



Natural Sciences: A Program Review

Jim Horne, Commissioner

March 2004

J. David Armstrong, Jr., Chancellor

The Florida Community College System (FCCS) is required to review its educational programs every five years (Section 1001.03(13), Florida Statutes). This review reflects the status of the natural science courses offered at Florida's 28 community colleges from 1996-2001. Although most of the 28 community colleges do not offer Associate in Arts degrees in the natural sciences area, they play a vital role in preparing students to successfully articulate into four-year institutions to acquire a science degree. The study reveals enrollment trends, student performance, how technology has impacted teaching methods, as well as identified some of the pertinent issues in science today.

Technology Has Significantly Impacted the Teaching of Science in the FCCS Over the Past Five Years. A major factor influencing these changes is the introduction of technology in classrooms and laboratories over the past several years. Today's students are exposed to data and information through the World Wide Web that was previously unavailable. In addition, technology has exponentially increased the time in which experiments can be conducted, as well as expanded the types of experiments that can be conducted in the laboratories. Also, more than half of the colleges offer natural science courses through distance learning, as indicated in the table below:

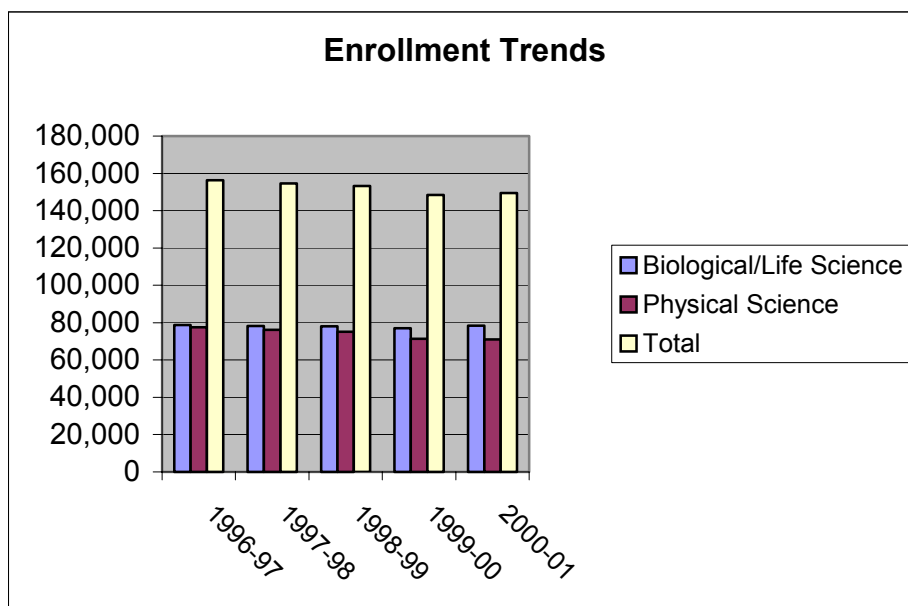
Table I
Summer 2002 Distance Learning Programs

COLLEGE	Biological Science	Chemistry	Environmental Studies	Geology	Interdisciplinary Science/ Natural Science	Physics	Oceanography/ Ocean Engineering
Brevard		X				X	
Broward	X						
Edison	X	X				X	
FCC at Jacksonville	X	X		X		X	
Florida Keys				X			
Gulf Coast	X	X				X	
Hillsborough	X			X		X	
Indian River	X	X			X	X	X
Lake-Sumter				X		X	X
Miami-Dade	X					X	X
Palm Beach	X	X		X			X

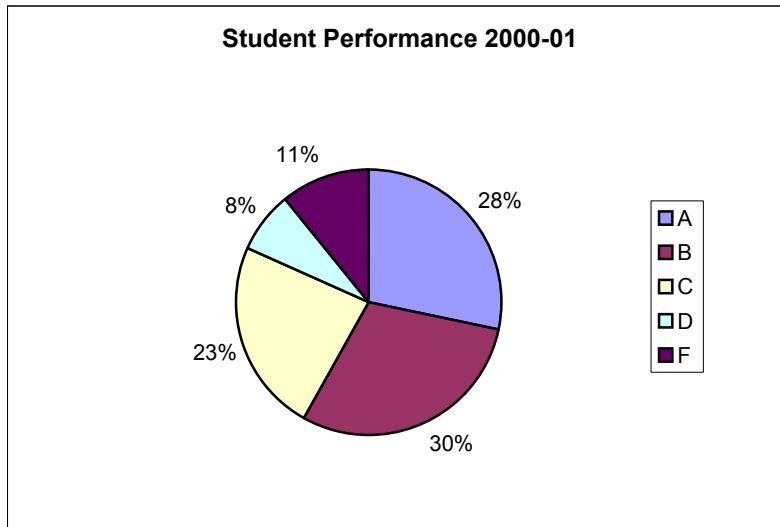
**Table I (Continued)
Summer 2002 Distance Learning Programs**

COLLEGE	Biological Science	Chemistry	Environmental Studies	Geology	Interdisciplinary Science/ Natural Science	Physics	Oceanography/ Ocean Engineering
Pasco-Hernando	X	X					
Pensacola	X			X		X	
St. Petersburg	X	X	X	X	X	X	X
Santa Fe	X	X					
Seminole				X		X	X
South Florida				X		X	X

Enrollment Decrease in Science Courses is an Area of Concern in FCCS. This study revealed a steady decline in the number of students enrolled in physical science courses from 1996 through 2000, with a slight increase in 2001. Although the decrease in enrollment coincides with the drop in overall enrollment within the FCCS during that same period, any decrease in enrollment in the Natural Sciences is an area of concern because of the critical need of professionals in science-related fields.

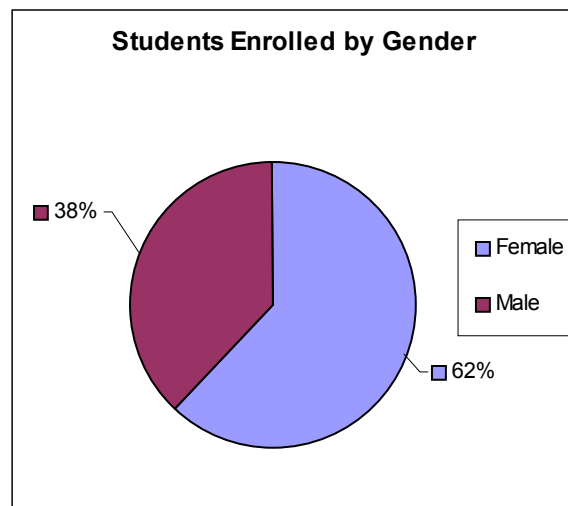


The Majority of the Students Successfully Completed Science Courses. The majority of the students are successfully completing the science courses. In 2000-01, 81% of the grades awarded were “C” or above.



“Hot Topics” in Science. Some of the relevant issues that students are concerned about that were identified during the survey included genetic research and some of its ethical, legal and social concerns that exist, as well as environmental science, especially in relationship to Florida’s Everglades.

Females Dominate Science Courses in FCCS. Although science has traditionally been a male dominated field, the majority of the students enrolled in natural science courses in Florida’s community colleges are female, representing 62%. This may be a reflection of the fact that females outnumber males in over-all enrollment at Florida’s Community Colleges. It should also be noted that students are required to take natural science courses as part of their general education requirement to obtain an Associate of Arts or Associates of Science degree.



FCCS Science Programs are Responsive to the Needs of Elementary Education Teachers. With the high demand for teachers in Florida, the community colleges have been responsive in designing science programs to address the needs of science teachers in elementary education and re-certification.

Consideration for Future Studies:

Since technology has had such a tremendous impact in the FCCS, a future study could analyze the effects of the use of technology in the classrooms, laboratories and distance learning to determine its effectiveness in student success. As more classes and laboratories are offered through distance learning, areas of concern that could arise are how the colleges protect the integrity of the courses and how students develop skills to perform experiments that require hands-on experience.

While the decrease in enrollment from 1997 to 2000 of natural science courses could be directly related to the overall decrease in enrollment at Florida community colleges, some of the colleges continue to show a decline. Further research could be conducted at the colleges to determine if there have been any major changes in their curriculum over the past few years. Also, it would be interesting to review those colleges that did not see a decline in enrollment in their natural science courses.

Relevant References

- ◆ Coalition for Education in the Life Sciences web site (2002). <http://www.wisc.edu/cels/>
- ◆ Division of Science Resources Statistics, 2002 (online). <http://www.nsf.gov/sbe/srs/stats.htm/>
- ◆ U. S. Department of Education Biological and Environmental Research Program/Human Genome Research (online). <http://www.science.doe.gov/>
- ◆ Florida Academic Counseling and Tracking for Students (FACTS) web site. (2002) <http://www.facts.org>
- ◆ Department of Education, Florida Community College System, [2002 Fact Book](#).
- ◆ [Science and Engineering Indicator 2002](#), National Science Foundation (online). <http://www.nsf.gov/sbe/srs/seind02/start.htm>

For more detailed information on Natural Sciences in the Florida Community College System, please see the full program review document at: <http://www.dcc.firn.edu/Vision/accountability.htm>.

Office of the Chancellor
Florida Community Colleges and Workforce Education
Florida Department of Education
325 W. Gaines Street, Room 1314
Tallahassee, Florida 32399-0400
(850) 245-0407
www.flboe.org/cc