

James Madison University

In Brief: Located in the heart of Virginia's Shenandoah Valley, JMU is recognized for its broad range of liberal arts education. More than 15,000 students attend JMU, which offers primarily bachelor's and master's degree programs.

The text in red following each measure is the institution's optional narrative about the measure.

Mission

Describes the institution's core values and priorities

JMU's mission statement approved by the Board of Visitors is:

"We are committed to preparing students to be educated and enlightened citizens who will live meaningful and productive lives."

Profile Measures

Descriptive statistics about the institution

Enrollment by Race/Ethnicity

Enrollment by Geographic Region within the Commonwealth

Enrollment by Full-time/Part-time Status

Enrollment of New Undergraduate Transfer Students by Age Distribution

Degree Inventory

General Fund Appropriations Per In-State FTE

Enrollment Projections (SCHEV 2B)

System-Wide Measures

Fourteen measures of operational efficiency and academic quality

The Student Experience

1. First-year Student Retention Rate

The first-year retention rate, that is the percentage of first-time, full-time students that start in the fall and enroll the following fall, indicates how well institutions retain students from the fall of their first year to the fall of their second year, thus allowing them to progress toward their goal of earning a baccalaureate degree. Traditionally, this has been called freshman-to-sophomore retention, however those terms refer to specific numbers of credit hours earned and thus it may be misleading. First-year student retention is probably more accurate.

First-year Student Retention Rate

2003-04	Peer Group Average
92%	82%

1998- 99	1999- 00	2000- 01	2001- 02	2002- 03	Five- Year Average
91%	90%	91%	91%	92%	91%

This measure is consistent with data sent to the Center for Student Retention Data

Exchange (CSRDE).

2. Number of Transfer Students from Virginia two-year colleges

The number of transfer students from two-year colleges (Richard Bland College and VCCS) in Virginia assesses how accessible an institution is to transfer students from two-year institutions planning to earn baccalaureate degrees.

Number of Transfer Students from Virginia two-year colleges

1999-00	2000-01	2001-02	2002-03	2003-04	Five-Year Average
210	257	261	259	294	256.0

Number of Transfer Students from Virginia two-year colleges with Associate Degrees

1999-00	2000-01	2001-02	2002-03	2003-04	Five-Year Average
141	164	183	198	218	180

3. Size Distribution of Undergraduate Class Sections

The distribution of undergraduate class size is a strong set of indicators that describe the learning environment in ways that simple student-to-faculty ratios do not, without placing perhaps undue emphasis on class size. Smaller class sizes may be indicative of higher academic quality, whereas larger class sizes may be indicative of increased institutional efficiency. Excludes labs, discussion sections and independent study courses which are often smaller in size.

Size Distribution of Undergraduate Class Sections

Number of Students	Fall 2001	Fall 2002	Fall 2003
2 - 9	10%	9%	7%
10 - 19	27%	24%	24%
20 - 29	29%	32%	31%
30 - 39	14%	16%	17%
40 - 49	7%	7%	7%
50 - 99	10%	9%	11%
100+	4%	4%	4%

JMU's submission is consistent with US News & World Report methodology in which the first range of class size is "2-9", not "1-9".

4. Percent of Lower-Division Enrollments Taught by Full-time Faculty

A complementary measure to the class size measure above is the percentage of lower-division courses taught by full-time faculty. This measure indicates the number of full-time faculty versus adjunct faculty teaching lower division courses. A higher percentage of courses taught by full-time faculty is assumed to be a positive indicator of academic quality, whereas a lower percentage of courses taught by full-time faculty may be a positive indicator of fiscal efficiency, since part-time faculty are generally less expensive than full-time faculty.

Percent of Lower-Division Enrollments Taught by Full-time Faculty

	Fall 1999	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Five-Year Average
Sections	76%	74%	76%	71%	73%	74%
Sub-Sections	75%	75%	71%	82%	71%	75%

Five-Year Average is not a weighted average.

5. First-Time, Full-Time Graduation Rate after Six Years

This measure is an indicator of how well institutions serve undergraduate students in achieving their presumed goals for higher education -- namely, a bachelor's degree -- within a reasonable amount of time. The calculation is based in federal methodology and is required to be published by all Title IV eligible institutions as a response to Public Law 101-142 The Student-Right-to-Know and Campus Security Act.

First-Time, Full-Time Graduation Rate after Six Years

1996 Cohort	Peer Group Average
80%	61%

1999	2000	2001	2002	2003	Five-Year Average
79%	80%	80%	78%	80%	79%

1997 cohort six-year graduation rate is 79.9%.

6. Average Time-to-Degree for Undergraduate Degrees

A complementary measure is the average time-to-degree for undergraduates pursuing baccalaureate degrees, which indicates the amount of time (in years) a student can reasonably expect to invest in order to graduate from a given institution. This measure also reflects such institutional characteristics as course availability as well as student characteristics.

Average Time-to-Degree for Undergraduate Degrees

Grad in 1998-99	Grad in 1999-00	Grad in 2000-01	Grad in 2001-02	Grad in 2002-03	Five-Year Average
4.2	4.2	4.2	4.2	4.3	4.2

The average time-to-degree at JMU is especially significant because JMU also has a six-year graduation rate of almost 80%.

7. Percentage of Living Undergraduate Alumni who Donate Annually

A final measure related to the student experience is the percentage of living undergraduate alumni that contribute to an institution in a given year which assesses the commitment alumni have to an institution, presumably based on positive experiences and favorable outcomes due to their education. It also assesses the institutions' ability to realize a potential financial resource. This measure compares each institution's FY2000 data to the two-year (1999-2000) average of their faculty salary peers.

Percentage of Living Undergraduate Alumni who Donate Annually

2002**Peer Group Average****14%****13%**

13.8 percent was reported to the 2002 US News & World Reports Survey (Academic year 2001-02). Data reflects FY01 (2000-01 fiscal year) operations. Peer data from SCHEV, year unknown.

System-wide Measures - Facilities and Operations

8. Classroom and Laboratory Space Utilization

This measure assesses how many hours a week an institution offers courses in its classrooms and laboratories and the extent to which those classes and labs are fully occupied. The 'weekly hours of room use' represents the average number of hours that classrooms or laboratories are used for courses. The 'weekly hours of station use' represents the average number of hours that available seats within classrooms and laboratories are used by students in courses. The 'percent of occupancy' is the result of dividing the station use hours by the room use hours.

Although utilization rates vary from institution to institution based on its facilities and academic offerings, the State Council of Higher Education for Virginia has recommended that institutions should, on average, use their classrooms 40 hours per week at an occupancy rate of at least 60 percent for an average station use of 24 hours per week. Similarly, for laboratories, the Council recommends that, on average, institutions should use their lab space 24 hours a week with 75 percent of the lab stations for an average station use of 18 hours per week. Utilization rates serve as one of several criteria for assessing institutions' requests to construct new or renovate existing facilities. Fall 2000 data will be added later in Summer 2001 as the final data become available.

Classroom and Laboratory Space Utilization

		Fall 1996	Fall 1998	Fall 2000
Classrooms	Weekly Hours of Room Use	37	40	36
	Percent of Occupancy	76.0%	72.0%	72.0%
Laboratory	Weekly Hours of Station Use	28	29	26
	Weekly Hours of Room Use	26	29	27
	Percent of Occupancy	77.0%	80.0%	75.0%
	Weekly Hours of Station Use	20	23	20

9. Percentage of E&G Spending on Instruction and Academic Support

Dollars spent on instruction and academic support as a percentage of an institution's total E&G expenditures assesses the focus an institution places on instruction as opposed to other 'educational and general' activities, such as administration, departmental research, and public service.

Note: Not all institutions were able to obtain peer comparison data for this measure due to delays in processing the IPEDS by NCES into the Peer Analysis Tool. As these data become available, ROIE will be updated.

Percentage of E&G Spending on Instruction and Academic Support

FY2003	Peer Group Average
68.5%	62.9%

10. Percentage of Management Standards Met

The percentage of management standards met is an assessment of how well the institution manages fiscal affairs by assessing five specific management practices relative to commonly agreed upon standards. The five practices are: 1) institution receives unqualified opinion from the State Auditor of Public Accounts; 2) institution has no significant management comments in the audit report; 3) institution meets the financial reporting requirements established by the Virginia Department of Accounts directive; 4) institution's percentage of accounts receivables outstanding more than 120 days are less than 10%; and 5) institutions' prompt pay percentage is 95% or greater.

Percentage of Management Standards Met

FY1999	FY2000	FY2001	FY2002	FY2003	Five-Year Average
100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

11. Programs eligible for specialized/professional accreditation that hold such accreditation

This measure informs the consumer of the programs with specialized accreditation and the agencies responsible for such accreditation. Some of these accreditations are important to graduates of the programs in question in terms of licensure. Other such accreditations are simply indicators that the program follows a prescribed set of standards for subject area or management practices.

Accreditations and Programs

AACSB International Association for the Advancement of Collegiate Schools of Business <i>College of Business Programs</i>	accredited	
Accreditation Commission for Programs in Hospitality Administration <i>Hospitality & Tourism Management</i>	No	
Accreditation Council for Occupational Therapy Education (ACOTE) <i>Occupational Therapy</i>	accredited	associated with licensure
Accreditation Review Commission on Education for Physician Assistants, Inc. <i>Master of Physician Assistant Studies</i>	accredited	associated with licensure
Accrediting Bureau of Health Education Schools Allied Health Education <i>Occupational Therapy, Physician Assistant, Public Health</i>	accredited	
Accrediting Council on Education in Journalism and Mass Communications	No	

<i>Media Arts & Design, Communication Studies</i>		
American Chemical Society	accredited	
<i>Chemistry</i>		
American Chemical Society	accredited	
<i>Biochemistry</i>		
American Chemical Society	accredited	
<i>Chemistry Education</i>		
American Chemical Society	accredited	
<i>Materials chemistry</i>		
American Psychological Association Professions	accredited	associated with licensure
<i>Scientific Psychology</i>		
Association for Advancement of Health Education	accredited	
<i>Health Sciences, Health Education</i>		
Association of University Programs in Health Administration	accredited	
<i>Health Administration</i>		
Commission of Accreditation of Allied Health Education Programs	accredited	associated with licensure
<i>Occupational Therapy, Physician Assistant</i>		
Commission on Accreditation for Dietetics Education, the accrediting agency for the American Dietetics Association	accredited	associated with licensure
<i>Dietetics</i>		
Commission on Collegiate Nursing Education	accredited	associated with licensure
<i>Nursing</i>		
Council for Accreditation of Counseling and Related Educational Programs	accredited	associated with licensure
<i>Community Counseling, School Counseling</i>		
Council on Academic Accreditation in Audiology and Speech Language Pathology of the American Speech-Language and Hearing Association	accredited	associated with licensure
<i>Communication Sciences & Disorders</i>		
Council on Social Work Education Commission on Accreditation (baccalaureate level)	accredited	
<i>Social Work</i>		
Foundation for Interior Design Educational Research	accredited	
<i>Interior Design</i>		
National Association of School Psychologists	accredited	associated with licensure
<i>School Psychology, Educational Specialist</i>		
National Association of Schools of Art and Design	accredited	
<i>Art</i>		

National Association of Schools of Dance <i>Dance</i>	accredited	
National Association of Schools of Music <i>Music</i>	accredited	
National Association of Schools of Theatre <i>Theatre</i>	accredited	
National Council for Accreditation of Teacher Education <i>Teacher Education</i>	accredited	
Society for Public Health Education <i>Public Health</i>	accredited	
Virginia Board of Nursing <i>Nursing</i>	accredited	associated with licensure
Virginia State Board of Education <i>School Counseling, Education Programs</i>	accredited	associated with licensure

12. Debt Service to Expenditures Ratio

This ratio assesses an institution's total capacity to handle debt by comparing the institution's debt service commitments for facilities to its total expenditures. The Commonwealth uses this ratio as an indicator of fiscal health when reviewing requests for new debt-financed capital projects. Currently, the Commonwealth recommends that debt service not exceed seven percent of expenditures.

Debt Service to Expenditures Ratio

FY1999	FY2000	FY2001	FY2002	FY2003	Five-Year Average
4.6	4.4	5.0	5.5	5.4	5.0

Faculty Support and Productivity

13. Research and Public Service Expenditures per full-time Faculty

The total research and public service expenditures per full-time faculty assesses the average research and public service productivity (in terms of dollars expended) per full-time faculty.

Note: Peer data for this measure are only available in alternate (odd-numbered) years. In order to avoid confusion and ensure apples-to-apples comparisons, institutional data will be updated on the same cycle.

Research and Public Service Expenditures per full-time Faculty

FY2001	Peer Group Average
\$13,937	\$27,811

\$13,937 and peer average for FY2001 use old GASB accounting standards. Current data for this measure using new GASB 34/35 is: FY2001 = \$14,578; FY2002 = \$16,522; FY2003 = \$20,264.

14. Student Credit Hours Taught per FTE Faculty

Total student credit hours taught per full-time equivalent faculty assesses the average teaching productivity of faculty. One should be aware that this measure is often at odds with measures of class size. Further, it may tend to overshadow the fact the faculty have other responsibilities beside teaching. The measure itself is the number of credit hour courses multiplied by the number of students in each course, both undergraduate and graduate. It directly conflicts with a previous measure, number 'Size Distribution of Undergraduate Courses' because smaller class sizes are seen as indicative of higher academic quality, whereas larger class sizes (this measure), are seen as indicative of increased institutional efficiency. A university is always balancing these two measures to be most effective AND efficient.

Student Credit Hours Taught per FTE Faculty

Fall 1999	Fall 2000	Fall 2001	Fall 2002	Fall 2003	Five-Year Average
267	252	254	252	250	255

Institution-specific Measures

Measures contributing special insights and context to the understanding of the institution and what it values

Every student who attends James Madison University (JMU) must complete two years in our General Education (www.jmu.edu/gened/) program, regardless of their major. So, all eleven of our learning measures take place in the General Education program since this experience is common to all JMU students. We use these student learning data in three ways:

- 1) **Competency** - all JMU students must pass these measures before advancing to their sophomore year.
- 2) **Value Added or "change over time"** - these measure differences reported over two occasions: as entering first year students and after course completion.
- 3) **Course versus No Course Comparison** - sophomore level students who have completed the required courses are compared to sophomores who have not yet completed the required General Education courses.

Of our eleven measures, four are competency based: Information Seeking Skills, Basic Technology, Oral Communication, and Writing. For the other seven, student scores are reported on a common scale similar to the Scholastic Aptitude Test (SAT). These measures are: American History and Government, Critical Thinking, Wellness and Human Development, Arts and Humanities, Quantitative Reasoning, Natural World/Science, and Global Experience. We use scores in all these areas to fine-tune sequences within the curriculum. Following are each measure in more detail.

Information-Seeking Skills Test - Competency

The Information Seeking Skills Test (ISST) assesses students' knowledge of, and skills in information retrieval, electronic databases, and the use of the Internet. To demonstrate their knowledge and skills in these areas, students must meet a standard that has been identified by JMU faculty as indicating proficient performance. **All JMU students must pass the ISST before being able to register for their sophomore year classes.**

Basic Technological Skills Tests - Competency

The Basic Technology assessment consists of three tests: word processing, presentation software, and spreadsheets. These tests represent baseline competencies

of computing skills that are expected of all JMU students. For each test, JMU faculty members have identified passing scores that indicate proficient performance. To demonstrate competency, students must pass all three tests prior to being allowed to register for their sophomore year classes. [To demonstrate competency, students must pass all three tests prior to being allowed to register for their sophomore year classes.](#)

Oral Communication Test – Competency

The Oral Communication assessment instrument is used to evaluate JMU students' knowledge in four areas: communication fundamentals, public speaking, interpersonal communication, and small-group communication. [A proficiency standard was set by the speech communication faculty in the spring of 2002 which will be used to estimate the percent of students attaining competence.](#)

Writing - Competency

Writing is assessed using a four-point holistic rating scale, in which a score of four represents excellent writing; two represents minimal competency, and one represents less than competent writing. Students submit a portfolio from their second semester writing course that includes their best two completed written works. [On a four point holistic scale, the average portfolio rating was 2.43 in 2001, 2.47 in 2002, and 2.45 in 2003. The weighted overall average across these three years is 2.45.](#)

American History and Government – Value Added

The American History and Government Test evaluates students' understanding of the major themes and concepts that structure American life from history and government. [In 2004, students who completed JMU's American Experience requirement \(US history or political science\) scored, on average, 51 points higher on the standardized score scale than they did as incoming students.](#)

Critical Thinking Test – Valued Added

The Critical Thinking assessment is used to evaluate JMU students' skills in the areas of interpretation, analysis, evaluation, and inference and in their dispositional attitudes. [In spring, 2004 JMU switched to a new critical thinking test that will be administered to samples of incoming freshmen and mid-year sophomores. Data regarding student growth will be provided when they become available.](#)

Wellness and Human Development - Value Added

Two scenario-based multiple-choice tests assess student learning in the Sociocultural and Wellness domains. A self-report survey is also administered to measure student's own health and wellness behaviors. [Sophomores who have completed at least 3 courses in the Sociocultural domain score 10% higher than sophomores who have completed no coursework in the domain. Results for the Wellness test and survey will be available in Spring 2005.](#)

Arts and Humanities – Course versus No Course Comparison

The Arts and Humanities Test is administered via computer and includes a number of multimedia and text-based stimuli. Students view specific artistic experiences, including watching a dramatic video, listening to recorded music, viewing artwork, and reading passages of literary and philosophical works. [Spring 2004 sophomore students scored, on average, 32 points higher than they did as incoming first year students.](#)

Quantitative Reasoning Test – Course versus No Course Comparison

The Quantitative Reasoning Test measures students' mathematical, graphical, tabular, and statistical reasoning skills. [Students who completed their science and math coursework scored, on average, 20 points higher than incoming first year students.](#)

Natural World/Scientific Reasoning Test - Course versus No Course Comparison

The Natural World/Science Test measures concepts in the natural and physical sciences and in scientific reasoning. [Sophomores who completed their science and math coursework scored, on average, 21 points higher than incoming first year students.](#)

Global Experience Test – Course versus No Course Comparison

The Global Experience assessment instrument evaluates students' understanding of global issues of importance to the human community. [In 2004, students who completed the Global Experience requirement scored an average of 59 points higher on the standardized score scale than they did as incoming students.](#)

Competencies

Institutional reports of student competency in the areas of written communication and technology.

Written Communications

Definition of the Competency

Competent writing is thoughtful, clear, focused, persuasive, and generally effective. Writing samples should provide evidence of clear purpose, awareness of audience, complex thought, well-developed ideas, organization, critical use of sources, control of conventions, and engagement with the subject matter.

Standards of the Competency

Writing samples are evaluated holistically on a four-point scale (4=excellent, 1=less than competent). Overall competency is demonstrated by an average score of 2.0.

Methodology

Through a process of random sampling, four students are selected from each section of the second semester writing course and asked to assemble, in consultation with instructor, a sample of completed work from the course. Two trained faculty, who teach in the writing program, independently rate each writing sample (based on the holistic scale). If scores differ by more than one point, a third rater also evaluates the sample and an average score is computed for each student.

Results	(Competency = average of 2.0 or higher)	
N, % excellent:	52 (avg. 3.5 or higher)	12%
N, % competent:	365	84%
N, % less than competent:	71	16%

Summary

- On a four point holistic scale, the average portfolio rating was 2.43. The departmental goal was an average of 2.5.
- Eighty-four percent of portfolios received an average score of 2.0 or higher.
- Portfolios from one of the four concentrations (package B) were rated significantly lower than portfolios from other packages. This may be due in part to self-selection of weaker writers into these courses.
- Results are close to department's expectations, but a small amount below.

Summary Scoring Guide

4 The writing expresses complex thought, focus, persuasiveness, and effectiveness. As a whole, it demonstrates:

- Clear purpose
- Awareness of audience and occasion
- Complex thought
- Development of ideas with details
- Organization
- Engagement with the subject matter
- Critical use of sources
- Control of conventions with few lapses

3 The writing expresses clear thought and is generally focused, persuasive, and effective. As a whole, it demonstrates:

- Clear purpose
- Some awareness of audience and occasion
- Clear thought
- Developed ideas
- Organization
- Engagement with the subject matter
- Critical use of sources
- Control of conventions with some lapses

2 The writing is generally unfocused and is mostly summary, but may demonstrate some reflection. As a whole, it demonstrates:

- Some sense of purpose, audience, and occasion
- Underdevelopment of ideas
- Some organization
- Uncritical use of sources
- Frequent lapses of control of conventions, though they do not significantly impede meaning

1 The writing lacks focus and reflection. As a whole, it demonstrates:

- Little awareness of purpose, audience, and occasion
- An absence or underdevelopment of ideas
- Disorganization
- Absence of sources or use of sources that are not relevant
- Lapses in control of conventions that impede meaning

Sample passages:

Excellent (This paper received an average score of 3.5)

Humans have the privilege of being the only living creatures in existence who possess the ability to convey thoughts and emotions. In a time when people struggle to be recognized as unique, an individual can search for non-conformity through the contents of a sentence. Writing can be a search for truth. An individual can discover the truth of his or her soul and personality through the simple act of writing. Writing can soon turn into the act of reading. Reading is a window into other people's ideas and feelings. The connection to others can be made through reading. Human beings can better understand each other and the world around through the process of reading. A single piece of paper with the writer's thoughts can easily become a map for self-discovery. Absorbing the words of others through reading can lead to compassion and

understanding.

Competent (This paper received an average score of 2.5)

Most people are still intrigued by the amazing technological innovations that are so prominent in our society. Since so many new and complex computer materials are being thrown into the world, it seems almost impossible to keep up, but some people do. These people are those who have the topnotch computer equipment and sit at their computers all day transformed by what their computers have to offer "With the growing importance of the Internet in everyday life, more and more people are accessing various on-line sources each day" (Ferris). Nowadays, almost anything can be done from your home computer. The Internet offers shopping, weather forecasts, movies, newspapers, interest groups, chatting, and the list goes on and on... it never stops. Many people find the World Wide Web irresistible because it "is informative, convenient, resourceful, and fun" (Ferris). So the Internet does not look too bad from a superficial standpoint, but when considering the negative effects it has on human life, people may start to reconsider. The Internet has been proven to cause Carpal Tunnel Syndrome (CTS), Computer Vision Syndrome (CVS), and mainly Internet Addiction Disorder (IAD). While stuck in this "technological trance," these computer users do not realize the physical and psychological effects their computers have on their lives.

Below competent (This paper received an average score of 1.5)

"Quality is what your customers tell you it is' has been a common but too simplistic throw-away line in some quarters of 'the movement' for some time" ("Award," 1). What this quote is trying to say is that businesses are now the ones to decided what quality is. The idea presented in the previous quote has come along with the creation of the Internet. The creation of the Internet has made an enormous impact on our society. While there are many positives that the Internet brings there are also a lot of problems. Most people know about the problems with pornography and Napster's current condition. One problem that many people do not know about is weblining. What exactly is weblining? Weblining is the process by which businesses use certain information to rate people on how good of customers they would be. Weblining may seem fair to the companies that use it, but it is a process people need to know about and help eliminate it.

Technology/Information Literacy

Definition of the Competency

Computer skills are built into the freshman general education Cluster One requirement, which includes an emphasis on technology used for interpersonal communication and information retrieval. Students are expected to prepare papers and presentations, communicate via e-mail, search the Internet, and achieve a level of information literacy.

Standards of the Competency

To demonstrate competency, students will successfully complete the Tech Level I test and the locally developed Information Seeking Skills Test (ISST). The Tech Level I consists of three subtests in the areas of word processing, presentation software, and general knowledge. The 53-item ISST is composed of four subtests that deal with different content areas: reference sources, database searching, Internet, and ethics. This test also deals with two cognitive levels: application and knowledge. The reliability of each Tech Level I test as measured by coefficient alpha was .73 for general knowledge, .81 for presentation software, and .78 for word processing. The reliability was .87 for the ISST.

In fall 1999, Cluster One faculty were involved in standard setting workshops to determine passing scores using the Bookmark standard-setting procedure for all technology tests. The participants represented General Education, Carrier Library,

Speech Communication, History, College of Business, and the Writing Program. This same faculty had defined the set of basic competencies necessary for the successful completion of this General Education Cluster One requirement. For the Tech I level tests to demonstrate competency, students are expected to attain (at least) the following cut-scores: Word Processing, successfully complete 17 out of 20 tasks; Presentation software, successfully complete 15 out of 20 tasks, and general knowledge, correctly answer 27 out of 35 questions. Overall competency is demonstrated by a combined score of 59 out of 75 tasks/questions on the Tech Level I exam. For the ISST, the recommended cut score for Meets the Standard was 42 items correct. For the Advanced cut score, the recommended cut score was 48 items correct out of 53.

Methodology

All freshmen must successfully complete the Tech Level I and ISST tests by the end of the freshman year or a registration hold is put on their records. In addition students scores on the technology tests become part of their academic record, e.g., as a "milestone". Computerized testing is offered in designated assessment labs and students can repeat the tests as many times as necessary to pass. Support materials, tutorials, and short-term classes are available on-line to assist student in preparing for and passing the multiple-choice tests.

Tech I and Information Seeking Skills Competency Tests:

Passing rates for first-year students who entered JMU in Fall 2000

	Information Seeking Skills Test	General Computer Knowledge Test	MS WordTest	MS PowerPoint Test
% who passed by December 2001	91%	98%	98%	98%
Number who passed (out of 3118)	2,849	3,049	3,054	3,057

- JMU students are required to pass all four of these technology tests before advancing to the second-year. The percentages below 100% generally reflect the percentage of students who dropped out (or stopped out) of JMU after the first year.
- 28% passed the Information Seeking Skills at "advanced" levels.
- The passing standards were set by committees of faculty members representing a variety of departments across the university, using CTB/McGraw-Hill's Bookmark standard-setting method.

Summary

Quantitative Reasoning

Definition of the Competency

James Madison University has established five General Education Clusters of learning objectives required for all students. Cluster Three: The Natural World is comprised of learning objectives most closely associated with Quantitative Reasoning. Students elect course sequences spanning 10-12 credit hours to complete their Natural World requirements. Two of the goals and objectives within Cluster Three define quantitative reasoning for JMU students and faculty.

Students that are competent in quantitative reasoning will be able to do the following:

- Use graphical, symbolic, and numerical methods to analyze, organize, and interpret natural phenomena.
- Discriminate between association and causation, and identify the types of evidence used to establish causation.

These learning objectives provide the framework upon which all packages of courses are reviewed, approved, and assessed for the quantitative reasoning component of the Natural World.

Standards of the Competency

To demonstrate competency, large random samples of entering first-year students were selected for assessment in the Natural World. Sample sizes for the last several years were as follows: fall 2000: 993 students; fall 2001: 746 students; fall 2002: 1084 students; and fall 2003: 1304 students. In this way, entering student performance in scientific reasoning was captured and described. As part of the annual spring Assessment Day, another large representative sample of students at the midpoint of their undergraduate academic careers [45-70 credit hours] was sampled. The sample sizes for these cohorts were as follows: spring 2001: 979 students; spring 2002: 804 students; spring 2003: 1174 students; and spring 2004: 902 students. These samples include transfer students. These data are analyzed to assess the quality and impact of the Cluster Three course packages.

The following analytical methods are used to assess the impact of Cluster Three packages and courses in achieving Quantitative Reasoning:

- Differences—students who have completed all Natural World course requirements should perform better than students who have taken only one or two courses related to quantitative reasoning. Further, students who have completed all course work should perform significantly better on the Quantitative Reasoning test than they did as entering first-year students.
- Relationship—a moderate positive correlation should exist between course grades in courses related to quantitative reasoning and performance on the Quantitative Reasoning test;
- Change—Sophomores and junior-level students should perform better on the Quantitative Reasoning test than entering first-year students;
- Competency—how many of the students that have completed their Cluster Three quantitative reasoning coursework achieve the standard or expectation established by JMU faculty?

The standard setting method selected was the Contrasting Groups method, which involves identifying two naturally occurring groups that should be distinct in relation to the standard that needs to be established. Entering first-year students with no Advanced Placement or transfer credits in mathematics and science form the baseline group. The contrasting group is defined as sophomore-junior level students that have completed their Cluster Three coursework. Students with transfer credits and Advanced Placement test scores were removed from this group as well, forming the least biased group and the best assessment of JMU's impact on student growth. For both groups, scores below chance were deleted, since they are completely unreliable scores. For each of the two groups, the median scores were calculated and the midpoint between them identified. The standard error of measurement was then calculated around this value, forming an upper and lower bound. Students scoring above the upper bound were deemed to have "Exceeded" faculty expectations; those with scores residing between the upper and lower bound were deemed to have "Met" faculty expectation; and those below the lower bound were deemed to have "Not Met" faculty expectations.

The tables below show the percentages of students achieving each standard level on the Quantitative Reasoning test for the last four academic years.

Academic Year 2000-2001

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2000	406	32%	129	55%	223	13%	54
Package Completers 2001	100	18%	18	50%	50	32%	32

Academic Year 2001-2002

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2001	258	29%	74	56%	144	15%	40
Package Completers 2002	149	21%	32	46%	69	32%	48

Academic Year 2002-2003

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2002	639	44%	283	47%	301	9%	55
Package Completers 2003	144	32%	46	43%	62	25%	36

Academic Year 2003-2004

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2003	924	33%	301	50%	466	17%	157
Package Completers 2004	96	19%	18	51%	49	30%	29

The Cluster Three Committee members have reviewed the assessment results over the last several years, and all of the above hypotheses have been tested and supported. The Committee members have concluded that overall, there is substantial evidence that Cluster Three courses enhance mastery of quantitative reasoning competencies. Interested readers can view several Cluster Three Interpretive Reports at the James Madison University Center for Assessment and Research Studies website <http://www.jmu.edu/assessment>.

Methodology

James Madison University conducts two formal Assessment Days each academic year. The fall assessment day takes place just prior to the beginning of classes, and all entering first-year students participate in assessment as part of their required orientation to the university. Students are assigned to testing locations on the basis of the last digits of their JMU ID numbers; thus, students assigned for a particular cluster test form large representative samples. The second Assessment Day takes place in February, and all undergraduate courses are cancelled on this day. Therefore, there are no room or time conflicts; all students with 45-70 credit hours are assigned to testing locations on the basis of the last digits of their ID numbers. These ID numbers do not change over time, so it is possible to assign students to take the same assessment tools they took as entering first-year students, providing one of the change analyses described above.

There are two Quantitative Reasoning instruments that were used in this summary: The Quantitative Reasoning Test is a subset of the items comprising the Natural World instrument. The two Quantitative Reasoning Tests are Version 5 (QR-5) and Version 6 (QR-6). QR-5 is a 27 item test designed to assess the 2 quantitative learning objectives listed above. These items were designed to measure application and understanding of quantitative reasoning skills and processes. The reliability of the QR-5 test is .63. The new QR-6 test was implemented in fall 2003 and consists of 45 items designed to assess the 2 learning objectives. The reliability of this new instrument is .74.

Summary

- Sophomore Quantitative Reasoning scores are significantly higher than entering students;
- Quantitative Reasoning scores increase significantly with increasing numbers of Cluster Three courses; parallel results are obtained with increasing numbers of mathematics courses.
- Multiple regression analyses reveal that Advanced Placement and JMU credit hours significantly and positively predict Quantitative Reasoning test scores; however, credit hours transferred into JMU do not.
- Median correlations between course grades and scores on the Quantitative Reasoning test were significantly greater than zero for math ($r=0.24$) and science courses ($r=0.25$).
- Consistently higher percentages of students that have completed their Natural World coursework have either "Met" or "Exceeded" faculty expectations for performance on the QR-5 and QR-6 instruments.
- Existing data support the hypothesis that Cluster courses enhance mastery of quantitative reasoning skills.

Scientific Reasoning

Definition of the Competency

James Madison University has established five General Education Clusters of learning objectives required for all students. Cluster Three: The Natural World is comprised of learning objectives most closely associated with Scientific Reasoning. Students elect course sequences spanning 10-12 credit hours to complete Natural World requirements.

Students that are competent in scientific reasoning will be able to do the following:

- Describe the methods of inquiry that lead to mathematical truth and scientific knowledge and be able to distinguish science from pseudoscience
- Use theories and models as unifying principles that help us understand natural phenomena and make predictions

- Recognize the interdependence of applied research, basic research, and technology, and how they affect society
- Illustrate the interdependence between developments in science and social and ethical issues
- Use graphical, symbolic, and numerical methods to analyze, organize, and interpret natural phenomena
- Discriminate between association and causation, and identify the types of evidence used to establish causation
- Formulate hypotheses, identify relevant variables, and design experiments to test hypotheses
- Evaluate the credibility, use, and misuse of scientific and mathematical information in scientific developments and public-policy issues

These learning objectives provide the framework upon which all course sequences are reviewed, approved, and assessed.

Standards of the Competency

To demonstrate competency, large random samples of entering first-year students were selected for assessment in the Natural World. Sample sizes for the last several years were as follows: fall 2000: 993 students; fall 2001: 746 students; fall 2002: 1084 students; and fall 2003: 1304 students. In this way, entering student performance in scientific reasoning was captured and described. As part of the annual spring Assessment Day, another large representative sample of students at the midpoint of their undergraduate academic careers [45-70 credit hours] was sampled. The sample sizes for these cohorts were as follows: spring 2001: 979 students; spring 2002: 804 students; spring 2003: 1174 students; and spring 2004: 902 students. These samples include transfer students. These data are analyzed to assess the quality and impact of the Cluster Three course sequences.

The following analytical methods are used to assess the impact of Cluster Three course sequences:

- Differences—students who have completed all Natural World course requirements should perform better than students who have taken only one or two courses in the sequence. Further, students who have completed their course work should perform significantly better than they did as entering first-year students.
- Relationship—a moderate positive correlation should exist between course grades in cluster courses and performance on the assessment test;
- Change—Sophomores and junior-level students should perform better on the Natural World test than entering first-year students;
- Competency—how many of the students that have completed their Cluster Three courses achieve a standard or expectation established by JMU faculty?

The standard setting method selected was the Contrasting Groups method, which involves identifying two naturally occurring groups that should be distinct in relation to the standard that needs to be established. Entering first-year students with no Advanced Placement or transfer credits in mathematics and science form the baseline group. The contrasting group is defined as sophomore-junior level students that have completed their Cluster Three coursework. Students with transfer credits and Advanced Placement test scores were removed from this group as well, forming the least biased group and the best assessment of JMU's impact on student growth. For both groups, scores below chance were deleted, since they are completely unreliable scores. For each of the two groups, the median scores were calculated and the midpoint between them identified. The standard error of measurement was then calculated around this value, forming an

upper and lower bound. Students scoring above the upper bound were deemed to have "Exceeded" faculty expectations; those with scores residing between the upper and lower bound were deemed to have "Met" faculty expectation; and those below the lower bound were deemed to have "Not Met" faculty expectations.

The tables below show the percentages of students achieving each standard level for the last four academic years. Graphic depictions of these tables are provided at the end of the report.

Academic Year 2000-2001

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2000	406	34%	139	42%	171	24%	96
All Courses Completed 2001	100	19%	19	38%	38	43%	43

Academic Year 2001-2002

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2001	258	31%	79	42%	109	27%	70
All Courses Completed 2002	149	20%	30	36%	54	44%	65

Academic Year 2002-2003

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2002	639	50%	317	40%	247	12%	75
All Courses Completed 2003	144	33%	48	34%	49	33%	47

Academic Year 2003-2004

	N	Did not meet Standard		Met the Standard		Exceeded the Standard	
		% of Students	# of Students	% of Students	# of Students	% of Students	# of Students
Freshman 2003	924	42%	386	44%	406	14%	132

All Courses

Completed 2004	96	39%	38	22%	21	39%	37
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The Cluster Three Committee members have reviewed the assessment results over the last several years, and all of the above hypotheses have been tested and confirmed. The Committee members have concluded that overall, there is substantial evidence that Cluster Three courses enhance mastery of Cluster objectives. Interested readers can view the Cluster Three Interpretive Reports at the James Madison University Center for Assessment and Research Studies website <http://www.jmu.edu/assessment>.

Methodology

James Madison University conducts two formal Assessment Days each academic year. The fall assessment day takes place just prior to the beginning of classes, and all entering first-year students participate in assessment as part of their required orientation to the university. Students are assigned to testing locations on the basis of the last digits of their JMU ID numbers; thus, students assigned for a particular cluster test form large representative samples. The second Assessment Day takes place in February, and all undergraduate courses are cancelled on this day. Therefore, there are no room or time conflicts; all students with 45-70 credit hours are assigned to testing locations on the basis of the last digits of their ID numbers. These ID numbers do not change over time, so it is possible to assign students to take the same assessment tools they took as entering first-year students, providing the repeated measure analysis described above.

There are two Scientific Reasoning instruments that were used in this summary: The Natural World Version 5 (NW-5) and Version 6 (NW-6). NW-5 is a 50 item test designed to assess scientific reasoning across the 8 learning objectives listed above. JMU faculty working closely with their liaison from CARS, have written and revised the Natural World test items over several years. These items were designed to measure understanding and consideration of the process of science and important scientific concepts. The reliability of the NW-5 test is .78. The new NW-6 instrument was implemented in fall 2003 and consists of 80 items designed to assess the 8 learning objectives. The reliability of this new instrument is .85.

Summary

- Sophomores score significantly higher than entering students;
- Students who had taken three or more Cluster courses [whether taken at JMU or transferred] score significantly higher than students without courses.
- Median correlations between course grades and scores on the Natural World test were significantly greater than zero for math ($r=0.17$) and science courses ($r=0.28$).
- Scientific reasoning scores increase with additional courses.
- Consistently higher percentages of students that have completed their Natural World coursework have either "Met" or "Exceeded" faculty expectations for performance on the NW-5 and NW-6 instruments when compared to entering first-year students.
- Multiple regression analyses reveal that Advanced Placement and JMU mathematics and science course credit hours significantly and positively predict performances on JMU's Scientific Reasoning Natural World test. Results also indicate that these positive performances are observed regardless of the course sequence a student selects. This is a powerful finding. However, transfer credits do not predict test performance.
- Existing data support the hypothesis that JMU's Cluster courses enhance mastery.

Click [here](#) for a list of James Madison University's peer institutions.

James Madison University's web site is: www.jmu.edu

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