director of Professional Services
           American Association for Higher Education

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

    o   All audiology and speech pathology courses are coded
         under Speech Pathology/Audiology (18.0103), in lieu
         of utilizing Audiology (18.0101) or Speech Pathology
         (18.0102).

    o   Dentistry is not an undergraduate program. Therefore,
         the section on Dentistry (18.04) contains no courses.

    o   Medicine is not an undergraduate program. Therefore,
         the section on Medicine (18.10) contains no courses.

Similar Courses in Two or More CIP Sections

    None.

ADDITIONAL PANELIST COMMENTS, IF ANY

    Refer to Allied Health (17).

CIP SECTION: Home Economics (19)

PANELIST: Dr. John R. Beaton
            Professor of Food, Nutrition and Institution
            Administration
            Dean of the College of Human Ecology
            University of Maryland
      and
            Dr. Helen Grove
            Alexandria, Virginia

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

    o   Dr. Grove clarified the distinction between Home
         Economics (19) and Vocational Home Economics (20) as
         follows:

              Home Economics prepares professionals to work with
              business, industry, human services, and other
              organizations.

              Vocational Home Economics prepares instructors to
              teach in high school vocational home economics
              programs (preparing high school students for
              employment rather than to enhance personal skills).

Similar Courses in Two or More CIP Sections

    o   Dr. Grove pointed out that in a curriculum such as Home
         Economics "extensive duplication of course listings is
         essential" when areas such as dietetics, human nutrition,
         and food science naturally overlap in some ways. Since
         there are thus similarly-titled courses in two or more
         subsections of Home Economics, the sections in which
         these courses should be placed is identified in the
         course title. Coders should refer to the school catalog
         to ascertain more precisely which Home Economics program
         is offering the course prior to making a coding selec-
         tion.

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Dr. Beaton recommended that since **Consumer Science**
    (19.0402) and **Family Economics** (19.0403) are essentially
    the same, these sections should be merged.

o   Dr. Grove judged that **Home Economics, General** (19.01)
    would not be statistically useful to analysts since very
    few courses merit coding in this area.

o   Dr. Grove indicated that the heavy concentration of
    courses in **Fashion Design** (19.0902) in the CSPEC was
    unusual since the more prevalent pattern is to have a
    larger number courses focusing on **Textiles and Clothing**
    (19.0901, 19.0903, 19.0904) with only a few specialized
    fashion design courses.

o   Dr. Beaton suggested the addition of a **Fashion
    Merchandising** category to **Home Economics** (20). Currently
    the CIP places these courses dealing with fashion
    merchandising in **Marketing and Distribution** (08).

o   Dr. Grove suggested the inclusion within **Home Economics**
    (20) of sections on **Interior Design** (with a different
    emphasis than the **Interior Design** program listed under
    04.05), **Hotel/Motel Management** (currently coded under
    06.0701), and **Restaurant Management** (currently coded
    under 06.0704).

o   Dr. Grove was not entirely satisfied with the accuracy of
    the representation provided by CSPEC of Home Economics
    courses. She stated that the CIP taxonomy causes some
    problems for classifying postsecondary courses, but that
    the sample of courses might also be at fault.

o   Dr. Beaton suggested that a course on Housing Issues and
    Prospects should be included in the Home Economics curri-
    culum under **Human Environment and Housing** (19.06). This
    course covers social and economic issues associated with
    production, consumption, and regulation of housing. With
    the current version of CSPEC, this course would be coded
    under the 8-digit unique code for "Miscellaneous"
    courses.

CIP SECTION: Vocational Home Economics (20)

PANELIST: Dr. John R. Beaton
            Professor of Food, Nutrition and Institution
            Administration
            Dean of the College of Human Ecology
            University of Maryland
      and
            Dr. Helen Grove
            Alexandria, Virginia

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o   Dr. Grove clarified the distinction between Home
        Economics (19) and Vocational Home Economics (20) as
        follows:

            Home Economics prepares professionals to work with
            business, industry, human services and other
            organizations.

            Vocational Home Economics prepares instructors to
            teach in high school vocational home economics
            programs (preparing high school students for
            employment rather than to enhance personal skills).

Similar Courses in Two or More CIP Sections

   o   Dr. Grove pointed out that in a curriculum such as Home
        Economics "extensive duplication of course listings is
        essential" when areas such as dietetics, human nutrition,
        and food science naturally overlap in some ways. Since
        there are thus similarly-titled courses in two or more
        subsections of Home Economics, the sections in which
        these courses should be placed is identified in the
        course title. Coders should refer to the school catalog
        to ascertain more precisely which Home Economics program
        is offering the course prior to making a coding selec-
        tion.

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Dr. Beaton recommended the addition of a new category
     to the CIP Vocational Home Economics (20) section to
     be entitled **Textile Design** (not related to Fashion
     Design). This category would include textile construc-
     tion courses. The CSPEC which is based on the CIP places
     courses in textile construction under **Clothing and
     Textiles** (20.0103). Dr. Beaton indicated the following
     courses presently in the CSPEC would be more appropri-
     ately coded under the new **Textile Design** category:

               Computer Graphics in Textile Design
               Creative Principles of Textile Design
               Decorative Fabrics
               Design for Knitted Fabrics
               Experimental Screen Printing in Textile Design
               History of Textiles
               Lace and Embroidery Design
               Painted Woven Design
               Portfolio Collection for the Textile Designer
               Printed Fabrics
               Printing for Fabrics
               Rug and Tapestry Weaving in Textile Design
               Screen Printing: Scarves
               Studio Practices in Textile Design
               Surface Design: Advanced Wallcoverings
               Surface Design: Bedroom/Bathroom
               Surface Design: Introduction to Fiberarts
               Surface Design: Kitchen/Dining Room
               Surface Design: Print Media Graphics
               Surface Design: Printed Rugs and Carpeting
               Textile Design
               Woven Design

CIP SECTION: Industrial Arts (21)

PANELIST: Dr. Donald Maley
Professor and Department Chairman,
Industrial Education
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   Dr. Maley drew the distinction between **Industrial Arts
     (21)** and **Vocational Education** (such as the CIP sections
     on **Construction Trades (46), Mechanics and Repairers
     (47)** and **Precision Production (48)**) as follows:

               Industrial Arts/Technology Education encompasses
               the phase of general education which deals with
               technology, its development, utilization and
               significance, and with industry, its organization,
               products, processes, and materials, as well as the
               problems and benefits resulting from an industrial
               society.

               Vocational Education is a form of education which
               enables the student to enter into gainful employ-
               ment, and to progress in that endeavor.

o   Dr. Maley advised that the category **Graphic Arts**
     (21.0106) has been broadened and is now generally
     referred to as "Graphic Communications."

Similar Courses in Two or More CIP Sections

o   Similarly-titled courses are found under the Industrial
     Arts subsection, **Construction (21.0102)**, and **Construction
     Trades (46)**. The section in which such courses should be
     placed is identified in the course title. Coders should
     refer to the school catalog to ascertain which department
     or program is offering the course prior to making a
     coding selection.

o   Similarly-titled courses are found under the Industrial
    Arts subsection, **Drafting and Design** (21.0103), **Drafting**
    (48.01) and **Drafting and Design Technology** (15.0202).
    The section in which such courses should be placed is
    identified in the course title. Coders should refer to
    the school catalog to ascertain which department or
    program is offering the course prior to making a coding
    selection.

o   Similarly-titled courses are found under the Industrial
    Arts subsection, **Electricity/Electronics** (21.0104,
    Electrical and Electronic Technologies (15.03), **Electri-
    cal, Electronics and Communications Engineering** (14.10),
    and **Electrical and Electronics Equipment Repair** (47.01).
    The section in which such courses should be placed is
    identified in the course title. Coders should refer to
    the school catalog to ascertain which department or
    program is offering the course prior to making a coding
    selection.

o   Similarly-titled courses are found under the Industrial
    Arts subsection, **Graphic Arts** (21.0106), **Graphic and
    Printing Communications** (48.02), **Graphic Arts Technology**
    (50.0801), and **Graphic Design** (50.0402). The section in
    which such courses should be placed is identified in the
    course title. Coders should refer to the school catalog
    to ascertain which department or program is offering the
    course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Given the distinction drawn between **Industrial Arts
    Education** and **Vocational Education**, Dr. Maley believed
    the following courses currently under the **Industrial
    Arts** section were not appropriate to that curriculum:

            Commercial Building
            Heating and Air Conditioning
            Mechanical Systems

    We note that these courses were coded under **Industrial
    Arts** because they appeared under the Industrial Arts
    program at the schools in the CSPEC sample.

o   Dr. Maley's was of the view that uniformity in course
    offerings among postsecondary institutions needs to be
    achieved in the industrial arts education profession.

CIP SECTION: Letters (23)

PANELIST: Dr. Donald Gallehr
            English Department
            George Mason University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

<u>Interpretation of CIP Section</u>

o   Dr. Gallehr indicated that **Comparative Literature**
    (23.03) usually refers to European, Oriental, and other
    foreign authors only, not to include English or American
    writers. The CIP definition of this section, however,
    covers literature dealing with selected themes and
    periods of time, as well as language source. Hence,
    English and American authors falling into these areas are
    currently coded under this section.

o   Note that journalism courses are coded under a specific
    CIP area entitled **Journalism** (09.04).

o   CIP defines the section, **Letters, General** (23.01), as
    "the skills and techniques essential to learning the
    English language." This definition does not clearly
    indicate whether general or remedial courses are both
    should be coded under the section. In the CSPEC, all
    remedial courses, including those in English, are coded
    under **Basic Skills** (32).

<u>Similar Courses in Two or More CIP Sections</u>

o   Similarly-titled courses are found under **Classics**
     (23.02), **Classical Greek** (16.0601) and **Latin** (16.0903).
     The section in which such courses should be placed is
     identified in the course title. Coders should refer to
     the school catalog to ascertain which department or
     program is offering the course prior to making a coding
     selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

     None.

CIP SECTION: Liberal/General Studies (24)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   Note that this section was used for coding only when a
     school catalog specifically identified a course as one
     belonging to liberal or general studies and thus
     not a part of any specific degree program.

Similar Courses in Two or More CIP Sections

     None.

CIP SECTION: Library and Archival Sciences (25)

PANELIST: Naomi C. Broering, MLS, MA
Medical Center Librarian
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

None.

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Ms. Broering commented that library degree programs
     should always include theoretical subjects with heavy
     concentration on instructions and applications
     coursework.

o   Ms. Broering agreed with the CIP differentiation between
     libraries, archives, and museums and found the CIP
     curriculum breakdown in the area of Library Science
     "quite comprehensive."

CIP SECTION: Life Sciences (26)

PANELIST: Dr. David L. Atkins
               Professor and Department Chairman of Biology
               The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

     None.

Similar Courses in Two or More CIP Sections

     None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

     o   Dr. Atkins expressed some reservation regarding several
           of the classes coded under Neurosciences (26.0608),
           although all courses coded in this section were offered
           by the biology departments of the schools in the CSPEC
           sample. He believed that the following courses in
           particular may have been more appropriately placed under
           Physiological Psychology (42.11):

                    Biology of Behavior Disorders (26.060801)
                    Brain and Behavior Neurosciences (26.060802)
                    Language and the Brain (26.060805)
                    Neural Mechanisms of Learning (26.0807)
                    Psychobiology (26.060811)

     o   Dr. Atkins recommended renaming the section, Zoology,
          General (26.0701), "Organismic Zoology" to encompass
          all organisms rather than solely humans and animals.

o   Dr. Atkins suggested the elevation of Genetics (26.0703)
    to major category status since it has become a prominent
    area of the Life Sciences. The classes currently coded
    in the CSPEC that he would place in this new category
    would be the following:

             Advanced Genetics (26.010102)
             Cytogenetics in Biology (26.010107)
             Experimental Genetics (26.010110)
             Genetics (26.010113)
             Physiological Genetics (26.010118)
             Genetic Engineering (26.020116)
             Plant Genetics (26.030401)
             Molecular Genetics (26.040205)
             Structure and Function of Euraryotic Chromosomes
                     (26.040206)
             Bacterial Genetics (26.050103)
             Genetics and Development in Animals (26.070301)
             Human Genetics (26.070302)

o   Dr. Atkins believed the CIP section on Life Sciences
    would be improved if the following combinations of
    subsections were made as they represent essentially
    identical areas or contain similar courses:

    -    Microbiology (26.0501) and Bacteriology (26.0302)
    -    Toxicology (26.0612) and Pharmacology (26.0705)
    -    Pathology (26.0704) and Parasitology (26.0610)
    -    Biochemistry and Biophysics (26.0201) and Molecular
           Biology (26.0302)

CIP SECTION: Mathematics (27)

PANELIST: Dr. Robert L. Gluckstern
Professor of Physics and Astronomy
University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   Under Pure Mathematics (26.0401), each level of Calculus
     was given a unique course code, as each addressed a
     unique and different mathematical area, as follows:

          Calculus I   (27.040111) - Introductory, Elementary
          Calculus II   (27.040112) - Analytical
          Calculus III (27.040113) - Multivariate
          Calculus IV   (27.040114) - Differential Equations

o   Dr. Gluckstern drew the distinction between Mathematics,
     General (27.01) and Pure Mathematics (27.04) as follows:
     Mathematics, General includes elementary courses, while
     Pure Mathematics covers a variety of advanced
     specialties.

Similar Courses in Two or More CIP Sections

o   Similarly-titled courses are found under Statistics
     (27.05) and a number of other disciplines, such as
     business and education. The sections in which these
     courses should be placed are identified in the course
     title. Coders should refer to the school catalog to
     ascertain which department or degree program is offering
     the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY

o   Dr. Gluckstern believed that the category, Pure Mathe-
     matics (27.04) was much too broad, and it might be
     worthwhile to split it into different, more specific areas.

CIP SECTION: Multi/Interdisciplinary Studies (30)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   With the exception of Women's Studies (30.07), courses
     were coded under Multi/Interdisciplinary Studies only
     when the school catalog specifically identified them as
     multidisciplinary and not part of a specific degree
     program. These courses are generally meant to complement
     or enrich a student's education.

o   All courses focusing expressly on women were coded under
     Women's Studies (30.07) irregardless of the school
     department offering the course.

Similar Courses in Two or More CIP Sections

    None.

CIP SECTION: Basic Skills (32)

PANELIST: Dr. John R. Beaton
               Professor of Food, Nutrition and Institution
               Administration
               Dean of the College of Human Ecology
               University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o   Courses coded under Basic Skills (32) are remedial or
         those identified as needed by students in order to   reach
         college-level ability in a particular subject area.
         Included in this category are special courses for
         international students. Since it is often difficult to
         determine whether a course is remedial from its title,
         coders are cautioned to check the school catalog's
         description of the course prior to selecting a code. A
         good indicator that a course is remedial is if no credit
         hours toward a degree are given for its completion.

Similar Courses in Two or More CIP Sections

   None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

   None.

CIP SECTION: Health-Related Activities (34)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The CIP section on **Health Enhancement Practices**
      (34.0103) may be easily confused with **Sports/Physical
      Education** (36.0108). The physical activities coded
      under **Health Enhancement Practices** specifically relate to
      assisting an individual in improving his physical and
      emotional wellbeing and include such courses as:

            Aerobics   (34.010301)
            Body Conditioning   (34.010303)
            Weight Training   (34.010311)
            Jazz Exercise   (34.010305)
            Jogging and Calisthenics (34.010306)

Similar Courses in Two or More CIP Sections

      None.

CIP SECTION: Leisure and Recreational Activities (36)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The CIP section on Health Enhancement Practices
     (34.0103) may be easily confused with Sports/Physical
     Education (36.0108). The physical activities coded
     under Health Enhancement Practices specifically relate to
     assisting an individual in improving his physical and
     emotional wellbeing and include such courses as:

         Aerobics   (34.010301)
         Body Conditioning   (34.010303)
         Weight Training   (34.010311)
         Jazz Exercises   (34.010305)
         Jogging and Calisthenics (34.010306)

Similar Courses in Two or More CIP Sections

o   Similarly-titled courses are found in both Sports/
     Physical Education (36.0108) and Physical Education
     (13.1314). The former represent participatory courses
     for all students; the latter are geared toward prospec-
     tive physical education teachers. For such courses,
     the section in which they should be placed is identified
     in the course title. Coders should refer to the school
     catalog to ascertain which department or degree program
     offers the course prior to making a coding selection.

CIP SECTION: Philosophy and Religion (38)

PANELIST: Dr. Jesse Mann
               Professor of Philosophy
               Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

     None.

Similar Courses in Two or More CIP Sections

     o   The "Philosophy of" a specific discipline often appears
          in different sections of the CSPEC. The section in which
          such courses should be placed is identified in the course
          title. Coders should refer to the school catalog to
          ascertain which department or degree program is offering
          the course prior to making a coding selection.

     o   Similarly-titled courses are found both under Religion
          (38.0201) and Theology (39). The section in which these
          courses should be placed is identified in the course
          title. Coders should refer to the school catalog to
          ascertain which department or degree program is offering
          the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

     o   Dr. Mann suggested that the following courses missing
          from the CSPEC are offered in a growing number of
          philosophy degree programs: Philosophy and Public
          Policy, the Philosophy of Hume and DesCartes, and Ethics
          and the Media (focusing on ethical problems such as
          invasion of privacy, censorship, and confidentiality
          encountered in the media. With the current version of
          CSPEC, these courses would be coded under the 8-digit
          unique code for "Miscellaneous" courses.

CIP SECTION: Theology (39)

PANELIST: Dr. Jesse Mann
                Professor of Philosophy
                Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

     None.

Similar Courses in Two or More CIP Sections

     o   Similarly-titled courses are found both under Religion
            (38.0201) and Theology (39). The section in which these
            courses should be placed is identified in the course
            title. Coders should refer to the school catalog to
            ascertain which department or degree program is offering
            the course prior to coding selection.

     o   Dr. Mann cautioned that at some religious institutions
            almost all courses have the term "Christian" in their
            title, although they may be offered under a department
            or degree program other than theology. Coders should
            refer to school catalogs to verify the correct coding of
            courses at such schools.

ADDITIONAL PANELIST COMMENTS, IF ANY

     None.

CIP SECTION: Physical Sciences (40)

CIP SUBSECTION: Astronomy (40.02)
                  Astrophysics (40.03)
                  Physics (40.08)

PANELIST: Dr. Robert L. Gluckstern
              Professor of Physics and Astronomy
              University of Maryland

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

        None.

Similar Courses in Two or More CIP Sections

        None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

   o   Dr. Gluckstern expressed surprise that more courses had
        not been found in the CSPEC sample to code under
        Fluids and Plasmas (40.0805).

CIP SECTION: Life Sciences (40)

CIP SUBSECTION: Chemistry (40.05)

PANELIST: Dr. Theodore Perros
               Professor and Chairman of the Department of Chemistry
               The George Washington University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   Dr. Perros indicated that Pharmaceutical Chemistry
      (40.0505) is a graduate level program. Hence, no courses
      are coded in this category for the CSPEC.

o   No specific section is designated by the CIP for courses
      in Nuclear Chemistry. Courses in this area are coded
      under Chemistry, Other (40.0599) for the purposes of the
      CSPEC.

Similar Courses in Two or More CIP Sections

o   Dr. Perros noted that some courses could be coded either
      of two ways depending on the focus of the subject matter.
      Without knowing the emphasis of the course, coding
      decisions become arbitrary. For example, Electro-
      chemistry (40.050604) could be placed under Analytical
      Chemistry (40.0502) or Physical Chemistry (40.0506),
      depending upon the extent to which theory was emphasized.

ADDITIONAL PANELIST COMMENTS, IF ANY:

o   Dr. Perros recommended the splitting of large areas, such
      as Chemistry, into smaller subdivisions to improve the
      coding process. However, he cautioned that this would
      also lead to more cases where one course might fit into
      several areas. The trade-off would have to be carefully
      analyzed before changing the current categorization.

CIP SECTION: Science Technologies (41)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

    None.

Similar Courses in Two or More CIP Sections

    o   Science Technologists are trained to assist scientists
         and engineers. Similarly-titled courses are found under
         Science Technologies (41) and under Physical Sciences
         (40). The section in which such courses should be placed
         is identified in the course title. The coder should
         refer to the school catalog to ascertain which department
         or degree program is offering the course prior to making
         a coding decision.

CIP SECTION: Psychology (42)

PANELIST: Dr. C. James Scheirer
               Health Science Administrator
               National Institutes of Health

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

     None.

Similar Courses in Two or More CIP Sections

     o   Statistics for Psychology is distinct from Mathematical
          Statistics and is coded under Quantitative Psychology
          (42.15).

ADDITIONAL PANELIST COMMENTS, IF ANY:

     o   Dr. Scheirer suggested that the following CIP sections
          are similar enough to be grouped together for coding
          purposes:

          -    Clinical Psychology (42.02), Community Psychology
               (42.04), and Counseling Psychology (42.06).

          -    Personality Psychology (42.10) and Social Psychology
               (42.16).

          -    Physiological Psychology (42.11) and Psychopharma-
               cology (42.14).

     o   Dr. Scheirer also indicated that the following areas are
          adequately represented with coursework to merit their own
          separate CIP categories:

          -    History and Systems (covering current topics in
               psychology from historical and theoretical per-
               spectives).

          -    Statistics and Methodology (an estimated 10
               percent of psychology courses may fall in this area).

o   Dr. Scheirer co-authored The Undergraduate Psychology
    Curriculum (1984) for the American Psychological Associa-
    tion which divided psychology courses into a hierarchical
    system. He believed this system is more appropriate for
    postsecondary course classification since it takes into
    account the close relationships of certain aspects of
    psychology. The curriculum breakdown is given below.

I.   Introductory

II. Experimental

         A. General Experimental
         B. Sensation and Perception
         C. Motivation
         D. Learning
         E. Cognition
         F. Language
         G. Comparative

III. Physiological

 IV. Statistics

  V. Developmental

         A. General Developmental
         B. Child
         C. Adolescent
         D. Adult
         E. Aging

 VI. Social/Personality

         A. General Social
         B. Personality
         C. Environmental
         D. Minority Issues
         E. Consumer

VII. Clinical

         A. General Clinical
         B. Abnormal
         C. Assessment
         D. Counseling
         E. Sexuality
         F. Community
         G. Behavioral Medicine
         H. Other Clinical

VIII. Industrial/Organizational

      A. General Industrial/Organizational
      B. Human Factors

IX. Adjustment/Personal Development

      A. Adjustment/Personal Development
      B. Human Relations
      C. Personal Mental Health

X. History/Systems

XI. Educational Psychology

XII. Special Topics

XIII. Seminar Courses

XIV. Other

CIP SECTION: Protective Services (43)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   Correctional Administration (43.0101) includes courses
     providing instruction in jail/institution management.

o   Corrections (43.0102) includes courses providing instruc-
     tion in the practices/methods of incarceration and
     rehabilitation of criminal offenders.

o   No courses were coded under Criminal Justice Administra-
     tion (43.0103) as it was determined that this CIP section
     overlapped with Law Enforcement (43.0107).

o   Courses coded under Criminal Justice Studies (43.0104)
     describe the criminal justice system, and its laws,
     theories and problems. This section is more general than
     the other subsections under Protective Services.

o   Criminal Justice Technology (43.0105) includes courses
     providing instruction in the methods and tools of
     criminal investigation.

o   Courses coded under Forensic Studies (43.0107) provide
     instruction in the medical factors of legal problems.

o   Law Enforcement (43.0107) includes courses providing
     instruction in police operations and methods.

o   Law Enforcement Administration (43.0108) includes courses
     providing instruction in police supervision and manage-
     ment.

o   Coders have experienced confusion between the CIP section
     on Protective Services (43) and that on Criminology
     (45.04). The latter focuses the social aspects of crime
     and rehabilitation of offenders. Protective Services
     includes coursework providing instruction on the methods
     of combating and rehabilitating criminals.

CIP SECTION: Public Affairs (44)

CIP SUBSECTION: Public Affairs, General (44.01)
                Community Services (44.02)
                International Public Service (44.03)
                Public Administration (44.04)
                Public Policy Studies (44.05)
                Public Works (44.06)

PANELIST: Dr. Valery Earle
           Professor of Political Science
           Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o   Few courses were coded in the above-listed subsections
        since these curricula tend to be graduate-level programs.

Similar Courses in Two or More CIP Sections

     None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

     None.

CIP SECTION: Public Affairs (44)

CIP SUBSECTION: Public Affairs, General (44.01)
                  Community Services (44.02)
                  International Public Service (44.03)
                  Public Administration (44.04)
                  Public Policy Studies (44.05)
                  Public Works (44.06)

PANELIST: Dr. Valery Earle
            Professor of Political Science
            Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o   Few courses were coded in the above-listed subsections
        since these curricula tend to be graduate-level programs.

Similar Courses in Two or More CIP Sections

    None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

    None.

The **Social Sciences** section is unusual because at least 10 of its 12 subsections represent major curriculum programs at the postsecondary level. The subsections comprising **Social Sciences** comprise the following:

Social Sciences, General	(45.0101)
Anthropology	(45.0201)
Archeology	(45.0301)
Criminology	(45.0401)
Demography	(45.0501)
Economics	(45.0601)
Geography	(45.0701)
History	(45.0801)
International Relations	(45.0901)
Political Science and Government	(45.1001)
Sociology	(45.1101)
Urban Studies	(45.1201)

In three specifics cases, History, International Relations and Political Science, the total unique courses found in the sample catalogs exceeded the 100 allotted spaces under each program. As a result, ASI coders found it necessary to list unique courses under more general titles and descriptors. For example, African History was designated as a unique course with alternate titles including the history of different African regions and countries.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Social Sciences, General (45.01)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   o   This subsection offers a general Social Science
        curriculum and draws courses from other curriculum
        programs, such as mathematics. In cases of similarly-
        titled courses, the section in which the course should
        be placed is identified in the course title. Coders
        should refer to the school catalog to ascertain which
        department or degree program is offering the course
        prior to making a coding decision.

Similar Courses in Two or More CIP Sections

        None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Anthropology (45.0201)

PANELIST: NONE

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

    None.

Similar Courses in Two or More CIP Sections

    o   Similarly-titled courses are found in both **Anthropology**
        (45.02) and **Area and Ethnic Studies** (05). In general,
        Ethnic Studies focus on the history, society, politics,
        culture and economics of a specific race. Anthropology
        places greater emphasis on the culture and social
        characteristics of a people. The section in which these
        courses should be placed is identified in the course
        title. Coders should refer to the school catalog to
        ascertain which department or degree program is offering
        the course prior to making a coding selection.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Criminology (45.04)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

    None.

Similar Courses in Two or More CIP Sections

    o   Coders have experienced confusion between the CIP section
         on Protective Services (43) and that on Criminology
         (45.04). The latter focuses on the social aspects of
         crime and rehabilitation of offenders. Protective
         Services includes coursework providing instruction on
         the methods of combating and rehabilitating criminals.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Economics (45.06)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

<u>Interpretation of CIP Section</u>

o   Similarly-titled courses are found in both **Economics**
     (45.06) and **Business** (06). The section in which these
     courses should be placed is identified in the course
     title. Coders should refer to the school catalog to
     ascertain which department or degree program is offering
     the course prior to making a coding selection.

<u>Similar Courses in Two or More CIP Sections</u>

     None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: History (45.08)

PANELIST: Dr. Dorothy Brown
            Department of History
            Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   Courses dealing with Women's History are coded under
     Women's Studies (30.07).

o   CIP assigns one code number (45.08) for the curri-
     culum program in History, thereby allowing only
     a total of 100 slots for courses with unique 8-digit
     codes.   Given the large number of postsecondary courses
     in the History curriculum, Dr. Brown merged courses with
     similar themes (rather than similar course content) under
     the unique 8-digit codes to stay within the CSPEC size
     restriction.   To assist ASI coders, she developed major
     categories for an initial grouping of courses, which
     served as a basis for selecting subgroups for 8-digit
     codes based on general theme.   These categories are given
     below.

               (1)   United States History
               (2)   Latin American History
               (3)   African History
               (4)   Middle Eastern History
               (5)   East Asian History
               (6)   Ancient History
               (7)   Medieval History
               (8)   European History
               (9)   General History/Historiography

     An example of the theme approach to coding is "American
     Social History" (45.080110). The alternate titles under
     this 8-digit code include "Social History of American
     Science" and "American Ethnic History."

Similar Courses in Two or More CIP Sections

o   Similarly-titled courses are found in both History
         (45.08) and **Area and Ethnic Studies** (05). The section in
         which such courses should be placed is identified in the
         course title. Coders should refer to the school catalog
         to ascertain which department or degree program is
         offering the course prior to making a coding selection.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: International Relations (45.09)

PANELIST: Dr. Valery Earle
                Professor of Political Science
                Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   CIP assigns only one code number (45.09) for the curri-
        culum program in International Relations, thereby
        allowing a total of 100 slots for courses with unique
        8-digit codes. Given the large number of postsecondary
        courses in the International Relations curriculum, the 8-
        digit code in this area represents courses liberally
        merged together by theme, rather than by similar course
        content.

o   Coders have experienced difficulty in distinguishing
        between International Relations (45.09) and courses
        dealing with comparative politics under Political
        Science and Government (45.10). International Relations
        stresses interaction among nations; courses in com-
        parative politics focus on comparing the political
        systems of different countries and should be coded under
        the CIP section on Political Science and Government.

Similar Courses in Two or More CIP Sections

        None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

        None.

CIP SECTION: Social Sciences (45)

CIP SUBSECTION: Political Science and Government (45.10)

PANELIST: Dr. Valery Earle
Professor of Political Science
Georgetown University

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

o   CIP assigns only one code number (45.10) for the curri-
culum program in Political Science and Government,
thereby allowing a total of 100 slots for courses with
unique 8-digit codes. Given the large number of post-
secondary courses in Political Science, the 8-digit code
in this area represents courses liberally merged
together by theme, rather than by similar course content.

o   Unless a title indicates the course deals with a specific
subject matter, independent study and seminar classes are
coded under "Independent Study in Political Science"
(45.100136). For example, the code for a course entitled
"Seminar in Political Science" is 45.100136, while
"Seminar in Political Behavior" is coded under "Political
Behavior" (45.100151).

o   Coders should note that, although a number of Political
Science Departments offer courses in "Criminology", the
CSPEC does such courses under Criminology (45.04) rather
than Political Science and Government (45.10).

Similar Courses in Two or More CIP Sections

None.

ADDITIONAL PANELIST COMMENTS, IF ANY:

None.

CIP SECTION: Mechanics and Repairers (47)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

   None.

Similar Courses in Two or More CIP Sections

   o   Similarly-titled courses are found in Mechanics and
        Repairers (47), Engineering (14), and Engineering
        Technology (15), although the level of technical diffi-
        culty and emphasis may differ. The section in which such
        courses should be placed is identified in the course
        title. Coders should refer to the school catalog to
        ascertain which department or degree program is offering
        the course prior to making a coding selection.

CIP SECTION: Precision Production (48)

CIP SUBSECTION: Graphic and Printing Communications (48.02)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   The distinction drawn between **Graphic Design** (50.0402)
     and **Graphic and Printing Communications** (48.02) is
     as follows: Courses focusing on the artistic aspects of
     Graphic Design are listed under **Graphic Design**
      (50.0402); courses teaching the technical aspects of
     graphics (for career preparation) are coded under ⁄
     Graphic and Printing Communications (48.02). For
     example, "Phototypesetting/Composing" is coded under
     48.0205, whereas "Fundamentals of Lettering" is placed
     under 50.0402.

o   Similarly-titled courses are found under the Industrial
     Arts subsection, **Graphic Arts** (21.0106), **Graphic and
     Printing Communications** (48.02), **Graphic Arts Technology**
     (50.08), and **Graphic Design** (50.0402). The section in
     which such courses should be placed is identified in the
     course title. Coders should refer to the school catalog
     to ascertain which department or degree program is
     offering the course prior to making a coding selection.

o   Similarly-titled courses are found under **Commercial
     Photography** (48.0204), **Photographic Laboratory and Dark-
     room** (48.0207), **Photography** (50.0605), and **Photographic
     Technology** (10.0103). As a general rule of thumb, the
     section on Photography emphasizes artistic endeavors;
     Photographic Laboratory and Darkroom and Photographic
     Technology focus on technical applications; and
     Commercial Photography on commercial uses. To assist
     coders, however, the section in which such courses should
     be placed is identified in the course title. Coders
     should refer to the school catalog to ascertain which
     department or degree program is offering the course prior
     to making a coding decision.

Similar Courses in Two or More CIP Sections

     None.

CIP SECTION: Visual and Performing Arts (50)

PANELIST: None.

PROBLEMS ADDRESSED AND THEIR RESOLUTION:

Interpretation of CIP Section

o   Similar introductory classes are found under **Fine Arts,
      General (50.0701)**, **Visual and Performing Arts, General
      (50.01)** and **Art History and Appreciation (50.0703)**. To
      avoid confusion, broad topic classes describing the
      context of art, such as "Understanding of Art", are
      placed under **Fine Arts, General (50.0701)**. Classes
      describing art during a specific time period, such as
      "Byzantine Art", are coded in **Art History and Apprecia-
      tion (50.0703)**.

o   **Design** courses appear in several areas throughout the
      CIP, including Section 50.04 under the Visual and Per-
      forming Arts. In coding this subject matter, coders
      should refer to the school catalog to review the course
      descriptor and ascertain which department or degree
      program is offering the course prior to making a coding
      selection.

o   Classes providing instrumental instruction (normally
      termed "Applied Music") are coded under **Music Performance
      (50.0903)**.

o   **Sculpture (50.0709)** and **Ceramics (50.0202)** are over-
      lapping areas and some classes involve instruction in
      both sculpture and ceramics. In these instances, the
      courses were coded under **Sculpture**.

o   **Fine Arts, Other (50.0799)**, **Graphic Arts Technology
      (50.08)**, and **Design Graphics (50.0402)** overlap in the
      subject area of printing. Courses coded under Design
      Graphics (50.0402) cover basic lettering and graphic
      design. Those placed under Fine Arts, Other (50.0799)
      are printmaking as an artistic endeavor. Courses under
      in Graphic Arts Technology (50.0801) provide instruction
      in commercial printing techniques, such as one would
      find in a publication firm.

Similar Courses in Two or More CIP Sections

o   Similarly-titled courses are found in both **Fine Arts** (50.07) and **Commercial Art** (48.0203). In general, the distinction lies in the fact that the former emphasizes the artistic aspects of art, while the latter focuses on the commercial aspects. The section in which such courses should be placed is identified in the course title. Coders should refer to the school catalog to review the course descriptor and ascertain which department or degree program offers the course prior to making a coding selection.

4.0 TESTING THE CSPEC

The primary reason for developing the CSPEC is to facilitate statistical research and analyses on course-taking behavior at the postsecondary level. An important measurement of the adequacy of the CSPEC in this regard is the validity of the codes assigned to college courses by individual coders using the CSPEC. To test the classification in this area, ASI invited five individuals (to be referred to as coders) to test the CSPEC using actual college transcripts. Two of these coders were the ASI staff who originally coded the classification system; the remaining three were local college graduates from the George Washington University (GWU). The coders were provided with the materials and instruction necessary to use the CSPEC. (ASI originally planned to obtain 100 transcripts for 10 coders to test the coding system, but due to time and budgetary constraints, the number of transcripts coded was reduced to 40 and the number of coders to five.) Each coder was asked to assign codes for courses on the same set of transcripts. The transcripts listed over 650 classes from 11 different schools.

Once the coding test was completed, the results were analyzed for general results. Sample size, both in terms of numbers of coders and numbers of transcripts, was insufficient to allow indepth statistical results.

4.1 Test Objective

The overall objective of the CSPEC testing was to obtain some indication that a group of coders working independently could, in fact, make a consistent appropriate coding decision a significant number of times using the CSPEC. Because, theoretically, there may be no one correct coding answer, for the purposes of the test the "correct" answer was defined as that with the highest level of agreement among the five coders. The level of agreement was reported as the number of coders assigning the same value for each course being coded.

The major expectation tested concerned the greater likelihood of obtaining the highest consensus on the first two coding digits, with coder agreement decreasing thereafter as the number of digits increased.

The logic of this concept is made evident by reviewing the structure of the eight-digit CSPEC code, as referenced in the diagram below.

Example		Breakdown of CIP Code
Letters	= 23	Section
Classics	= 23.02	Subsection
Classics	= 23.0201	Area within a Subsection
Advanced Greek & Roman Mythology	= 23.020101	Specific Course

The first two digits refer to the broad instructional CIP area. In the above example, the two-digit section entitled "Letters" represents "a summary of groups of instructional programs that describes sound, literature, syntax, phonology, morphology, semantics, sentences, prose and verse, as well as the development of skills and attitudes used in communicating and evaluating thought and feelings through oral and written language." The first four digits distinguish a subsection, such as "Classics" which is defined by CIP as " a group of instructional programs that describe the language and literature of the ancient Greco-Roman world in English translation." The first six digits, taken together, delineate a group of related classes within a subsection. In this case, the title is also "Classics." Finally, the eight-digit code designates a specific course, such as "Advanced Greek and Roman Mythology."

To test these expectations, ASI used SPSS (Statistical Package for the Social Sciences) to compare the frequency of agreement among the coders at the various increasing digit intervals. SPSS was chosen because it provides the capability of easily comparing different sections of a complex data set.

As a first step, ASI developed a method of comparing coder responses against each other. This method was based on designating two sets of coder responses as master sets. All other coder responses were then compared to these sets to obtain a percentage of agreement and disagreement.

The two master sets selected were those of ASI coders. Because of their familiarity with the CIP and CSPEC, it was assumed their chance of miscoding courses would be substantially less than that of the GWU coders.

The use of two master sets for comparison purposes was deemed necessary to avoid a problem inherent in selecting only one set. In a situation when all other coders would agree among themselves, but not with one designated master, their responses would be counted as errors although the level of agreement was high. The two master sets approach effectively circumvented this problem.

Since level of agreement was needed for different factors, all relevant variables were coded. The factors of interest included the coder, the school, the student, the specific course at each school, the different components of the eight-digit code, and the source used to determine the code. This information was coded and entered into the EDS computer system at the Department of Education, for analysis.

4.2 Identification of a Sample of School Transcripts

The transcript sample used in the test was selected to obtain representation from a variety of institutions. It consisted of public, private, technical, two-year and four-year schools in different geographic regions of the country. The distribution of schools was as follows:

NAME	CONTROL	LEVEL	LOCATION
Morgan State University	Public	4-year	Northeast
University of The District Columbia	Public	4-year	Northeast
The University of Michigan-Flint	Public	4-year	Midwest
Roosevelt College	Private	4-year	Midwest
State University of New York Agriculture & Technical College	Public	2-year	Northeast
Meridian Junior College	Public	2-year	Midwest
University of Alaska-Fairbanks	Public	4-year	West
N. Seattle Community College	Public	2-year	West
St. Augustine's College	Private	4-year	South
Cleveland Technical College	Public	2-year	South
Vassar College	Private	4-year	Northeast

4.3 Training and Pre-Testing

ASI organized a one-day training session for the three GWU coders prior to the actual coding test. The training covered the following areas:

o A brief overview of the CSPEC and its purpose.

o A description of the CIP format and how to use the CIP documentation in conjunction with CSPEC to code courses.

o An introduction to the four primary source materials used for coding courses: the main CSPEC printout of course codes, titles and descriptions; the CSPEC Title Index, the CIP documentation; and the catalogs from the schools providing the sample transcripts.

o A recommended step-by-step procedure to code courses (See the Appendix).

In addition to these instructions, the coders were given 10 sample courses to code as a pre-test practice run. The coding decisions and how they were made were discussed by the group to ensure their understanding of the materials and methodology.

4.4 Test Environment

The coding test began the day following training with each coder asked to work independently in assigning codes to the same courses listed on the sample of 40 transcripts. All coders were given ready access to the resource materials needed for the coding effort and were afforded regulated, but timely, breaks to reduce the fatigue factor. ASI asked the coders to spend a maximum of ten minutes in making individual course coding decisions. Coding was completed by all participants at the end of the third day of testing.

4.5 Summary of Findings

The analysis conducted was primarily concerned with agreement among coders. As shown by Figure 1 on the following page, the potential for confusion and misclassification begins with the assignment of the first two digits of the CSPEC, and increases as each two additional digits are added. Table 1 below summarizes the major findings of this analysis and reflects the relationships shown in Figure 1.

FIGURE 1

Figure 1. Relationship Between Instructional Programs and
Subject Matter Areas

Instructional Programs
(Distinguished on Basis of Purposes/Objectives)
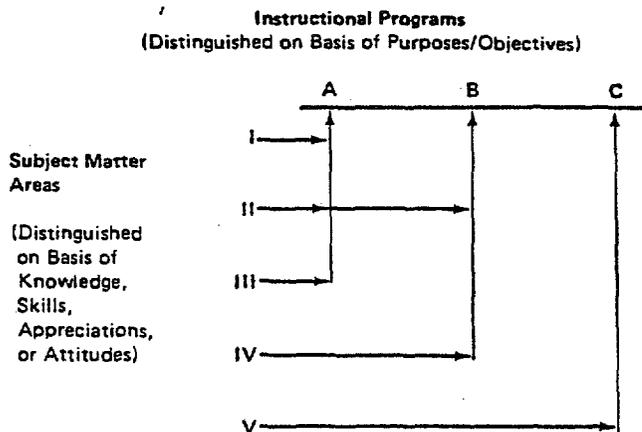
The relationships between Subject Matter Areas I, II, III, and Instructional Program A illustrate a common phenomenon: instructional programs generally derive from many subject matter areas. For example, an instructional program that prepares students for advanced study in physics may draw from mathematics and chemistry, in addition to physics. The relationships between Subject Matter Area II and Instructional Programs A and B illustrate that multiple instructional programs often draw from a common subject matter area. Programs designed for such different purposes as preparing students for advanced study in physics and preparing students as entry-level machinists both draw on mathematics, though at differing levels of complexity. Finally, the relationship between Subject Matter Area V and Instructional Program C shows that many instructional programs have as their sole purpose the transferral of knowledge or skills embodied in a single subject matter area. Examples of this relationship are programs to help students with a communication skill such as reading or programs to acquaint an individual with recent advances in chemistry.

Source: Malitz, Gerald S., A Classification of Instructional Programs, U.S. Department of Education, National Center for Education Statistics, 1981, pg. 4.

Table 1

Agreement Among Coders
by Number of Digits in the CSPEC Code

Number of Digits Matched	Three Coders Agree	Four Coders Agree	Five Coders Agree
First 2 (CIP Section)	80%	76%	72%
First 4 (CIP Subsection)	72%	66%	62%
First 6 (CIP Area within Subsection)	69%	62%	57%
All 8 digits (Full CSPEC)	60%	52%	46%

As indicated, in over 50 percent of the cases, all five coders were able to agree on a six-digit code, which would place the course in the most appropriate grouping of related classes. Nevertheless, in selecting unique course codes (eight-digit), consensus fell just below the 50 percent mark.

These findings reflect certain factors which the test confirmed have impact on the ability of the coder to make an appropriate coding selection using the CSPEC. ASI believes that if these elements are eliminated or at least minimized, the consensus figures in Table 1 will be dramatically increased. The factors impacting on the CSPEC test are addressed in the following section.

4.6   Factors Impacting on Coding Decisions Utilizing the CSPEC

4.6.1 Lack of Coder Experience with the CSPEC

Although not entirely unexpected, the test did substantiate that coders familiar with the CSPEC (that is, the ASI coders who had developed the data base) reached a consensus among themselves more often than those unfamiliar with the system (the GWU coders). This divergence was particularly evident in coding the more difficult sections (reference Tables 2, 3 and 4). One could assume from this evidence that the longer the coder used the CSPEC, the more consistent he would become in making an appropriate coding decision and thus the more likely he would agree with other coders of like experience.

4.6.2. Troublesome CSPEC Sections

Testing the CSPEC in a controlled environment allowed ASI to pinpoint specific sections of the classification that presented problems to coders and should, therefore, receive more emphasis during coder training.

The coders as a group experienced the greatest difficulty in dealing with the Engineering and Engineering-Related Technologies Curriculum Areas (CSPEC Sections 14 and 15). All five failed to reach agreement on the eight-digit code level for these areas, and in 80 percent of the cases, they did not even agree on the first two digits. Nevertheless, the consensus achieved between the experienced ASI coders far exceeded those of the GWU coders. Table 2 presents these conclusions in tabular form.

Table 2
Engineering and Engineering Technologies:
Agreement Among Coders
by Coder Experience
and Number of Digits in the CSPEC

Number of Digits Matched	Experienced Coders (ASI) Agree	Five Coders Agree
First 2 digits	85%	20%
First 6 digits	31%	7%
All 8 digits	23%	0%

Several factors explain this lack of consensus. Engineering and Engineering Technologies are overlapping curricula and somewhat ambiguous. By way of example, a course on "Introduction to Circuits" could legitimately be placed in both sections. Moreover, the courses in these sections are complex for coders lacking an engineering background. Compounding these impediments was the fact that a current catalog from the school providing most of the engineering classes for the test was not available.

Another section which presented coding problems was "Computer and Information Sciences" (CSPEC Section 11), which was often confused by coders with the CSPEC Section 07 on "Business and Office". A common coding error during the test occurred in the placement of introductory computer courses, which could be coded in either section depending on the department offering the courses or the degree program in which the students were enrolled. Here, as in the case of Engineering, the experience of the coder in using the CSPEC was an important factor in the level of agreement. Table 3 presents the level of agreement reached among the coders for the computer curriculum.

Table 3

Computer and Information Sciences:
Agreement Among Coders
by Coder Experience and
Number of Digits in the CSPEC Code

Number of Digits Matched	Experienced Coders (ASI) Agree	Five Coders Agree
First 2 Digits	67%	46%
First 6 Digits	50%	27%
All 8 Digits	50%	27%

A final section which gave the inexperienced coders, in particular, some difficulty was Basic Skills (CSPEC Section 32). A prevalent mistake by coders was to place remedial English classes under the section on Letters (CSPEC Section 23) in lieu of Basic Skills. Once again, the more indepth knowledge of the ASI coders proved to be a key factor in attaining a high level of agreement in this area, as reflected in Table 4.

Table 4

Basic Skills:
Agreement Among Coders
by Coder Experience and
Number of Digits in the CSPEC Code

Number of Digits Matched	Experienced Coders (ASI) Agree	Five Coders Agree
First 2 Digits	96%	65%
First 6 Digits	91%	50%
All 8 Digits	77%	32%

4.6.3 Utilizing Out-of-Date College Catalogs

The test revealed that current catalogs are a prerequisite for correct coding. Course titles as listed on a transcript often do not adequately describe course content. For example, one school might have a class called "English I" which is more commonly known as "Freshman English." However, at another school, "English I" might refer to "Remedial English." In such instances, the coder would need to refer to the catalog for a specific description of the course. Several of the catalogs provided to ASI for the test were not current with their respective transcripts. As a result, a number of courses from these transcripts were not listed in their catalogs, thereby leaving much of the coding decision to guesswork.

4.6.4 Vague Course Abbreviations

Many schools abbreviate both the course title and the department offering the course on their transcripts. On a number of occasions, the test coders misinterpreted these abbreviations and miscoded courses.

4.6.5 Lack of Distinction of Courses by Type of Institution

Similarly-titled classes are offered at two- and four-year institutions. The test coders noted major differences between the content and the complexity of these courses, depending on the type of institution. The CIP (and thus the CSPEC), however, makes no distinction among its instructional programs as to the type of school offering that program or the level of difficulty. This conflict between the CIP and college catalog descriptors represented a source of confusion to the coders during the test.

4.6.6 Incorrect Usage or Underutilization of Source Material

In 74 percent of the cases coded, coders relied solely on the CSPEC alphabetic Title Index to locate the "correct" code. When the title listing was used, there was 26 percent agreement on the eight-digit code among the five coders. This contrasts sharply with the 51 percent level of agreement between the experienced ASI coders in using the Index. The chief cause of this discrepancy was the incorrect use of the Title Index by the three coders lacking experience in using the Index.

Likewise, the GWU coders did not reference the school catalogs as often as required to resolve the dilemma of coding similarly-titled courses found in one or more CIP section. (This problem, which is characteristic of postsecondary curricula, has already been alluded to in Section 3.0.) Instead, they often opted simply to choose the first of the titles they found in the Title Index and go no further in their search.

In like manner, the GWU coders had particular difficulty in using the CIP as a resource document. As previously indicated in Section 3.0, the CIP descriptors of its various sections tend to be non-specific. This non-specificity does not facilitate the coding of specific courses. This lack of understanding of the CIP sections discouraged the coders from utilizing the document in their coding efforts.

4.6.7 Overuse of Certain CSPEC Sections

One tendency evidenced among the three GWU coders was that when a coder became familiar with a specific CSPEC section after spending some time using it in search of a course code, he would likely fall back frequently on this section to code questionable courses. More often than not, these courses would be miscoded.

Once again, a root cause of this inclination was the lack of adequate knowledge of the CIP and CSPEC.

5.0 SUMMARY AND RECOMMENDATIONS

The CSPEC data base of over 10,000 uniquely coded postsecondary courses, if used correctly, is a potentially important survey tool for the Center of Education Statistics. The CSPEC is an expansion of the Classifi-cation of Instructional Programs (CIP) written by the Center for Education Statistics in 1981. The CSPEC is based on the structure of the CIP, dividing 50 major curriculum programs (with two-digit code numbers) into more specific areas of instruction (up to six digits). The CSPEC has taken the CIP one step further, allowing for the assignment of a unique code (eight digits) for each course under an area of instruction. The alternate titles provided by the CSPEC represent those courses whose general content duplicate those which are already assigned an eight-digit code. All courses used for the CSPEC data base were taken from a sample of 60 postsecondary educational institutions.

In order to determine the reliability and ease of use of the CSPEC for survey purposes, ASI conducted a small coding experiment. Five individuals (two who were familiar with the CSPEC and three who were not) were asked to assign codes from the CSPEC to over 650 courses from 40 college transcripts. Test coders were provided with a copy of the CIP, a printout of the CSPEC, college catalogs from each school in the transcript sample, and an alphabetic Title Index listing of all CSPEC courses and their respective codes.

The results of the test indicated that the likelihood of obtaining a consensus on any course code decreased with each CSPEC interval of two digits. In other words, coders agreed on the two-digit curriculum program area assigned each code (72 percent agreement) more often than they agreed on the entire unique course code (46 percent agreement). More importantly, the test brought to the surface certain factors adversely affecting consensus results. (These factors have been outlined in more detail in Section 4.5.) Elimination or minimization of these factors would, therefore, enhance the reliability of coding decisions.

The use of the CSPEC by coders and analysts should be approached carefully. The potential usefulness of the information provided by the CSPEC for research is evident. However, the practical limitations of the CSPEC, beyond its shear volume, should be recognized in working with the classification. Among these limitations are the following:

o The CSPEC does not reflect the level of course work

nor the type of school (particularly two-year versus four-year) offering the course work.

o Postsecondary curricula are not generally divided in accordance with the CIP, which forms the basis of the CSPEC.

o Different instructional programs frequently offer similarly-titled courses. Hence, accurate coding using the CSPEC depends heavily on the proper use of resource documentation, especially the school catalog.

As we learned from our coding test, there are steps which can be carried out to enable coders to take full advantage of the CSPEC. The following presents ASI's suggestions in this regard:

1. <u>Provide Coders with Legible Transcripts with Clear Descriptions of Course and Department Abbreviations</u>

Four of the schools selected for test sample provided illegible transcripts which could not be deciphered by the coders and thus were removed from the test. Good copy is, therefore, an obvious prerequisite for enhancing the coding effort.

Moreover, when a coder knows what academic department offers the course he is coding, he has a better chance of coding the course correctly within the CSPEC. Since many schools use internal abbreviations for their departments (such as OPE for Radiographic Biology) on their transcripts, it is recommended that the schools be asked to send a list of abbreviations and their meanings, along with the transcripts they are providing.

2. <u>Provide Coders with Current Catalogs</u>

In just over 25 percent of the cases coded during the test of the CSPEC, coders had to use sources other than the Title Index. The school catalog was a necessary reference in dealing with vague titles or with courses which could be coded in two or more CSPEC sections. Without the catalog, the coding decision would be left to guesswork. Further, since college curricula are frequently changing, and courses are dropped or added from a school catalog, coders must be provided with catalogs which match the years covered by the transcripts.

3. <u>Conduct Extensive Coder Training</u>

The analysis of the test results confirmed that the more knowledgeable and experienced the coders were in using the CSPEC, the higher the level of consensus in coding courses. In short, familiarity developed both speed and consistency in making appropriate coding decisions.

Although experience is gained through actual usage, familiarity and knowledge of the CSPEC can be developed and fine-tuned in a well-prepared and extensive training session. The one day provided for the ASI test coders proved too short to meet this goal for the three inexperienced

coders. In addition to increasing the length of time devoted to training, ASI would recommend several other lines of action:

o Coders should be given the CIP for review in advance of the training.

o College-educated individuals with expertise in a variety of subject areas as coder are probably the best candidates for coding courses using the CSPEC.

o In addition to the CIP, the CSPEC main printout, the CSPEC Title Index, and the school catalogs, coders should be provided with the summary of the CSPEC Panel comments as listed in Section 3.0 of this report, to become aware of ASI's approach to and interpretation of the CIP as a basis for CSPEC.

o Strong emphasis should be placed on the use of source material, most especially the school catalog and the Title Index. It is important that the coder be able to find clues as to the proper placement of a course in the CSPEC by ascertaining which school department or degree program is offering the course.

o Practice coding on sample data should be both varied and extensive, with both group and individual exercises. The more difficult sections, as pinpointed by ASI in Section 4.5.2, should be emphasized.

4. Provide Quality Control During Actual Coding Effort

Coding courses using the CSPEC is an individual effort. To ensure the consistency of approach and accuracy of coding decisions among many individuals, ASI would suggest an advisor knowledgeable and experienced in the CSPEC be available to the coders at all times to answer questions. Moreover, a periodic quality control check of a random sample of coded classes by such an advisor would also prove beneficial.

As a final note, this technical document has been provided to the Center for Education Statistics as a record of the project's objectives, development and final deliverables. It is also hoped that it may serve as an informational guide to those who will be the end users of the CSPEC in the future.

APPENDIX

Recommended Procedures to Code a Course Using CSPEC

1. Note if the transcript indicates the department in which the course is offered. This will facilitate your selecting the correct section of the CSPEC to place the course. If the department is not listed on the transcript, refer back to the school catalog to trackdown this information.

2. Look down the alphabetic CSPEC Title Index for a course of the same title which is also in the area of study indicated by the department shown on the transcript or in the catalog. Then write that code next to the class. Hopefully, most of your coding will end at this step. Note that for duplicate titles in the listing (that reflect the fact that similarly-titled courses are found in different curricula), the program area offering the course will be part of the title.

3. If the Title Index does not have the title you are looking for, refer to the catalog from the school whose transcript you are coding and read the description provided for the course concerned. Then look in the main CSPEC printout (with descriptors and alternate titles) for the CIP section which coincides with the department or degree program offering the course (see Step 1). Look down the eight-digit listing of courses under that section to find one which closely matches the description of the course you are coding. If you find the match, assign that number to the class concerned. Note that many CIP curriculum areas have four- or six-digit "Other" categories for courses not fitting in to any specific grouping of similar classes. Be sure to check the "Other" category if the no other CIP section fits the department offering the course.

4. If a match is not found in Step 3, the course should be assigned an "Miscellaneous" code. Every six-digit grouping of similar courses has an eight-digit code for miscellaneous courses that are not covered by any of the other eight-digit course codes under that category. The miscellaneous category was established simply because the CSPEC was based on a small sample of all postsecondary institutions and, there-fore, does not encompass all possible postsecondary courses.