

## **Marshall Plan: Science Literacy**

### **Assessment Report (2004-2005): General Education Component Area**

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**By: Judith Silver, Interim Associate Dean, College of Science**

#### **I. Background**

Because students in the College of Science, College of Information Technology & Engineering, and the College of Health Professions take a large number of science courses (See Appendix A), this report will concentrate on examining the science competency of students who are not in those three colleges. For information on the competency of COS, CITE, and COHP students, refer to the annual reports from their individual departments.

In Academic Year 2004-2005, the students in the remaining colleges comprised 77%<sup>1</sup> of the undergraduate student population for Marshall University. Their general education science requirements ranged from seven to 12 hours. As stated in the Marshall Plan, non-science majors meet this requirement by taking an interdisciplinary integrated science course as a portion of their science hours. The integrated science courses differ from traditional scientific content courses in that their content comes from a minimum of two fields and they focus on one area of investigation, or science-related issue, important in modern society. Since scientific issues related to the social welfare are growing more complex and multifaceted as scientific knowledge grows, the ISC courses were envisioned as an approach that would empower students with a scientific way of thinking, kindle an interest in understanding science as a means to further lifetime learning, and allow the development of opinions and the formation of decisions independently of misrepresentation for or against science in the media.

The ISC courses are designed to enable students to learn how scientific investigation is conducted. Technology and the empirical, or statistical, analysis of data are woven into the fabric of the courses. Since a mathematics background of at least MTH 121 is required as a prerequisite for ISC courses, students have baseline facility in organizing and utilizing empirical data. Students learn about experimental design with adequate sampling. They also

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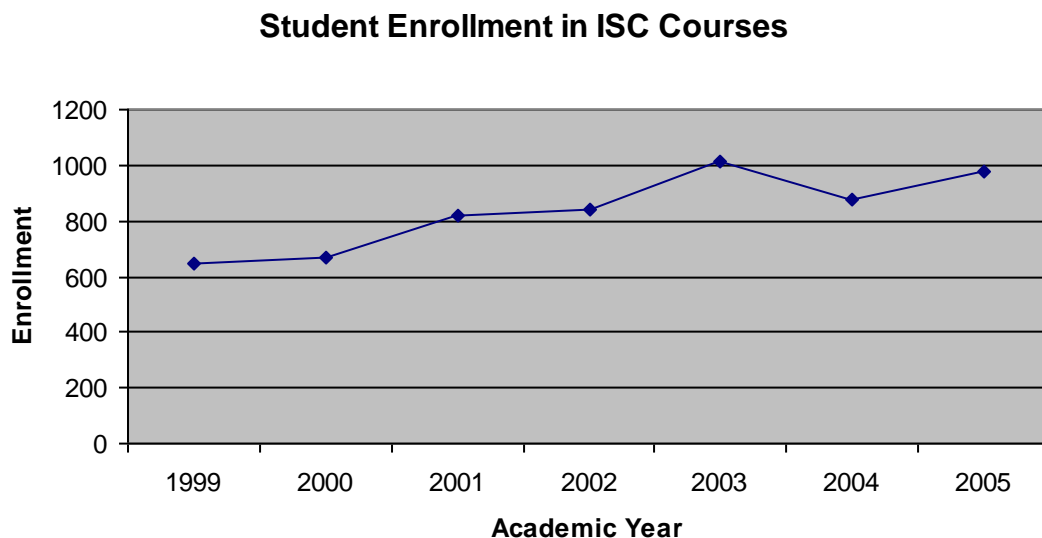
<sup>1</sup> According to Marshall University Institutional Research, there were 1006 students in the College of Health Professions, 143 students in the College of Information Technology & Engineering, and 1038 students in the College of Science during Fall 2004. Since there were 9665 total undergraduate students, this means that 77% of the undergraduates were not in those two colleges.

learn that, in the scientific method, repeated experiments yield similar findings within an acceptable confidence level. Students participate in the process of science by working collaboratively in laboratory or field projects. The need for objectivity and the absence of bias in both data collection and analysis are emphasized. The instructor acts as a coordinator and resource person, while the students are responsible for organizing teams which give regular progress reports. Thus, leadership and fellowship are developed.

Completed projects result in a written assignment and/or presentation, with emphasis on the analysis of data and interpretation of results that support or reject hypotheses. In an ever more complex and heavily populated society, the choices we make as citizens and as a nation will be increasingly centered on the impact of science in our every day lives. Thus efforts are made to instill in students the ability to critically analyze information and to make their own determination about the use and reliability of scientific reports.

Since the ISC courses began in 1995, 10 courses have been approved by the by Integrated Sciences Curriculum Committee, the College of Science Curriculum Committee, and University Curriculum Committee (see Appendix B). Others, which are offered as special topics while undergoing course approval, include Human Ecology, Tropical Ecology, Issues of the Ohio River, Medicinal Plants, Living on Earth, and Transportation & the Environment.

Student enrollment in ISC courses has generally been on an upward trend, as shown by the chart below.



Other information on the offered sections of ISC courses is shown in Appendix C. The number of sections, which is determined by demand, has grown from two to 38 as students populated the ISC Classes to meet the Marshall Plan.

Many of the original professors who developed ISC courses have now retired, or are unwilling to teach these courses on a regular basis. New faculty members are being recruited from among the science faculty. These, together with a cadre of excellent temporary and part time instructors, ensure that the courses are well staffed.

## II. Goals and Outcomes

### A. Component Area Goals

The Science Literacy Proposal approved by the Faculty Senate and President Gilley in fall 1994, SR-94-95- (25) 132(ASCR), stated that:

*Our desire is that all graduates of Marshall University have the necessary mathematical and scientific skills for professional advancement and that they be literate in science. The National Council of Science and Technology Education defines scientific literacy in the following terms:*

1. *“Being familiar with the natural world and recognizing both its diversity and its unity*
2. *Understanding key concepts and principles in science*
3. *Being aware of some of the important ways in which science, mathematics, and technology depend upon one another.*
4. *Knowing that science, mathematics, and technology are human enterprises and knowing about their strengths and limitations*
5. *Having a capacity for scientific ways of thinking*
6. *Using scientific knowledge and ways of thinking for individual and social purposes”*

These six statements have been adopted as the goals of Science Literacy at Marshall University.

### B. Attributes of ISC

In order to maintain some unity in the design of the diverse ISC courses, a template of attributes for ISC was developed. Even though the ISC courses differ widely in the issue and areas of science addressed, all of the courses share the following characteristics:

1. ISC courses are centered on the universality of science and on issues that are relevant to the present and future lives of the students. When possible, students are given the opportunity to select the issues to be considered. While a text may be used for reference, ISC courses are not based on a sequence of topics in a textbook.

2. An issue will generally involve more than one scientific discipline and require students to answer empirical questions by designing experiments, gathering data and interpreting results and by consulting sources other than a text, such as: scientific journals, popular scientific magazines, newspapers, magazines, and web sites. In discussing issues students learn the importance of using empirical data as evidence in making an argument for or against a hypothesis.
3. Students may report the results of their scientific enquiry into issues through papers or oral presentations in scientific format, poster sessions or on web sites.

### C. Learning Objectives/Outcomes

In addition to sharing general attributes, all ISC courses share common learning objectives. In addition, each course has its own specific learning objectives which professors are asked to include in their syllabus. Common learning objectives among ISC courses include the following:

1. Develop systematic approaches and methods to new scientific or other problems encountered in every day life
2. Develop a working knowledge of the scientific method
3. Become familiar with computers as tools of scientific investigation
4. Develop critical thinking skills
5. Be able to assess risks relative to the benefits of scientific and technological processes
6. Develop the type of clarity in writing that is inherent in scientific expression.

## **III. ASSESSMENT**

### **A. Entry Level Assessment Instruments**

The ACT is administered to incoming freshmen at Marshall University. Three portions of the test are especially important in assessing the entry level of students who will take ISC as a part of the science requirement: composite, math, and natural sciences scores. Tables 1(a) and 1(b) below compare these values for the national population and the population attending Marshall University.

**Table 1(a). ACT admission scores by year enrolled in ISC courses.**

<b>Score or Sub Score</b>	<b>2003-2004</b>	<b>2004-2005</b>
<b>MU Mean Composite ACT for ISC Students</b>	20.8	20.4
<b>MU MTH ACT Scores for ISC Students</b>	19.3	19.0
<b>MU Mean NAT SCI ACT for ISC Students</b>	21.2	20.4

National baseline ACT scores can be obtained at <http://www.act.org>. But, because integrated science students took their ACT exams while in high school and are now at least in their sophomore year of college, we can't directly compare their scores to national scores for a particular year. We report here the national averages for years 2000-2003, the years in which it is most likely that these students were tested.

**Table 1(b). National ACT scores by high school graduation year. (Standard deviations are shown in parentheses.)**

<b>Score or Sub Score</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>
<b>National Mean Composite ACT Score</b>	21.0 (4.7)	21.0 (4.7)	20.8 (4.8)	20.8 (4.8)
<b>National Mean MTH ACT Score</b>	20.7 (5.0)	20.7 (5.0)	20.6 (5.0)	20.6 (5.1)
<b>National Mean NAT SCI ACT Score</b>	21.0 (4.5)	21.0 (4.6)	20.8 (4.6)	20.8 (4.6)

Table 1(c) shows what the percentile scores would be for the 2004-2005 ISC students, if they were compared to national norms in various years.

**Table 1(c). 2004-2005 ISC student ACT percentile scores for selected years.**

<b>Score or Sub Score</b>	<b>MU ISC Mean for 2004-2005</b>	<b>Percentile if taken in 2000</b>	<b>Percentile if taken in 2001</b>	<b>Percentile if taken in 2002</b>	<b>Percentile if taken in 2003</b>
<b>Composite ACT</b>	20.4	45	45	47	47
<b>Mathematics ACT</b>	19.0	37	37	38	38
<b>Natural Science ACT</b>	20.4	45	45	46	46

We see that entry-level mean ACT scores for Marshall ISC students are within the middle third of scores for the nation as a whole. This is despite the fact that the Marshall students represented in Table 1 are those who have self-selected not to major in mathematics or science. Thus we would expect ISC student percentile rankings in these areas to be lower than those of the university population or the nation as a whole.

A major concern in teaching a required ISC class is whether the student population has a mathematics background appropriate for the course. Analyzing scientific data requires collecting, grouping, summarizing, and in some cases statistical analysis of data. It is essential that ISC students possess a minimal level of math proficiency, and thus completion of a college level mathematics course is required before a student can enroll in ISC. The vast majority of students applying to Marshall University have the prerequisite Math ACT score of 19.0 that allows them to immediately enroll in MTH 121. Students with a Math ACT 17 or 18 must complete at least one remedial math course before taking MTH 121. By the time the entering freshmen become juniors and seniors, they will have taken MTH 121 or higher and have thus must met the mathematics ISC prerequisite.

With the exception of Physics 101 and Physical Science 109 and 110, the other science courses commonly used to satisfy General Education do not have math requirements. These other courses allow students to gain immediate exposure to science content that counts toward their college's requirements. Requiring college level math as a prerequisite tends to displace the ISC course to a time later than the freshman year. Thus, ISC tends to be the last science course that non-science majors take. The enrolled students then generally have a solid science and math foundation upon which to build. This is necessary because interdisciplinary courses by their nature place demands on students to examine problems and solutions from more than one, and sometimes many, perspectives.

The current curriculum arrangement places students in an excellent position to learn to think clearly and understand how an understanding of science can improve the way they live their every day lives.

## B. Mid Level Assessment Instruments

In order to learn whether grades in ISC are related to academic performance, a comparison of the overall GPA and the grades in ISC were was carried out for Academic Year 2004-2005 (Table 2). When only grades for students completing the course are considered, the correlation coefficient for the year is  $\rho = .97$ . Thus there appears to be an extremely strong tendency for grades in ISC courses to be similar to the grades students earn in their other Marshall University courses. We can also observe that the pass rate was good. During 2004-2005, 944 students made a “usable” grade of A, B, or C; while only 82 made an “unusable” grade of D, W, I, or F.

**Table 2. Comparison of overall GPA and grade in ISC of students completing the course in Academic Year 2004-2005\***

	<b>Total</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>F</b>	<b>I</b>	<b>W</b>
<b>Cummulative Mean GPA</b>	3.01 N=1026	3.29 N=488	2.86 N=341	2.60 N=115	2.53 N=11	2.18 N=19	2.25 N=3	2.75 N=49

\* Data from Institutional Resources

In order to learn whether class standing was related to grades in ISC, a comparison was made of earned hours as compared to performance in ISC classes. As stated earlier, when the ISC courses were first introduced it was anticipated that students would tend to take them as juniors or seniors. Thus students will have completed their math requirement, and probably at least one science course, before attempting ISC. Presentations and reports are required in most ISC courses; so not only is it important for students to complete math and science courses, but it is important that students have had time for their speaking and writing skills to mature before taking ISC. Examining the standing of students taking ISC helps to determine whether that model is being achieved. The results of the study comparing earned hours to grades are shown below in Table 3:

**Table 3. Comparison of the earned hours and grades of ISC students in 2004-2005\***

	<b>Total</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>F</b>	<b>I</b>	<b>W</b>
<b>Cummulative Mean Hours N=1026</b>	99.74	101.39	100.8	99.43	102.82	83.32	81.00	83.61

\* Data from Institutional Resources

There is a positive correlation,  $\rho = .67$ , between total earned hours and grades in ISC courses for academic year 2005; but the correlation is not strong. 527 of the 558 students (94%) who had earned 100 or more hours made a grade of A, B, or C. 417 of the 468 students (89%) who had earned less than 100 hours made A, B, or C grades.

The data collected for Table 3 also give some indication of whether enough ISC courses are available to allow students to take them in a timely manner. In 2003-2004, the average student had taken 104.68 hours of coursework before enrolling in ISC. But in 2004-2005, the average had dropped to 99.74. This shows that students are not waiting as long as they previously did before enrolling in their ISC course. Hopefully this indicates that Marshall University is doing a better job in providing enough ISC course sections to meet the demand.

### **C. Exit Level Assessment Instruments**

#### Academic Profile Test

The Academic Profile Test is used as a nationally normalized baseline assessment instrument for Marshall University students. In Academic Year 2004-2005 it was given to all ISC students. The results are shown in Table 4. Because of its broad coverage, the components of the report are suitable for evaluating the MU Science General Education Component as compared to other institutions. The two measures that are most important for the assessment effort in this study are the Skills Dimension Sub-scores for Critical Thinking and Natural Sciences. In years past this exam has been given to a representative sample of students from all colleges. Since it was given to only ISC students in 2004-2005, it would be unwise to compare these scores to those in past years.



The scores reported here are those of the same group of students that scored at the 45<sup>th</sup> or 46<sup>th</sup> percentile on the Natural Science ACT before they entered college. But, by the time they took the Academic Profile Test they had completed over 100 semester hours of coursework and have nearly completed their ISC courses. The scores are consistent with what would be expected of this group of students. These findings do not suggest an excellent level of achievement in Science General Education; but the scores are in the normal range for all college students. The average Critical Thinking score increased by an impressive 5 percentile points.

**Table 4. Critical Thinking and Natural Sciences Skills Dimension Sub-scores\***

	<b>Number of ISC Students</b>	<b>2004-2005 Scores</b>	<b>National Percentile Score</b>
<b>Critical Thinking</b>	584	110.05	50
<b>Natural Sciences</b>	584	114.00	45

\* Data from the 2004-2005 Academic Profile Report

### Graduating Senior Survey

In past years, data from the Graduating Senior Survey has been included in the ISC Assessment Report. However, information from the 2005 graduating class is not yet available and cannot be included in this report. Results from two key questions from previous surveys are shown in Table 5 and Table 6.

**Table 5.** Graduating senior responses to the statement, “*I believe that the science courses I took increased my understanding of the scientific process.*”

Scales	1999-2000 N=362		2000-2001 N=292		2001-2002 N=327		2002-2003 N=302		2003-2004 N=278	
SA	80	22.4%	62	21.7%	76	23.2%	79	26.2%	70	25.2%
Agree	125	32.0%	99	34.6%	109	33.3%	97	32.1%	84	30.2%
Neutral	100	28.0%	68	23.8%	91	27.8%	77	25.5%	69	24.8%
Disagree	32	9.0%	39	13.6%	37	11.3%	32	10.6%	37	13.3%
SD	20	5.6%	18	6.3%	25	4.3%	17	5.6%	18	6.5%

Table 5 shows that, very consistently in each of the five years included, over 50% of the students completing the survey strongly agreed or agreed that their science courses increased their understanding of the scientific process. Relatively few, less than 10%, of the students strongly disagreed with the fact that the courses were useful.

**Table 6.** Graduating senior responses for those students who took and took an Integrated Science Course to the statement, “*This course conveyed scientific processes more completely than other science courses I took.*”

Scales	1999-2000 N=362		2000-2001 N=292		2001-2002 N=259		2002-2003 N=275		2003-2004 N=259	
SA	31	11.4%	33	15.6%	56	21.6%	71	25.8%	59	22.8%
Agree	55	20.2%	40	18.9%	57	22.0%	69	25.1%	78	30.1%
Neutral	155	57.0%	88	41.5%	84	32.4%	86	31.3%	77	29.7%
Disagree	17	6.3%	32	15.1%	41	15.8%	22	8.0%	26	10.0%
SD	14	5.1%	19	9.0%	21	8.1%	27	9.8%	19	7.3%

Table 6 shows that, in 2002-2003 and 2003-2004, over 50% of the responding students strongly agreed or agreed that ISC courses more completely conveyed the scientific process than other science courses taken. Since this is the most recent data available, most likely the 2005 graduates also think that ISC courses are adequately teaching the scientific process concept.

#### **IV. Plans for the Current Year**

##### **A. Student Learning Objectives**

In Fall 2004, the ISC Learning Objectives were redesigned for clarity and restated to emphasize student outcomes. They are currently stated as follows:

Upon completion of the ISC component of the Marshall Plan students will

1. learn to think critically
2. understand the scientific method and learn the process of scientific investigation
3. know how to distinguish between science and pseudoscience
4. gather and analyze data to draw conclusions based on valid interpretation of results
5. garner skills and competencies in research, writing, and presentation
6. acquire knowledge and gain an understanding of natural science

## **B. Possible Changes in ISC Requirements**

Dr. Stephen Kopp became president of Marshall University in Fall 2005 and has set up a committee to study the undergraduate core curriculum. Because the integrated science requirement is one of the requirements under consideration, no major changes are being recommended by the ISC Committee at this time.

## **C. Existing Assessment Tools and Practices**

Since Integrated Science is an interdisciplinary approach to teaching science there are no standardized exams available to adequately assess programmatic success. From among the existing commercial assessment tools there has been heavy reliance on the Science ACT scores as a benchmark for measuring science proficiency of incoming students and the Academic Profile Test to measure value added as students pass through the general education science curriculum. The Graduating Senior Survey has been used to measure the value added to the scientific knowledge and skills base as students pass through the science curriculum.

## **D. Revised Assessment Plan**

The assessment tools used in the past, although valuable, do not measure all of the learning goals in the ISC Model. In Fall 2004, an effort was launched to develop a comprehensive assessment plan to measure performance in the interdisciplinary science courses as well as the regular science content courses. In the absence of a useful national test designed to measure the achievement of the learning objectives, it was suggested that a portfolio be created for each ISC course. The tools used to assess the portfolio items are listed in bold type in the revised Assessment Plan below.

**Table 7. Assessment Plan for Science Literacy, revised Fall 2004**

Assessment Tool		Learning Objective Assessed*					
		1.	2.	3.	4.	5.	6.
A.	<b>Pre test/post test on the scientific process</b>	✓					
B.	<b>Lab Report on the Process of Science. Students will make observations, develop hypotheses, design experiments, collect data, and draw conclusions. Submit as a Word document.</b>	✓	✓	✓	✓	✓	✓
C.	<b>Writing Assignment—Comparative critique of two papers one chosen as an exemplar of science and one as an example of pseudo science. Minimum 3 pages, double spaced submitted as a Word document.</b>	✓	✓		✓	✓	✓
D.	<b>Writing Assignment—Provide a synthesis based on three or more reference sources emphasizing scientific findings and the strength of those findings. Minimum, 3 pages double spaced submitted as a Word document.</b>	✓	✓		✓	✓	✓
E.	<b>Presentation—Oral presentation summarizing an area of scientific research based on a minimum of three references. Minimum, 10 minutes. Submit as PowerPoint.</b>	✓	✓		✓	✓	✓
F.	Academic Profiles Test administered to a sample of Marshall University graduating seniors who have completed the science literacy component of the Marshall Plan	✓					✓
G.	Graduating Senior Survey summaries submitted by those responding to the questionnaire administered to graduating seniors		✓				

\* Numbers refer to the six learning objectives outlined in Section IV B.

The revised assessment plan adds five assessment tools (bolded) to the two already in use (not bolded), forming a comprehensive method of assessment that will provide more substantive data on student learning. Average student scores in each of the seven areas will then be computed and included in the annual report.

Assessment Tool A will contain a pre-test component and a post test component. The pre-test will be administered very early in the semester before any content is discussed. The post test will comprise of a set of questions

embedded on an exam in each ISC course. Assessment Tools B-E consists of assignments or projects to be completed in each class. A sample of 20% of the portfolios, identified by a random number generator, will be examined by an independent panel of judges at the end of the term. Assessment tool F, the Academic Profile Test, will be retained to provide national standards on critical thinking and knowledge of natural science. Assessment tool G, the Graduating Senior Survey is also being retained to provide data on student perceptions of skills gained in understanding the scientific process. It will also ascertain student opinion on whether the scientific process was conveyed better in the ISC course or in other courses taken.

As of Fall 2005, not all ISC course syllabi have been shored up to assure the inclusion of these tasks. For some of the instructors, this means that topics need to be added or lab work needs to be expanded. We are in the process of making these requirements uniform. When this is achieved, the results from items A–E will be included in the annual report. Our goal is to have this in place by the beginning of the Fall 2006 semester.

## Appendix A

### Science Requirements for Baccalaureate Students in Science-Oriented Colleges

College	Degree Program	Science Courses Required
Health Professions	Nursing	BSC 227, BSC 228, BSC 250, CHM 203, CHM 204
	Medical Technology	BSC 227, BSC 228, BSC 250, BSC 424, CHM 211, CHM 212, CHM 217, CHM 218, CHM 327, CHM 365, PHY 201, PHY 202, PHY 203, PHY 204
	Cytotechnology	BSC 120, BSC 121, BSC 227, BSC 228, BSC 250, BSC 300, BSC 322, BSC 324, CHM 211, CHM 212, CHM 217, CHM 218, CHM 327, PHY 201, PHY 202, PHY 203, PHY 204
	Communication Disorders	BSC 227, PHY 101, PHY 101L, CD 241 <i>Introduction to Communication Science</i> , CD 429 <i>Anatomy &amp; Physiology of the Speech and Hearing Mechanism</i>
	Dietetics	BSC 120, BSC 227, BSC 228, BSC 250, BSC 302, CHM 211, CHM 212, CHM 217, CHM 218, CHM 327, CHM 365
Information Technology & Engineering	Civil Engineering	CHM 211, CHM 212, CHM 217, CHM 218, PHY 202, PHY 204, PHY 211, PHY 213
	Computer Science	BSC 120-121, or CHM 211-212 & 217-218, or PHY 211-214; and at least one other core BSC, CHM, GLY, or PHY course.
	Safety Technology	BSC 104 or BSC 120, CHM 211, CHM 212, CHM 217, CHM 218, PHY 210, PHY 202, PHY 203, PHY 204
Science	All Programs	12 hrs of BSC, CHM, GLY, or PHY courses distributed in at least two fields

## Appendix B

### Integrated Sciences (ISC) Course Descriptions

**200 Energy:** from photosynthesis to steam engines. 4 hrs.

Relationships between present and historic levels of energy consumption and human population growth are examined. Issues compare energy use and technology of class members to comparable populations in developing countries. (PR: MTH 121 or higher, except MTH 400 and MTH 401)

**201 Biotechnology.** Biotechnology explores scientific, political, economic, and ethical aspects of recombinant DNA technology and genetically altered organisms. Class projects include DNA manipulation and analysis, forensic studies, and Internet exploration. (PR: MTH 121 or higher, except MTH 400 and MTH 401)

**202 Freshwaters of the World.** The course discusses the physics, chemistry, geology, and biology of freshwaters, its importance for all living things, and the need for conservation and pollution-prevention of this invaluable resource. (PR: MTH 121 or higher, except MTH 400 and MTH 401)

**203 Doing Science: The Central Paradigms.** Students will investigate the nature of science by studying several of its central theories and other issues. Students will gather and interpret evidence and research original and secondary sources. (PR: MTH 121 or higher, except MTH 400 and MTH 401)

**204 Global Warming.** 4 hrs. Model the social, economic, and scientific data using algebra as it relates to global warming. (PR: MTH 121 or higher except MTH 400 or MTH 401)

**205 Who-done-it: Introduction to Forensic Science.** The relationship between scientific process and crime solutions will be examined. Particular attention will be given to use of DNA technology and probability theory in criminal justice system. (PR: MTH 121 or higher, except MTH 400 and MTH 401)

**206 Living in Space.** A space science courses that explores NASA-directed research. Students will compare "ground based" investigations in plant science, physics, geology, human behavior and physiology with the results from space flight experiments. (PR: MTH 121 or higher, except MTH 400 and MTH 401)

**207 Coal Science.** Examines the importance of coal to industrialized nations and the operation of the John Arnos power plant. There is an assessment of the impact of mining activities on the environment. (PR: MTH 121 or higher, except MTH 400 and MTH 401)



**208 *Evolution: Process of Change.*** The issue of evolution is investigated. Topics from the Big Bang to the evolution of viruses are considered. Emphasis is on environmental, genetic, and molecular mechanisms governing change. (PR MTH 121 or higher, except MTH 400 and MTH 401)

**209 *Chemistry in the Home.*** An introduction to basic concepts of chemical science as it applies to materials commonly found within the household. Students will be expected to learn how to evaluate potential hazards of such materials.

**210 *Science & the Visual Arts.*** An overview of how science and mathematics contribute to the visual arts. Emphasis on perspective, proportion, scientific topics in art, mathematically based art forms, and artist's materials.

## Appendix C

### ISC Courses by Year

Semester	ISC Course numbers	# Different Courses	Total # Sections	Total # Faculty	Total # Students
199901	200,202,203,206,280,281,282	7	10	7	222
199902	200,202,204,205,206,280	6	10	7	229
199903-6	200,202,203,204,205,207,280,280	8	8	10	198
200001	200,202,203,208,280,281	5	8	6	181
200002	202,203,204,205,208,281,282	7	11	8	277
200003-6	200,202,204, 205,207,280	6	6	8	207
200101	202,203,205,208, 280,281,282	7	12	8	290
200102	204,205,280,281,282,283	6	13	11	279
200103-6	200,202,204,205,207,208,280,281,282	9	11	12	247
200201	200,204,205,280,281,282,283	9	15	9	295
200202	204,205,280,281,282,283	6	13	10	297
200203-6	201,202,205,207,208,280,281,282	8	11	11	248
200301	200,202,203,205,206,208,280,281,282, 283	10	15	14	337
200302	200,204,205,280,281,282,283	7	18	19	397
200303-6	200,201,202,204,205,207,280	7	12	14	278
200401	202,205,280,281,282,283	6	13	8	315
200402	201,202,204,205,281,283	6	16	10	356
200403-6	201,202,204,205,281,282,283	7	10	9	206
200501	205,280,281,282,283	5	13	6	329
200502	204,280,281,282,283	5	18	10	421
200503-6	201,204,205,281*,282	4	11	8	227

\*ISC 281 is counted as one course, though it didn't necessarily have the same special topics title in each of the summer terms.