

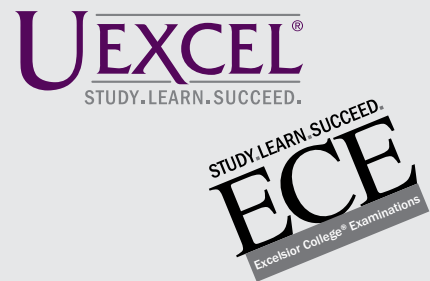
# 2014

UExcel<sup>®</sup> and Excelsior College<sup>®</sup> Examinations

## Technical Handbook



# UExcel and Excelsior College Examinations Credit Recommendations



The following table provides a mapping between the Exam Number, the Exam Title, Catalog Number, (Catalog Number being in parentheses) and Credit recommendations. For the Catalog Number the 3 letter alpha code represents the department followed by the four-digit catalog number. The x is an internal code indicating that it represents an examination and not a course.

EXAM NUMBER	EXAMINATION (CATALOG NUMBER)	CREDITS	LEVEL	EXAM NUMBER	EXAMINATION (CATALOG NUMBER)	CREDITS	LEVEL
459	Abnormal Psychology (PSYx310) .....	3	U	101	Introduction to Psychology (PSYx101) .....	3	L
554	Adult Nursing (NURx310).....	8	U	364	Juvenile Delinquency (SOCx320) .....	3	U
506	Anatomy & Physiology (BIOx210) .....	6	L	352	Labor Relations (BUSx360).....	3	U
250	Basic Genetics (BIOx250) .....	3	L	583	Life Span Developmental Psychology (PSYx210) ..	3	L
359	Bioethics: Philosophical Issues (HUMx310) .....	3	U	565	Literacy Instruction in the Elementary School (EDUx310).....	6	U
323	Business Ethics (BUSx323) .....	3	U	254	Managerial Accounting (ACCx212) .....	3	L
255	Business Law (BUSx230) .....	3	L	453	Maternal & Child Nursing (associate) (NURx220)..	6	L
150	Calculus (MATx150).....	4	L	457	Maternal & Child Nursing (baccalaureate) (NURx315).....	8	U
110	College Writing (ENGx110) .....	3	L	558	Microbiology (BIOx220) .....	3	L
546	Community-Focused Nursing (NURx448).....	4*	U	420	Operations Management (BUSx425) .....	3	U
100	Contemporary Mathematics (MATx100).....	3	L	353	Organizational Behavior (SSCx315, BUSx315) ....	3	U
545	Cultural Diversity (SOCx305).....	3	U	354	Pathophysiology (BIOx410) .....	3	U
360	Earth Science (GEOx101) .....	3	L	140	Physics (PHYx140) .....	6	L
434	English Composition (ENGx111).....	6	L	170	Political Science (POLx170).....	3	L
489	Essentials of Nursing Care: Health Differences (NURx105) .....	3	L	116	Precalculus Algebra (MATx116).....	3	L
488	Essentials of Nursing Care: Health Safety (NURx104).....	3	L	350	Principles of Finance (BUSx350) .....	3	U
484	Ethics: Theory & Practice (PHIx310, BUSx310) ...	3	U	251	Principles of Management (BUSx240) .....	3	L
253	Financial Accounting (ACCx211).....	3	L	252	Principles of Marketing (BUSx250).....	3	L
490	Foundations in Nursing Practice (NURx109) .....	3	L	503	Psychiatric/Mental Health Nursing (NURx320)....	8	U
407	Foundations of Gerontology (HSCx310; SOCx310) .....	3	U	355	Psychology of Adulthood & Aging (PSYx315, HSCx315).....	3	U
403	Fundamentals of Nursing (NURx210).....	8	L	437	Quantitative Analysis (BUSx437) .....	3	U
492	Health Differences Across the Life Span 1 (NURx211).....	3	L	491	Reproductive Health (NURx209).....	3	L
493	Health Differences Across the Life Span 2 (NURx212).....	3	L	537	Research in Nursing (NURx430).....	3	U
494	Health Differences Across the Life Span 3 (NURx213).....	3	L	356	Research Methods in Psychology (PSYx365) .....	3	U
351	Human Resource Management (BUSx410, HSCx410).....	3	U	259	Science of Nutrition (SCIx259) .....	3	L
105	Introduction to Sociology (SOCx105) .....	3	L	357	Social Psychology (PSYx325) .....	3	U
417	Interpersonal Communication (COMx215) .....	3	L	102	Spanish Language (SPAx102).....	6	L
258	Introduction to Macroeconomics (ECOx262).....	3	L	210	Statistics (MATx210) .....	3	L
257	Introduction to Microeconomics (ECOx260) .....	3	L	495	Transition to the Professional Nurse Role (NURx108).....	3	L
362	Introduction to Music (MUSx101).....	3	L	171	Weather and Climate (PHYx120) .....	3	L
363	Introduction to Philosophy (PHIx101).....	3	L	256	Workplace Communication with Computers (BUSx220).....	3	L
				367	World Conflicts Since 1900 (HISx340) .....	3	U
				358	World Population (SOCx330).....	3	U

## Footnotes

U=upper-level credit; L=lower-level credit.

\*As of January 1, 2015 Excelsior College will award 3 credits for the Community-Focused Nursing exam.

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# Introduction

## About This Handbook

The *UExcel and Excelsior College Examinations Technical Handbook* provides the latest available technical and psychometric information about the current forms of the UExcel examinations and the Excelsior College Examinations (ECEs). This *Technical Handbook* is designed to assist college faculty members, administrators, student advisors, testing directors, and other test users in evaluating the test results of these examinations and in setting credit-by-examination policies.

The *Handbook* outlines the test content specifications for each examination listed by examination title and three-digit examination number. The number represents the code that is used by internal systems. See the content guides for more specific content information. These specifications state the content areas covered by the examination and the percentage of items that are allocated to each content area. The psychometric properties of each examination are also described in this *Handbook*. Statistics used to describe these psychometric properties are based on the performance of examinees who have taken the examinations for credit.

Analyses of these statistical results are based on the administration of two of the current forms of an examination as a representative sample. Depending on when the examination forms were first introduced, the results may reflect administration dates that span more than one year.

The *Handbook* is updated annually and reflects the latest available information for existing examinations and the new examinations being introduced this year.

Beginning in July 2013, eight exams previously owned by Pearson VUE under the UExcel brand were merged into Excelsior's existing Center for Educational Measurement (CEM) examination development and registration processes. As a result of the merger, all CEM examinations available to the general public have been re-branded as UExcel Exams.

The ten nursing exams that are part of Excelsior's associate and bachelor's degree programs have retained the Excelsior College Examination (ECE) brand. Psychometric information for both UExcel exams and the ECEs can be found within this Handbook.

Please note that as of January 1, 2015 the two Baccalaureate level Excelsior College Examinations (ECEs), Community Focused Nursing and Research in Nursing, will fall under the UExcel brand of examinations. However, there will be no change to the examination content.

## Excelsior College History

In 1971, the New York State Board of Regents founded Regents College (now known as Excelsior College) as its external degree program. The initial development of the program was

funded by major grants from the Ford Foundation and the Carnegie Corporation. From 1971 until 1998, Regents College operated as a program of the Board of Regents, which also served as its board of trustees, and under the authority of The University of the State of New York by which degrees and diplomas were awarded during that period.

In 1998, the Board of Regents granted the College a charter to operate as a private, non-profit independent institution, and on January 1, 2001, Regents College changed its name to Excelsior College. Today, an independent board of trustees governs Excelsior College, comprised of individuals from across the United States who are prominent in the fields of education, business, and the professions.

From 1998 through 2000, degrees and transcripts were issued under the Regents College name. Since 2001, degrees and transcripts have been issued under the Excelsior College name.

The College, which offers degree and certificate programs in business, health sciences, liberal arts, nursing, and technology, has been continuously accredited by the Middle States Commission on Higher Education since 1977.

## About Excelsior College

The mission of Excelsior College is to provide educational opportunity to adult learners with an emphasis on those historically underrepresented in higher education. The College meets students where they are, academically and geographically, through quality instruction and the assessment of prior learning.

Recognizing that college-level knowledge can be obtained in many ways, Excelsior provides various options to earning college credit, measuring what students know rather than focusing on where or how they learned it. Undergraduate credits are earned through a variety of educational offerings including Excelsior's own online courses and credit-bearing exams; courses (both online and campus-based) from other colleges and universities; certificate programs; and from recognized college-level sources such as military and corporate training programs. Excelsior's graduate programs are delivered online. Through these means, the college makes associate, baccalaureate, and master's degrees more accessible to busy, working adults.

The College's School of Nursing has three times been designated by the National League for Nursing (NLN) as a Center of Excellence in Nursing Education 2005–2008, and 2011–2016.

More than 30,000 adult learners are currently pursuing their associate, bachelor's, or master's degrees. In all, Excelsior College has more than 141,000 graduates throughout the world.

# Introduction

## About the Center for Educational Measurement

The mission of the Center for Educational Measurement is to serve Excelsior College and the global assessment market by providing customized student learning assessment services and products of superior quality. The Center offers innovative assessment solutions that are sound, cost effective, accessible, and responsive to the needs of students, the Excelsior College community, and external constituents. Services include determining assessment needs and providing comprehensive solutions, conducting research on educational measurement issues, and contributing to advances in assessment technology. The Center also provides test development, psychometric, editorial, and assessment technology services to academia, business, and industry both internally and externally, and for those seeking expertise in various forms of assessment of prior knowledge and competency.

## Accreditations and Approvals

Excelsior College is accredited by the Middle States Commission on Higher Education, 3624 Market Street, Philadelphia, PA 19104, telephone: 267-284-5000. The Middle States Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation.

The associate, bachelor's, and master's degree programs in nursing at Excelsior College are accredited by the Accrediting Commission for Education in Nursing (ACEN), formerly known as the National League for Nursing Accrediting Commission (NLNAC), 3343 Peachtree Road NE, Suite 850, Atlanta, GA 30326, telephone: 404-975-5000. The ACEN is a specialized accrediting agency for nursing recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation (CHEA).

The bachelor's degree programs in electrical engineering technology and nuclear engineering technology are accredited by the Engineering Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202, 410-347-7700; [www.abet.org](http://www.abet.org). ABET is a specialized accrediting agency recognized by the Council for Higher Education Accreditation (CHEA).

Excelsior College has received specialized accreditation for its business programs through the International Assembly for Collegiate Business Education (IACBE), 11374 Strang Line Rd., Lenexa, KS 66215; 913-631-3009; [www.iacbe.org](http://www.iacbe.org). The

IACBE is a specialized accrediting agency recognized by the Council for Higher Education Accreditation (CHEA). The business programs in the following degrees are accredited by the IACBE: Bachelor of Science in Accounting (NYS CPA track) and Bachelor of Science in Business.

All the College's academic programs are registered (i.e., approved) by the New York State Education Department.

The Master of Arts in Liberal Studies program has been accepted into full membership by the Association of Graduate Liberal Studies Programs (AGLSP).

The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated and made college credit recommendations for Excelsior College Examinations and UExcel exams.

More information about the [ACE College Credit Recommendation Service](http://www.acenet.edu) is available on its website at [www.acenet.edu](http://www.acenet.edu) in the Programs & Services section. To contact ACE directly, email [CREDIT@ace.nche.edu](mailto:CREDIT@ace.nche.edu) or call 866-205-6267.



# Examination Development Procedures

There are five major stages in the development of each UExcel and Excelsior College Examination: (1) developing a test plan; (2) writing and editing items (questions); (3) evaluating, pretesting, and revising items; (4) assembling test forms; and (5) standard setting.

These test development processes are the same for tests comprised of multiple-choice items and those comprised of extended response (essay) items. The committee members and item writers are teaching faculty and practicing professionals in the United States. Excelsior College staff oversees the technical aspects of test construction in accord with current professional standards.

## Developing Test Plans

A committee of faculty establishes the learning outcomes and objectives for each examination. This examination committee identifies the major content areas to be tested and specifies the proportion of the examination that falls in each content area. A detailed outline of each content area is also developed. The resulting test plan includes the test objectives and test specifications for each content area. The test plan constitutes the principal guide used in subsequent stages of the test development process and is periodically reviewed and revised to ensure that it reflects current developments in each content area.

## Writing and Editing Items

After the test plan has been developed, item writers are recruited and selected based on their expertise and current teaching status. These item writers represent a broad spectrum of colleges and universities across the United States. After the test items are written according to the item writing guidelines, test development specialists review the items to identify and correct any technical, content, or editorial flaws. The pool of items is then presented to the faculty committee for a content review. The committee deletes or revises items that do not adequately match the objectives and content specifications of the examination. The result of this stage is a pool of potential items that are ready for pretesting.

## Evaluating, Pretesting, and Revising Items

Potential examination items are pretested by including them as non-scorable items on regularly administered examinations. Statistical analyses of item properties are conducted, and poorly performing items are again reviewed and refined by the faculty committee, with the help of this statistical information. After this review, items are considered to be of sufficient quality for evaluation of an examinee's knowledge of the subject matter.

## Assembling Test Forms

The procedure for assembling examination forms is a two-phase process.

The first phase of this process consists of selecting items to be scored based on their psychometric properties, such as item difficulty and item information. Two or more parallel forms of scored items are created by selecting pairs of items with relatively equivalent psychometric properties and assigning one item from each pair to different forms. The resulting forms have relatively equivalent psychometric properties, and each form reflects the content specifications outlined in the test plan. In addition, a subset of link items that appear on both forms is chosen. The link items represent a mini-test in both content and psychometric properties. A set of unscored pretest items is also selected for each form.

In the second phase of the form assembly process, the items selected for a form are read through as a whole. The purpose of this step is to identify problems with item interaction. One such example is clueing, where one question contains content that an examinee could use to answer another question, without really knowing the content. Another is overlap, where items test the same content.

Excelsior College's exams are initially constructed and analyzed using classical test theory (CTT). Exams that reach sufficient sample size in volume are transitioned to Item Response Theory (IRT) construction and analysis models.

In assembling extended response examination forms, test developers first determine the number and suitability of items that can be answered within a three hour test window. Forms that are parallel in terms of difficulty and content are then constructed, along with model answers. These forms are then vetted by experts in the disciplines.

## Standard Setting

In the last stage before the assembled forms are published, a group of subject matter experts convene to set the cut-scores for each letter grade threshold levels in a two day standard setting meeting at Excelsior College. For more details about the standard setting process please see the section on "Standard-Setting Methods for Deriving Pass/Fail Standards" later in this section.

## Examination Administration and Scoring Procedures

Excelsior College maintains strict examination security in order to ensure the validity of examination results. Examinations are administered by computer in random delivery order, under carefully standardized testing conditions at Pearson VUE Testing Centers located throughout the United States, its territories, Canada, and at other locations around the globe.

Multiple-choice examinations are computer scored with an objective scoring key and a raw score is determined using either IRT or CTT methods. For most examinations scored using CTT methods, raw scores are converted to percent scores. For two examinations using CTT methods, raw scores are transformed linearly to a standard score distribution with a population mean of 50 and standard deviation of 10.

# Examination Development Procedures

Extended response examinations are scored via aggregated ratings from trained subject matter experts (SMEs) and are converted to percentage of the total points earned. The specific scoring procedure used for each examination is noted in this Handbook.

Credit is transcribed by Excelsior College for examinees who achieve letter grades of C or higher. Colleges and institutions seeking to establish a local credit recommendation standard should contact Jiten Pradhan at the Center For Educational Measurement, Excelsior College (Jpradhan@excelsior.edu or 518-464-8731) for assistance.

We encourage colleges and universities to use the Excelsior College and ACE recommended letter grades of A, B, and C as acceptable standards for awarding credit.

Based on performance, an examinee is awarded a letter grade of A, B, C, D, or F along with diagnostic information describing examinee performance in each major content area. In general, exams that are two hours in length have letter grades of A, B, C, and F; whereas, exams that are three hours in length generally have letter grades of A, B, C, D, and F. The letter grade indicates the examinee's relative proficiency with respect to the learning outcomes specified in the exam content guide. Following are descriptions of the performance at each level:

## Letter Grade Description

- A** - Highly Competent: Examinee's performance demonstrates an advanced level of knowledge and skill, relative to the learning outcomes.
- B** - Competent: Examinee's performance demonstrates a good level of knowledge and skill as reflected in the learning outcomes.
- C** - Marginally Competent: Examinee's performance demonstrates a satisfactory level of knowledge and skill relative to the learning outcomes.
- D** - Not Competent (no credit recommended): Examinee's performance demonstrates weak knowledge of the content and minimal skill relative to the learning outcomes.\*
- F** - Fail (no credit recommended): Examinee's performance demonstrates no knowledge of the content, no skill in the subject, and has not met the learning outcomes.

\*In general, two hour exams do not award a D letter grade.

## Definitions of Psychometric Concepts

### Validity and Content Validation

In general terms, test validity refers to the extent to which test scores support inferences that are consistent with the purpose and intended use of the test (AERA Standards, 2014). One of the several methods of gathering evidence on test validity is content validation. Content validation is the process of assessing how well the content represents and measures the subject matter in the test domain. Content validation determines whether the sample of items included in a test adequately measures the breadth of knowledge and skills deemed important in the relevant subject matter domain.

For UExcel and Excelsior College Examinations, content validation is largely built into the test development process described earlier. College-level instructors in the relevant subject matter are involved in all stages of test development to ensure that the content of the test is relevant and measures the essential knowledge and skills with adequate breadth and depth. A subject matter expert (SME) is a faculty member with relevant and current theory and practice in their fields. SMEs oversee the development of test specifications, the writing of test items, and the design of scoring rubrics for extended response tests. When test forms are assembled, items are selected in accordance with the test specifications set forth by these faculty members during the initial stages of test development.

Validity and the procedures of content validation apply equally to all tests, regardless of whether the tests will be evaluated using IRT or CTT methods of assessment.



# Examination Development Procedures

Interpretation of content validity may be further aided by using the free content guides, available on the College's website at [www.excelsior.edu/exams](http://www.excelsior.edu/exams).

## Main Concepts for Item Response Theory (IRT)

Many of the UExcel and Excelsior College Examinations are developed and scored using procedures based in IRT. This section outlines and defines the main concepts of IRT related to the psychometric results presented in this Handbook. These IRT results are based on the performance of all examinees taking these items on past operational forms of UExcel and Excelsior College Examinations. Additional information and references for a more extensive coverage of IRT concepts are in the Technical Appendix.

- **Ability Estimate**—In IRT, it is assumed that an examinee has an underlying ability ( $\theta$ ) or proficiency level that determines their probability of answering an item correctly. Items can be classified in terms of these probabilities, so that it is possible to determine approximately what level of ability is required in order for an examinee to answer the item correctly. By administering items that vary in such probabilities, an examinee's pattern of responses to these items can be used to estimate their ability level. The purpose of the test is to estimate the ability level for each examinee, so that the ability estimates become the scores that are assigned to the examinees.

- **Standard Error of Ability Estimates**—The standard error of an ability estimate is an index of the precision of the ability estimate. More precise ability estimates (i.e., those with relatively smaller standard errors) are closer to their corresponding true values of ability ( $\theta$ ). Standard errors of estimates can be determined for individual items or for the test as a whole. In addition, they can be determined at different levels of ability.

- **Item and Test Information**—Item information functions display the contribution that an individual item makes to ability estimation at different points along the ability ( $\theta$ ) continuum. The test information function aggregates the individual item information functions to determine how much statistical information the test as a whole provides at each level of ability. In other words, this information shows how well the test as a whole discriminates between examinees at different ability levels. IRT extends the concept of reliability beyond a single index to information *function*, which varies with item difficulty, discrimination, and guessing.

- **Derivation of Pass/Fail Standards**—Current grading standards for examinations evaluated using IRT are ability ( $\theta$ ) cut-scores. The proportion-correct cut-scores obtained from standard setting are then converted to theta cut-scores using the test characteristic curve.

## Main Concepts for Classical Test Theory (CTT)

Due to the complexity of the statistical procedures underlying IRT, large volumes of test takers are required to adequately conduct IRT analysis. While CTT can be useful even when using IRT methods, in cases where sample sizes are

inadequate, CTT is used exclusively. This section defines the main concepts of CTT related to the psychometric information provided in this Handbook. Some CTT indices are provided in this Handbook for examinations scored with IRT, to further describe our assessment methods. CTT results are based on the performance of only those examinees taking these items on the current operational forms of these tests. All extended response examinations are scored using CTT principles. Additional information and references for a more extensive coverage of CTT can be found in the Technical Appendix.

- **True Score**—In CTT, examinees are assigned scores on the basis of their number (or percentage) of correct responses to a set of dichotomously scored items. An examinee's number-correct score on the test is an unbiased estimate of their true score. The true score is conceptually the same as the ability estimate ( $\theta$ ) in IRT; however, unlike the ability estimate, the true score is inseparable from the specific items chosen for the test.

- **Reliability**—In CTT, the observed test score for any given examinee contains two components: (1) the examinee's true score as defined above, and (2) random error. Random error is most often defined as the degree of inconsistency among the items in the test. Conversely, reliability is typically defined in terms of the internal consistency of the items. The concept of test reliability hinges on the average amount of error a test has in estimating true scores.

Two strategies for evaluating reliability are the computation of reliability coefficients and standard errors of measurement. Several methods exist for computing reliability coefficients depending on the type of test and the purpose of testing. Reliability coefficients are generally ratios that indicate, across examinees, the proportion of the total variability in their observed test scores that is due to true differences in their knowledge of the content being tested, (as opposed to random error). Reliability coefficients can range from .00 to 1.00, where a coefficient of 1.00 indicates perfectly reliable and precise measurement of true scores.

Standard errors of measurement are a direct function of unreliability. The standard error of measurement represents the average amount of random error involved, across all examinees, when using the scores they receive on a given test as estimates of their true scores. Lower standard errors of measurement therefore indicate a higher degree of reliability and measurement precision.

- **Item Difficulty**—The difficulty of an item is defined in CTT as the proportion of examinees who answer the item correctly. If few examinees answer the item correctly, it is assumed to be difficult. If most examinees answer the item correctly, it is assumed to be easy.

- **Item-Total Correlations**—Item-total correlations are a measure of item discrimination. In other words, they index the degree to which an item discriminates between those examinees who know the subject matter being tested and those who do not. An examinee's total score on the test is used as the

# Examination Development Procedures

index of their knowledge level. A strong positive correlation between an item and the total score indicates that examinees with high proficiency are answering the item correctly, while a near-zero correlation indicates that the item does not discriminate between test takers with high and low proficiency. In this Handbook, all item-total correlations are point-biserial correlations that have been corrected for inflation due to the item being included in the total score.

• **Derivation of Pass/Fail Standards**—Grading standards for most examinations currently evaluated using CTT have been set using expert judgement. For some examinations, grading standards are norm-referenced, based on normative data from campuses across the country.

## Standard-Setting Methods for Deriving Pass/Fail Standards

Excelsior College uses expert-based methodologies to set standards for grading on selected examinations under the direction of our faculty and with guidance from Excelsior College testing professionals. These methodologies are variations of the Angoff method commonly used by testing institutions to set standards for high-stakes examinations, such as licensing and certification examinations. A modified Angoff (1971) method is used for the multiple-choice examinations and an optimized extended response method is used for extended response examinations. Both methods share the same principles, with variations that accommodate the scoring scale.

Subject matter experts (SMEs) are continuously selected by Excelsior College to participate in standard setting for a particular examination based on their expertise and experience in teaching the examination subject matter. SMEs arrive at conceptual definitions of examinees' performance categorized into various competency categories such as highly competent, competent, marginal, and weak. With these definitions in mind, SMEs are asked to estimate item difficulty via probability distributions of successful responses for examinees in each of the defined categories.

The modified Angoff and the optimized extended response standard-setting methods differ only in the types of probabilities that the SMEs are asked to estimate. Multiple-choice questions require SMEs to estimate the proportion of examinees in a given competency category who would be able to answer each item correctly. Extended response questions require that SMEs estimate the proportion of examinees that would fall at each point on the rating scale. The probability distributions resulting from this procedure are used to set the cut-scores for each examination by averaging the experts' ratings across items, at each competency level.

The letter grades reported to examinees indicate that their performance was equivalent to the performance of students who received the same letter grade in a comparable, on-campus course.

For more information regarding the psychometric and statistical data in this Handbook, please contact:

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Psychometric Information  
for UExcel Examinations in

# Arts & Sciences

## Abnormal Psychology (459)

The Abnormal Psychology examination is based on material that corresponds to a one-semester, three-credit, upper-level course in abnormal psychology at the undergraduate level. The examination assumes a knowledge of concepts typically learned in an introductory psychology course. The examination tests for knowledge and understanding of the historical background of abnormal psychology, the major conceptualizations in the field, and the nature and description of psychological disorders as well as their definitions, classifications, etiology, and major treatments.

### Description of the Examination

The Abnormal Psychology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Introduction and Basic Issues</b>	25
<b>II. Disorders</b>	60
<b>III. Treatment, Prevention, and Legal Issues</b>	15

The Abnormal Psychology examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Abnormal Psychology examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Abnormal Psychology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of January 10, 2008 to August 31, 2014.

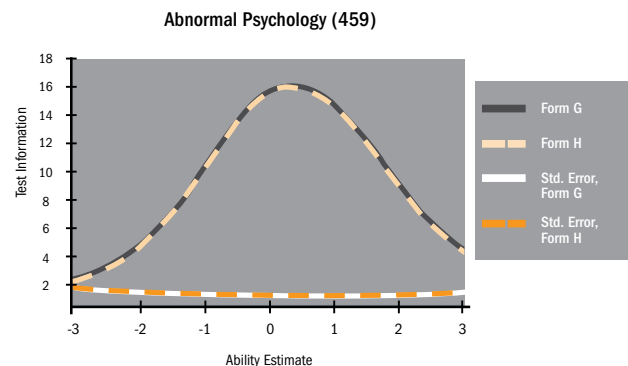
#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ABNORMAL PSYCHOLOGY EXAMINATION

	EXAMINATION FORM	
	G	H
<b>Number of examinees</b>	776	771
<b>Number of items</b>	130	130
<b>CLASSICAL TEST THEORY SUMMARY</b>		
<b>Average item difficulty</b>	.67	.70
<b>Average item-total correlation (point-biserial)</b>	.31	.29
<b>Proportion of item-total correlations less than .15</b>	.03	.04
<b>Internal consistency (KR20)</b>	.92	.91

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM G	FORM H
	%	%
<b>A</b>	21	25
<b>B</b>	39	39
<b>C</b>	27	27
<b>D</b>	7	6
<b>F</b>	7	3

#### Test Information Functions for Alternate Forms



## Anatomy & Physiology (506)

The Anatomy & Physiology examination is based on material that corresponds to a six-credit, lower-level, introductory, two-semester sequence of courses in anatomy and physiology at the undergraduate level. It measures knowledge and understanding of the integrative mechanisms that contribute to the functioning of the human body. A familiarity with basic terms of biology and with concepts such as basic cell structure and function is assumed.

### Description of the Examination

The Anatomy & Physiology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. The Human Body: An Overview</b>	5
<b>II. Chemical Basis of Life</b>	5
<b>III. Dynamics of Support and Motion</b>	12
<b>IV. Integration and Regulatory Mechanisms</b>	23
<b>V. Maintenance of the Human Body</b>	33
<b>VI. Urinary System</b>	10
<b>VII. Fluid and Electrolyte Balance</b>	5
<b>VIII. Reproduction and Development</b>	7

The Anatomy & Physiology examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Anatomy & Physiology examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Anatomy & Physiology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of August 1, 2011 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ANATOMY & PHYSIOLOGY EXAMINATION

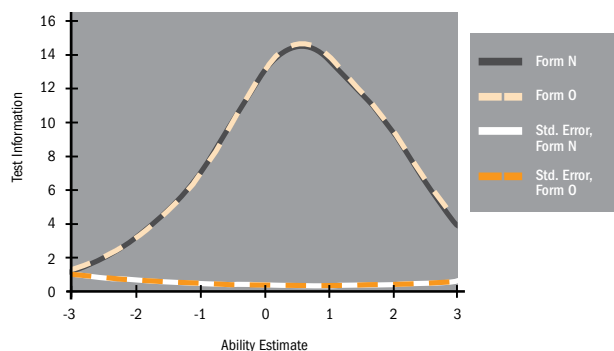
	EXAMINATION FORM	
	N	O
<b>Number of examinees</b>	2315	2297
<b>Number of items</b>	120	120
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.63	.64
<b>Average item-total correlation (point-biserial)</b>	.28	.28
<b>Proportion of item-total correlations less than .15</b>	.06	.05
<b>Internal consistency (KR20)</b>	.89	.89

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM N	FORM O
	%	%
<b>A</b>	16	17
<b>B</b>	31	30
<b>C</b>	34	35
<b>D</b>	13	12
<b>F</b>	5	6

#### Test Information Functions for Alternate Forms

##### Anatomy & Physiology (506)



## Basic Genetics (250)

The Basic Genetics examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, lower-level, one-semester course in basic genetics. The content of the examination corresponds with course offerings such as Basic Genetics or Introduction to Heredity. This examination assumes a familiarity with introductory biology, general chemistry, and algebra. The basic concepts and terminology of transmission, molecular, and population genetics are tested with this exam, along with the ability to apply this knowledge to solving problems in genetics and to understand the societal implications of genetic technologies.

### Description of the Examination

The Basic Genetics examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Molecular and Chromosomal Basics of Inheritance</b>	15
<b>II. Transmission/Mendelian Genetics</b>	25
<b>III. Genotype to Phenotype</b>	25
<b>IV. Mutation, Variation, and Evolution</b>	20
<b>V. Biotechnology and Societal Implications</b>	15

The Basic Genetics examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Basic Genetics examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously. The Basic Genetics examination examination was introduced on September 10, 2012 and we are presently acquiring data for statistical analysis.



## Bioethics: Philosophical Issues (359)

The Bioethics: Philosophical Issues examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, upper-level course dealing with ethical theories related to bioethics, basic concepts in bioethics, clinical topics in biomedical ethics, social topics in bioethics, and topics in environmental ethics. The content of the examination corresponds with course offerings such as bioethics, biomedical ethics, and environmental ethics. The examination assumes a familiarity with introductory ethics and philosophy.

The Bioethics: Philosophical Issues examination tests for a knowledge of facts and terminology, an understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of the philosophical issues concerning biomedical and environmental ethics.

### Description of the Examination

The Bioethics: Philosophical Issues examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Ethical Theories in Bioethics</b>	15
<b>II. Basic Concepts in Bioethics: Relationships Among Patients and Health Care Professionals</b>	15
<b>III. Clinical Topics in Biomedical Ethics</b>	25
<b>IV. Social Topics in Bioethics</b>	20
<b>V. Topics in Environmental Ethics</b>	25

The Bioethics: Philosophical Issues examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Bioethics: Philosophical Issues examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Bioethics: Philosophical Issues examination was introduced on February 4, 2013. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE BIOETHICS: PHILOSOPHICAL ISSUES EXAMINATION		
	EXAMINATION FORM	
	F	G
Number of examinees	95	84
Number of items	100	100
Average of percent-correct scores	67.42	63.77
Standard deviation of percent-correct scores	10.88	12.88
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.67	.64
Average item-total correlation (point-biserial)	.21	.25
Proportion of item-total correlations less than .15	.28	.20
Internal consistency (KR20)	.81	.85
Standard error of measurement in percent-correct score units	4.78	4.95

## Calculus (150)

The Calculus examination measures knowledge and understanding of material typically taught in the first semester of an undergraduate sequence in Calculus. The content of the examination corresponds with course offerings commonly called Calculus I. The examination assumes a familiarity with Precalculus topics including algebra, trigonometry, and functions. It tests for a knowledge of facts and terminology, an understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of problems in business, the sciences, and engineering.

### Description of the Examination

The Calculus examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Limits and Continuity</b>	15
<b>II. Derivatives</b>	25
<b>III. Applications of Derivatives</b>	30
<b>IV. Integrals</b>	30

The Calculus examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Calculus examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

### Psychometric Information

The Calculus examination contains a total of 60 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Calculus examination was introduced on October 29, 2009. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR CALCULUS		
	EXAMINATION FORM	
	A	B
Number of examinees	114	140
Number of items	60	60
Average of percent-correct scores	53.18	52
Standard deviation of percent-correct scores	20.63	17.92
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.53	.52
Average item-total correlation (point-biserial)	.41	.36
Proportion of item-total correlations less than .15	.04	.06
Internal consistency (KR20)	.91	.88
Standard error of measurement in percent-correct score units	6.15	6.2

## College Writing (110)

The College Writing examination corresponds to an introductory, one-semester course in college writing. It measures the ability to persuade a reader to pursue a specified course of action, using personal knowledge and experience to support a proposal, and to analyze and respond appropriately to written texts that represent opposing viewpoints, using the Modern Language Association (MLA) style of citation. In general, the examination measures the ability to organize knowledge, ideas, and information; to adopt rhetorical strategies such as narration, illustration, explanation, and description in appropriate ways; to adopt and maintain a tone and point of view appropriate for a specified audience and rhetorical situation; to develop and maintain a controlling idea and a coherent organization; and to write within the rhetorical, syntactic, and mechanical conventions of Standard Written American English.

### Description of the Examination

The College Writing examination was developed based on the following test specifications (see content guide for details):

#### CONTENT AREA

##### I. Proposal Writing

##### II. Analysis and Response

Each form of the College Writing examination forms consists of two questions representing the two types of writing prompts. Each type of prompt requires demonstration of a number of interrelated writing abilities.

An electronic “scoring engine” called IntelliMetric™ analyzes each response according to a complex series of criteria based on artificial intelligence. IntelliMetric™ is calibrated to make the same judgments on the quality of writing that a rater would make, and has proven to match human raters consistently. The electronic rating produces a grade report, including feedback on the dimensions of Focus & Meaning, Content & Development, Organization, Language Use & Style, and Mechanics & Conventions immediately after the examination has been taken. However, IntelliMetric™ cannot score a response that a) is too short, b) is off topic, c) is repetitious, d) has insufficient development, e) has too many unknown words, f) has major syntax problems, g) is simply a copy of the prompt, h) is in an unknown format, for example, a response written in a foreign language or in the form of a poem, i) has a deleted response, for example, text that is inadvertently highlighted and typed over while the intention was to add to it. In this case, the response will not receive an immediate electronic rating but will be forwarded to human raters. The human raters rate the exam using the same rubric as the IntelliMetric™ scoring engine. Each of the scored prompts is rated on a scale of 0 to 6. The total score on the test lies between 0 and 12. Scores are converted to percent scores and the recommended minimum score for credit is 48 percent. The recommended minimum score earns a letter grade of C. Only letter grades are reported to examinees.

The College Writing examination is developed, scored, and evaluated using CTT methods. Examinees’ scores are percent scores. Letter grades and diagnostic score reports are provided

to examinees. The American Council on Education’s College Credit Recommendation Service (ACE CREDIT) has evaluated the College Writing examination. For more information, visit ACE CREDIT’s website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

### Psychometric Information

The following tables provide a summary of psychometric information for two current forms of the College Writing examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of October 29, 2009 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE COLLEGE WRITING EXAMINATION		
	EXAMINATION FORM	
	A	B
Number of examinees	1011	1008
Number of items	2	2
CLASSICAL TEST THEORY SUMMARY		
Average of raw scores (and percent scores)	7.40 (61.68)	7.71 (64.32)
Standard deviation of raw scores (and percent scores)	1.53 (12.75)	1.24 (10.41)
Average of raw scores (and percent scores) for Prompt 1	3.70 (61.69)	3.97 (66.15)
Standard deviation of raw scores (and percent scores) for Prompt 1	.99 (16.51)	.74 (12.39)
Average of raw scores (and percent scores) for Prompt 2	3.67 (61.18)	3.71 (61.84)
Standard deviation of raw scores (and percent scores) for Prompt 2	.90 (14.92)	.78 (12.94)

A recent study in the Journal of Technology, Learning and Assessment (JTLA) reported that the IntelliMetric™ scoring engine is a consistent and reliable method for scoring Analytic Writing Assessment essays, when compared to human raters, after analyzing approximately 500 responses to each of 101 prompts. This study found that a perfect + adjacent agreement appears in 92 to 100 percent of instances. The Pearson correlations of agreement between human raters and the IntelliMetric™ system averaged .83 (Dikli, 2006).

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM A	FORM B
	%	%
A	20	22
B	34	40
C	37	34
F	9	4

## Contemporary Mathematics (100)

The Contemporary Mathematics examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, lower-level, one-semester course in mathematics. The content of the examination corresponds with course offerings such as Mathematics in Contemporary Society, Liberal Arts Math, or Math for Non-STEM (science, technology, engineering, and mathematics) Majors. Knowledge of arithmetic and elementary algebra are prerequisites for the material covered in this examination. The exam tests for an ability to apply mathematical knowledge and concepts to understand and analyze practical contemporary mathematical problems.

### Description of the Examination

The Contemporary Math examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Mathematical Reasoning</b>	25
<b>II. Probability and Statistics</b>	30
<b>III. Mathematics and Politics</b>	20
<b>IV. Graph Theory</b>	25

The Contemporary Mathematics examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Contemporary Mathematics examination contains a total of 60 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Contemporary Mathematics examination was introduced on February 6, 2013. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE CONTEMPORARY MATHEMATICS EXAMINATION		
	EXAMINATION FORM	
	A	B
<b>Number of examinees</b>	131	125
<b>Number of items</b>	60	60
<b>Average of percent-correct scores</b>	58.89	61.94
<b>Standard deviation of percent-correct scores</b>	12.94	10.03
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.59	.62
<b>Average item-total correlation (point-biserial)</b>	.27	.20
<b>Proportion of item-total correlations less than .15</b>	.22	.29
<b>Internal consistency (KR20)</b>	.78	.64
<b>Standard error of measurement in percent-correct score units</b>	6.07	5.99

## Cultural Diversity (545)

The Cultural Diversity examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, upper-level course in the social sciences, dealing with social, political, and economic realities of human difference in the United States. The content of the examination corresponds with course offerings such as Multiculturalism in the US, Race and Ethnic Relations, Cultural Diversity, or Contemporary Social Theory. The examination assumes a familiarity with introductory sociology and/or introductory cultural anthropology.

The examination tests for a knowledge of facts and terminology, an understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of the social construction of difference and its implications in US society.

### Description of the Examination

The Cultural Diversity examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Framework for Understanding Cultural Diversity in the United States</b>	20
<b>II. Conceptualizing Cultural Diversity</b>	25
<b>III. Patterns of Ethnic Relations</b>	15
<b>IV. Racial and Ethnic Identities and Experiences</b>	25
<b>V. Responses to Dominance and Inequality</b>	15

The Cultural Diversity examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Cultural Diversity examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously. New forms of the Cultural Diversity examination were introduced on November 19, 2013. We are presently acquiring data for statistical analysis.

## Earth Science (360)

The Earth Science examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, lower-level course in the physical, natural, and environmental sciences. The content of the exam corresponds with introductory course offerings such as earth science, physical geology, geoscience, environmental geoscience, or earth-system science. The examination tests for a knowledge of facts and terminology, an understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of the earth's processes.

### Description of the Examination

The Earth Science examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Introduction</b>	5
<b>II. Plate Tectonics</b>	10
<b>III. The Rock Cycle</b>	25
<b>IV. The Hydrologic Cycle</b>	25
<b>V. Geologic Hazards</b>	20
<b>VI. Earth History</b>	10
<b>VII. Earth and Energy Resources</b>	5

The Earth Science examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Earth Science examination contains a total of 110 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Earth Science examination was introduced on December 3, 2012. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE EARTH SCIENCE EXAMINATION		
	EXAMINATION FORM	
	D	E
Number of examinees	76	80
Number of items	110	110
Average of percent-correct scores	53.53	56.78
Standard deviation of percent-correct scores	13.25	16.81
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.54	.57
Average item-total correlation (point-biserial)	.25	.33
Proportion of item-total correlations less than .15	.24	.06
Internal consistency (KR20)	.87	.92
Standard error of measurement in percent-correct score units	4.86	4.77



## English Composition (434)

The English Composition examination corresponds to an introductory, two-semester, six-credit course in English Composition. The examination measures the ability to persuade a reader, to understand and compose an extended argument, to analyze and respond appropriately to written texts including literary texts, to use and document sources, and to recognize and write about revision and editing processes. In general, the examination measures the ability to organize knowledge, ideas, and information; to use rhetorical strategies such as narration, illustration, explanation, description, comparison and contrast, division, classification, and cause and effect in appropriate ways; to choose a tone and point of view appropriate for a specified rhetorical situation; to develop and maintain a controlling idea and a coherent organization; and to write within the rhetorical, syntactical, and mechanical conventions of Standard Written American English.

### Description of the Examination

The English Composition examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA
<b>I. Argumentation</b>
<b>II. Analysis and Response</b>
<b>III. Revision Strategy</b>

Each form of the English Composition examination consists of three extended response (essay) questions in the form of writing prompts. Each of these prompts is rated on three dimensions. Each dimension is rated by trained content experts on a 1–6 point scale. A minimum of two expert raters evaluate each examinee's response for each prompt, for each dimension. If the first two ratings are discrepant on one or more dimensions, a third rater is used to rate that prompt on all three dimensions. When there are three ratings, the average of all three is used only if they form a one-interval sequence; otherwise, the average of the two closest ratings is used. Ratings for each dimension are summed to obtain the prompt score and the prompt scores are summed to obtain a total score. The total score on the test lies between 9 and 54. Scores are converted to percent scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The English Composition examination contains a total of 3 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties when they were either scored or pretested in a previous examination. The following tables provide a summary of psychometric information for two current forms of the English Composition examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of June 21, 2010 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ENGLISH COMPOSITION EXAMINATION		
	EXAMINATION FORM	
	K	L
Number of examinees	318	320
Number of items	3	3
Average of raw scores (and percent-correct scores)	30.99 (48.87)	30.63 (48.07)
Standard deviation of raw scores (and percent-correct scores)	6.01 (13.35)	6.28 (13.95)
CLASSICAL TEST THEORY SUMMARY		
Internal consistency (coefficient alpha)	.75	.77
Rating reliability (ICC 1,k) <sup>1</sup>	.88	.88
Standard error of measurement in raw score units (and percent score units)	3.01 (6.68)	3.01 (6.69)

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM K	FORM L
	%	%
A	3	2
B	12	14
C	53	50
D	26	26
F	6	8

<sup>1</sup>(ICC 1,k) refers to a specific type of intraclass correlation that was used to evaluate rating reliability for this examination. A brief description is provided in the *Technical Appendix*.

## Ethics: Theory & Practice (484)

The Ethics: Theory and Practice examination is based on material normally presented in a one-semester, upper-level, three-credit course in applied ethics. The examination measures understanding of ethical theories and concepts, metaethics, and the principles of moral deliberation as they apply to practical ethical situations. Testing for the application of knowledge about ethics is accomplished through the interpretation of case studies or situations and relative to sets of multiple-choice questions. The content category for theories and concepts includes theories about utilitarianism, natural law, and Kantianism, and concepts such as justice, duties and obligations, and rights. The metaethics category includes topics relating to subjectivism/objectivism, naturalistic fallacy, and genealogical subjects; moral deliberation covers topics such as moral sensitivity, status of moral judgments, and implications of moral concepts. Knowledge from the broad categories is then applied to practical ethical concerns such as social and personal issues, medical issues, professional and business ethics, and environmental issues.

### Description of the Examination

The Ethics: Theory and Practice examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Theory</b>	33
<b>II. Practice</b>	67

The Ethics: Theory & Practice examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Ethics: Theory and Practice examination contains a total of 135 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Ethics: Theory and Practice examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of June 11, 2007 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ETHICS: THEORY AND PRACTICE EXAMINATION

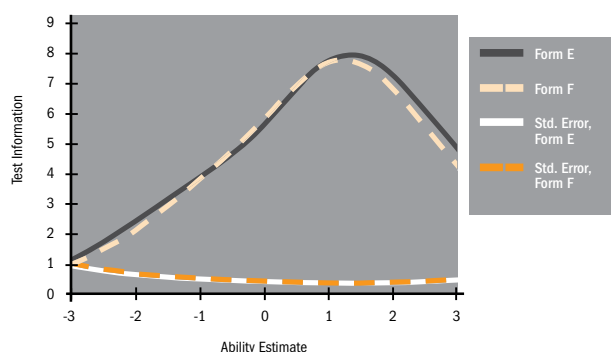
	EXAMINATION FORM	
	E	F
<b>Number of examinees</b>	3005	2951
<b>Number of items</b>	135	135
<b>CLASSICAL TEST THEORY SUMMARY</b>		
<b>Average item difficulty</b>	.55	.56
<b>Average item-total correlation (point-biserial)</b>	.29	.29
<b>Proportion of item-total correlations less than .15</b>	.04	.03
<b>Internal consistency (KR20)</b>	.88	.88

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM E	FORM F
	%	%
<b>A</b>	13	14
<b>B</b>	17	18
<b>C</b>	24	24
<b>D</b>	31	29
<b>F</b>	15	15

#### Test Information Functions for Alternate Forms

Ethics: Theory and Practice (484)



## Foundations of Gerontology (407)

The Foundations of Gerontology examination is based on material that corresponds to a one-semester, upper-level, three-credit course in gerontology at the undergraduate level. The examination tests for knowledge and understanding of the biological, psychological, and social aspects of aging. It measures the ability to describe, understand, and analyze issues pertaining to the functioning and well-being of older adults. In addition to a knowledge base, the examinee is expected to have an awareness of the needs and realities involved in the aging process and the implications of population aging for society. Emphasis is placed on both normal aspects of aging and problems associated with aging. The content of the examination is multidisciplinary in nature and covers theories, concepts, empirical patterns, and their implications for policy and practice.

### Description of the Examination

The Foundations of Gerontology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Important Concepts of Gerontology</b>	10
<b>II. Demography of Aging: Trends and Projections</b>	12
<b>III. Biology and Physical Health</b>	17
<b>IV. Psychology and Mental Health</b>	14
<b>V. Sociology</b>	14
<b>VI. Economics, Work, and Retirement</b>	14
<b>VII. Political Behavior and Public Policy</b>	14
<b>VIII. Death and Dying</b>	5

The Foundations of Gerontology examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Foundations of Gerontology examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Foundations of Gerontology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of November 1, 2010 (Form H) and April 11, 2011 (Form I) to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE FOUNDATIONS OF GERONTOLOGY EXAMINATION

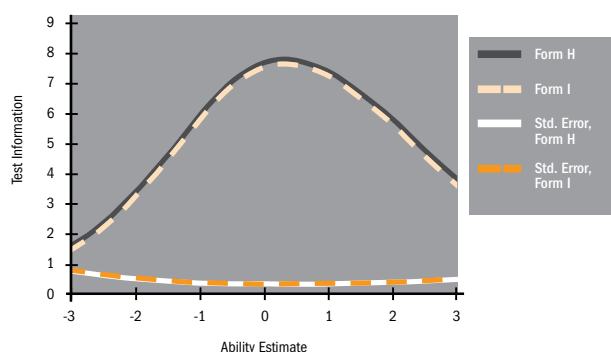
	EXAMINATION FORM	
	H	I
Number of examinees	744	675
Number of items	130	130
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.69	.68
Average item-total correlation (point-biserial)	.20	.21
Proportion of item-total correlations less than .15	.22	.21
Internal consistency (KR20)	.83	.84

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM H	FORM I
	%	%
A	10	7
B	32	25
C	46	51
D	12	16
F	0	0

#### Test Information Functions for Alternate Forms

Foundations of Gerontology (407)



## Interpersonal Communication (417)

The Interpersonal Communication examination measures knowledge and understanding of the material and skills typically taught in a one-semester, three-credit, lower-level undergraduate course in interpersonal communication. The content of the examination corresponds with course offerings such as human communication dynamics, relational communication, communication in everyday life, principles of interpersonal communication, and effective communication. The examination tests for a knowledge of facts and terminology, an understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in evaluating and improving aspects of interpersonal communication.

### Description of the Examination

Interpersonal Communication was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Basics of Interpersonal Communication</b>	20
<b>II. Verbal and Nonverbal Communication</b>	20
<b>III. Relationship Theories, Development, Maintenance, Deterioration, Repair, and Dissolution</b>	20
<b>IV. Challenges to Effective Interpersonal Communication</b>	20
<b>V. Applications in Interpersonal Contexts</b>	20

The Interpersonal Communication examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Interpersonal Communication examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Interpersonal Communication examination contains a total of 140 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Interpersonal Communication examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of March 21, 2011 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR INTERPERSONAL COMMUNICATION		
	EXAMINATION FORM	
	A	B
<b>Number of examinees</b>	241	243
<b>Number of items</b>	140	140
<b>Average of percent-correct scores</b>	64.38	60.49
<b>Standard deviation of percent-correct scores</b>	10.13	9.05
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.64	.60
<b>Average item-total correlation (point-biserial)</b>	.20	.16
<b>Proportion of item-total correlations less than .15</b>	.28	.51
<b>Internal consistency (KR20)</b>	.84	.79
<b>Standard error of measurement in percent-correct units</b>	4.1	4.13

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM A	FORM B
	%	%
<b>A</b>	6	2
<b>B</b>	30	15
<b>C</b>	45	55
<b>D</b>	17	27
<b>F</b>	2	1

## Introduction to Microeconomics (257)

The Introduction to Microeconomics examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, lower-level, one-semester course in Microeconomics. The content of the examination corresponds with course offerings such as Principles of Microeconomics, Introduction to Microeconomics, Principles of Economics, or Introduction to Economics. No prior knowledge of economics is required for this examination.

This examination tests for a knowledge of facts and terminology, an understanding of concepts and forms, and for the examinee's ability to apply the concepts learned in Introduction to Microeconomics. The exam also assumes a good understanding of high school algebra.

### Description of the Examination

The Microeconomics examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Introduction to Economics and the Economy</b>	25
<b>II. Markets and Behavior</b>	20
<b>III. Market Structures</b>	20
<b>IV. Resource Markets</b>	20
<b>V. Government Issues and Policies</b>	15

The Introduction to Microeconomics examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Microeconomics examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Introduction to Microeconomics examination was introduced on July 11, 2011 and we are presently acquiring data for statistical analysis.

## Introduction to Macroeconomics (258)

The Introduction to Macroeconomics examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, lower-level, one-semester course in Macroeconomics. The content of the examination corresponds with course offerings such as Principles of Macroeconomics, Introduction to Macroeconomics, Principles of Economics, or Introduction to Economics. No prior knowledge of economics is required for this examination.

This examination tests for a knowledge of facts and terminology, an understanding of concepts and forms, and for the examinee's ability to apply the concepts learned in Introduction to Macroeconomics. The exam also assumes a good understanding of high school algebra.

### Description of the Examination

The Macroeconomics examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Overview of Economics</b>	10
<b>II. The Marketplace</b>	10
<b>III. Measuring the Macro Economy</b>	20
<b>IV. Fluctuations in Economic Activity</b>	20
<b>V. Fiscal and Monetary Policies</b>	30
<b>VI. Supply-Side Policy, and the Relation Between Monetary and Fiscal Policies</b>	10

The Introduction to Macroeconomics examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Macroeconomics examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Introduction to Macroeconomics examination was introduced on July 11, 2011 and we are presently acquiring data for statistical analysis.



## Introduction to Music (362)

The Introduction to Music examination measures knowledge and understanding of the material and skills typically taught in a one-semester, three-credit, lower-level course in music appreciation. The content of the examination is drawn from that commonly included in courses with titles like Introduction to Music Literature, Music Appreciation, Survey of Music, and Music in the Western World. No prior knowledge of music is required for this examination. The examination tests for a knowledge of facts and terminology, an understanding of concepts and forms, and the examinee's ability to apply this knowledge and understanding in listening to musical compositions. Examinees will be expected to know the different stylistic periods and composers of each period, including characteristics and forms from each historical period. Examinees are also expected to know biographical information about major composers and technical features of their specific compositions.

### Description of the Examination

The Introduction to Music examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Elements</b>	20
<b>II. Media</b>	15
<b>III. Stylistic Periods and Composers</b>	50
<b>IV. American Innovations and non-Western Music</b>	15

The Introduction to Music examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Introduction to Music examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Introduction to Music examination was introduced on December 3, 2012. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR INTRODUCTION TO MUSIC		
	EXAMINATION FORM	
	D	E
Number of examinees	75	69
Number of items	120	120
Average of percent-correct scores	61.48	56.2
Standard deviation of percent-correct scores	14.99	13.46
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.61	.56
Average item-total correlation (point-biserial)	.30	.26
Proportion of item-total correlations less than .15	.16	.23
Internal consistency (KR20)	.91	.88
Standard error of measurement in percent-correct units	4.54	4.58

## Introduction to Philosophy (363)

The Introduction to Philosophy exam measures knowledge and understanding of the material typically taught in a one-semester, three-credit, lower-level, survey course in basic philosophy. The examination content reflects common knowledge drawn from courses with such titles as Introduction to Philosophy or Basic Philosophical Issues. No previous knowledge of philosophy is required prior to beginning study for this examination.

The examination tests for a knowledge of facts and terminology, an understanding of logic, epistemology, metaphysics, and ethics. Examinees will be expected to know logical reasoning, the history of philosophy and the different approaches to various philosophical problems.

### Description of the Examination

The Introduction to Philosophy examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. The Nature of Philosophy and Logic</b>	10
<b>II. Metaphysics</b>	35
<b>III. Epistemology</b>	20
<b>IV. Ethics</b>	35

The Introduction to Philosophy examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Introduction to Philosophy examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Introduction to Philosophy exam contains a total of 110 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Introduction to Philosophy examination was introduced on December 3, 2012. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR INTRODUCTION TO PHILOSOPHY		
	EXAMINATION FORM	
	C	D
Number of examinees	98	102
Number of items	110	110
Average of percent-correct scores	49.01	55.64
Standard deviation of percent-correct scores	13.29	16.13
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.49	.56
Average item-total correlation (point-biserial)	.25	.32
Proportion of item-total correlations less than .15	.24	.09
Internal consistency (KR20)	.86	.91
Standard error of measurement in percent-correct units	4.89	4.73

## Introduction to Psychology (101)

The Introduction to Psychology examination measures knowledge and understanding of the material typically taught in a one-semester, three-credit, lower level survey course in a baccalaureate program. The examination measures knowledge and understanding of the theories and principles of general psychology and the ability to apply this information to everyday life examples. The content of the examination consists of 11 major categories: The Science of Psychology, Biological Influences on Behavior, Sensation and Perception, Consciousness, Learning and Memory, Motivation and Emotion, Cognition and Intelligence, Human Development, Personality, Psychological Disorders and Therapy, and Social Psychology. No prior knowledge or understanding of psychology is assumed.

### Description of the Examination

The Introduction to Psychology examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. The Science of Psychology</b>	10
<b>II. Biological Influence on Behavior</b>	8
<b>III. Sensation and Perception</b>	5
<b>IV. Consciousness</b>	5
<b>V. Learning and Memory</b>	14
<b>VI. Motivation and Emotion</b>	8
<b>VII. Cognition and Intelligence</b>	8
<b>VIII. Human Development</b>	8
<b>IX. Personality</b>	8
<b>X. Psychological Disorders and Therapy</b>	16
<b>XI. Social Psychology</b>	10

The Introduction to Psychology examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Introduction to Psychology examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Introduction to Psychology examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Introduction to Psychology examination was introduced on October 29, 2009. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR INTRODUCTION TO PSYCHOLOGY		
	EXAMINATION FORM	
	A	B
Number of examinees	124	136
Number of items	120	120
Average of percent-correct scores	62.46	58.57
Standard deviation of percent-correct scores	14.77	15.13
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.62	.59
Average item-total correlation (point-biserial)	.30	.30
Proportion of item-total correlations less than .15	.10	.12
Internal consistency (KR20)	.91	.92
Standard error of measurement in percent-correct units	4.33	4.38

## Introduction to Sociology (105)

The Introduction to Sociology examination measures knowledge and understanding of the material and skills typically taught in a one-semester, undergraduate survey course in a baccalaureate program. The examination content reflects common knowledge drawn from courses with such titles as Introduction to Sociology or General Sociology. No prior knowledge of sociology is required for this examination.

The examination tests for a knowledge of facts and terminology, for an understanding of concepts and forms, and for the examinee's ability to apply the concepts learned in an introductory sociology course.

### Description of the Examination

The Introduction to Sociology test was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. The Sociological Perspective</b>	10
<b>II. The Social Foundations</b>	20
<b>III. Differentiation and Inequality</b>	30
<b>IV. Social Institutions</b>	30
<b>V. Social Change</b>	10

The Introduction to Sociology examination is developed, scored, and evaluated using CTT methods. Examinees scores are percent scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Introduction to Sociology examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Introduction to Sociology exam contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Introduction to Sociology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of July 25, 2011 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR INTRODUCTION TO SOCIOLOGY		
	EXAMINATION FORM	
	A	B
Number of examinees	452	504
Number of items	120	120
Average of percent-correct scores	60.69	60.89
Standard deviation of percent-correct scores	12.36	12.41
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.61	.61
Average item-total correlation (point-biserial)	.25	.24
Proportion of item-total correlations less than .15	.24	.21
Internal consistency (KR20)	.88	.88
Standard error of measurement in percent-correct units	4.34	4.27

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM A	FORM B
	%	%
<b>A</b>	9	9
<b>B</b>	27	26
<b>C</b>	40	39
<b>F</b>	23	26

## Juvenile Delinquency (364)

The Juvenile Delinquency examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, upper-level course in juvenile delinquency. The content of the examination is drawn from that commonly included in courses with such titles as Juvenile Delinquency or Juvenile Delinquency & Justice. The examination assumes a familiarity with sociology, psychology, and research methodology.

The examination tests for a knowledge of facts and terminology, an understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of contemporary issues.

### Description of the Examination

The Juvenile Delinquency examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Nature &amp; Extent of Juvenile Delinquency</b>	25
<b>II. Theories of Juvenile Delinquency</b>	35
<b>III. Influences on Delinquency</b>	25
<b>IV. Understanding of Control, Prevention, &amp; Treatment</b>	15

The Juvenile Delinquency examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Juvenile Delinquency examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Juvenile Delinquency examination was introduced on December 3, 2012. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR JUVENILE DELINQUENCY		
	EXAMINATION FORM	
	F	G
Number of examinees	62	53
Number of items	120	120
Average of percent-correct scores	63.32	62.30
Standard deviation of percent-correct scores	10.62	11.23
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.63	.62
Average item-total correlation (point-biserial)	.20	.21
Proportion of item-total correlations less than .15	.33	.30
Internal consistency (KR20)	.82	.83
Standard error of measurement in percent-correct units	4.50	4.59

## Life Span Developmental Psychology (583)

The Life Span Developmental Psychology examination is based on material that corresponds to a one-semester, three-credit, lower level undergraduate course in life span development. The examination measures understanding of the concepts, principles, and theories associated with life span development as well as the ability to apply this understanding in specific situations. The examinee will be expected to integrate content across the stages of the life span. A course in life span development typically has introductory psychology as a prerequisite.

### Description of the Examination

The Life Span Developmental Psychology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. The Study of Life Span Development</b>	15
<b>II. Genetics, Prenatal Development, and Childbirth</b>	10
<b>III. Infancy and Toddlerhood</b>	10
<b>IV. Early Childhood</b>	10
<b>V. Middle Childhood</b>	10
<b>VI. Adolescence</b>	10
<b>VII. Early Adulthood</b>	10
<b>VIII. Middle Adulthood</b>	10
<b>IX. Late Adulthood</b>	10
<b>X. Death and Dying</b>	5

The Life Span Developmental Psychology examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Life Span Developmental Psychology examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Life Span Developmental Psychology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of June 4, 2009 (Form C) and October 1, 2008 (Form D) to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE LIFE SPAN DEVELOPMENTAL PSYCHOLOGY EXAMINATION

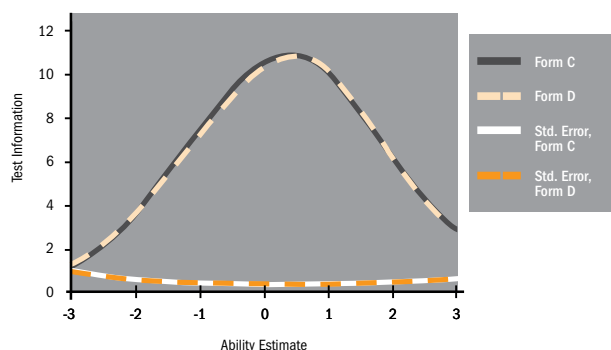
	EXAMINATION FORM	
	C	D
<b>Number of examinees</b>	5571	6795
<b>Number of items</b>	130	130
<b>CLASSICAL TEST THEORY SUMMARY</b>		
<b>Average item difficulty</b>	.66	.66
<b>Average item-total correlation (point-biserial)</b>	.25	.25
<b>Proportion of item-total correlations less than .15</b>	.08	.06
<b>Internal consistency (KR20)</b>	.87	.87

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM C	FORM D
	%	%
<b>A</b>	5	5
<b>B</b>	31	31
<b>C</b>	46	46
<b>D</b>	16	16
<b>F</b>	2	2

#### Test Information Functions for Alternate Forms

Life Span Developmental Psychology (583)





## Microbiology (558)

The Microbiology examination is based on material that corresponds to a one-semester, three-credit, lower-level course in microbiology at the undergraduate level. A general knowledge and understanding of chemistry, as well as biology or anatomy and physiology, is assumed. The examination tests for knowledge and understanding of bacteria, algae, fungi, protozoa, and viruses, and their relationships with humans.

### Description of the Examination

The Microbiology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Introduction to Microbiology</b>	5
<b>II. Biology of Microorganisms</b>	25
<b>III. Control of Microorganisms</b>	15
<b>IV. Disease, Resistance, and the Immune System</b>	20
<b>V. Biology of Infectious Diseases</b>	25
<b>VI. Environmental, Food, and Industrial Microbiology</b>	10

The Microbiology examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Microbiology examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Microbiology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of October 9, 2008 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE MICROBIOLOGY EXAMINATION

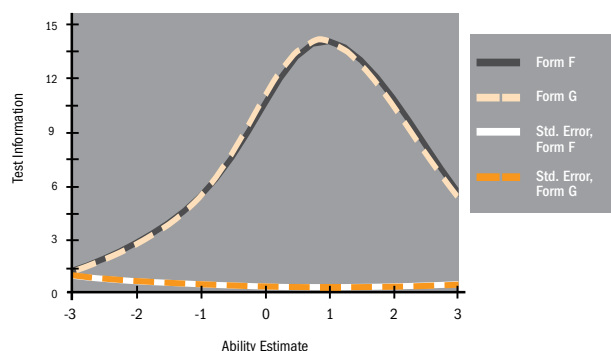
	EXAMINATION FORM	
	F	G
<b>Number of examinees</b>	5088	4982
<b>Number of items</b>	130	130
<b>CLASSICAL TEST THEORY SUMMARY</b>		
<b>Average item difficulty</b>	.61	.61
<b>Average item-total correlation (point-biserial)</b>	.26	.26
<b>Proportion of item-total correlations less than .15</b>	.03	.07
<b>Internal consistency (KR20)</b>	.88	.88

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM F	FORM G
	%	%
<b>A</b>	16	17
<b>B</b>	35	37
<b>C</b>	32	29
<b>D</b>	11	10
<b>F</b>	7	8

#### Test Information Functions for Alternate Forms

Microbiology (558)



## Pathophysiology (354)

The Pathophysiology examination is based on material usually presented in a one-semester, three-credit upper-level undergraduate course in pathophysiology. The examination measures understanding of the physiologic mechanisms altered by disease in the living organism. The primary focus of the examination is on the altered health states of adults and includes clinical presentations, signs and symptoms, appropriate diagnostic studies, and global concepts of treatment. A familiarity with normal anatomy and physiology and microbiology is assumed. A familiarity with concepts of biochemistry and immunology would also be useful.

### Description of the Examination

The Pathophysiology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Cell Biology/Mechanisms of Cell Injury/Neoplasia	10
II. Host Defense/Hematology	16
III. The Cardiovascular System	15
IV. The Respiratory System	11
V. The Renal System/Fluids and Electrolytes/Acid-base	12
VI. Neurology and the Musculoskeletal System	10
VII. The Gastrointestinal System/Nutrition/The Endocrine System/The Reproductive System	16
VIII. Clinical Applications Related to the Various Systems	10

The Pathophysiology examination is developed, scored, and evaluated using IRT methods. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Pathophysiology examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acccredit](http://www.acenet.edu/acccredit). Credit is recommended for examinees who achieve letter grades of C or higher.

### Psychometric Information

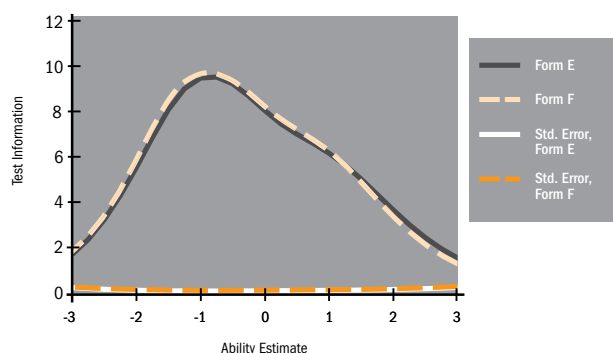
The Pathophysiology examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Pathophysiology examination. This information is based on the performance

of examinees taking this examination for credit nationwide, through the time period of July 11, 2011 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE PATHOPHYSIOLOGY EXAMINATION		
	EXAMINATION FORM	
	E	F
Number of examinees	400	452
Number of items	120	120
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.67	.65
Average item-total correlation (point-biserial)	.31	.29
Proportion of item-total correlations less than .15	.03	.02
Internal consistency (KR20)	.91	.90

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM E	FORM F
	%	%
A	45	40
B	25	25
C	12	18
D	12	11
F	7	5

Test Information Functions for Alternate Forms  
Pathophysiology (584)



## Physics (140)

The Physics examination measures knowledge and understanding of the material typically taught in a two-semester (lecture-only) algebra-/trigonometry-based undergraduate course sequence in Physics. The content of the examination corresponds with course offerings commonly called Physics I & II. The examination assumes a familiarity with units and conversion; scientific notation and orders of magnitude; algebra, trigonometry, and graphing techniques. The examination tests for a comprehensive knowledge of facts and terminology, an understanding of physical concepts and theories, and the student's ability to apply this knowledge and understanding to analyze and solve a variety of problems.

### Description of the Examination

The Physics examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Mechanics</b>	30
<b>II. Thermal Physics</b>	20
<b>III. Electromagnetism</b>	25
<b>IV. Lights and Optics</b>	15
<b>V. Modern Physics</b>	10

The Physics examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Physics examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Physics examination contains a total of 70 items. The scored items are representative of the content specifications outlined previously. The Physics examination was introduced on October 29, 2009 and we are presently acquiring data for statistical analysis.

## Political Science (170)

The Political Science examination measures the knowledge and understanding of material typically taught in a one-semester, lower-level undergraduate course in Political Science. The content of the examination corresponds with introductory course offerings such as introduction to political science, comparative law, and international relations. The examination tests for a knowledge of facts and terminology; an understanding of concepts and theories; and the examinee's ability to apply this knowledge and understanding in an analysis of politics, government, and world affairs.

### Description of the Examination

The Political Science examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Basic Terms/Concepts of Political Science</b>	10
<b>II. Political Theories and Ideologies</b>	15
<b>III. Comparative Government</b>	30
<b>IV. Comparative Law and Policy</b>	20
<b>V. International Relations</b>	25

The Political Science examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Political Science examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Political Science examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Political Science examination was introduced on October 29, 2009 and we are presently acquiring data for statistical analysis.

## Precalculus Algebra (116)

The Precalculus Algebra examination measures knowledge and understanding of material and skills typically taught in a three-credit, undergraduate, lower-level, one-semester course in Precalculus Algebra. The content of the examination reflects comprehension of college-level algebra skills and concepts. It measures knowledge and understanding of the following major themes: solving a variety of equations and inequalities; graphing, analyzing and applying transcendental and algebraic functions; and operations with functions.

### Description of the Examination

The Precalculus Algebra examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Equations and Inequalities</b>	15
<b>II. Graphs and Functions</b>	25
<b>III. Linear and Quadratic Functions</b>	20
<b>IV. Polynomial and Rational Functions</b>	10
<b>V. Algebra of Functions</b>	10
<b>VI. Exponential and Logarithmic Functions</b>	20

The Precalculus Algebra examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Precalculus Algebra examination contains a total of 60 items. The scored items are representative of the content specifications outlined previously. The Precalculus Algebra examination was introduced on February 6, 2013 and we are presently acquiring data for statistical analysis.

## Psychology of Adulthood & Aging (355)

The Psychology of Adulthood & Aging examination is based on material usually presented in a one-semester, three-credit, upper-level course in psychology of adulthood and aging. The examination measures understanding of the psychological, biological, and social aspects of aging throughout adulthood. The examination includes both classic and contemporary research and theory related to adult development and aging. The examination includes the following content areas: concepts of age and demographics; research methods and designs; personality and adjustment; biology, physiology, health, and chronic conditions; cognitive aspects; work, retirement, leisure, and relationships; death, dying, and bereavement; and mental health and psychopathology. A familiarity with the content typically presented in a general introductory-level psychology course is required.

### Description of the Examination

The Psychology of Adulthood & Aging examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Concepts of Age and Demographics</b>	7
<b>II. Research Methods and Designs</b>	10
<b>III. Personality</b>	7
<b>IV. Biology, Physiology, Health, and Chronic Conditions</b>	19
<b>V. Cognitive Aspects</b>	17
<b>VI. Work, Retirement, Leisure, and Relationships</b>	15
<b>VII. Death, Dying, and Bereavement</b>	7
<b>VIII. Mental Health, Adjustment, and Psychopathology</b>	18

The Psychology of Adulthood & Aging examination is developed, scored, and evaluated using CTT methods. Examinees' scores are standard scores with a population mean of 50 and standard deviation of 10. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Psychology of Adulthood & Aging examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Psychology of Adulthood & Aging examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Psychology of Adulthood & Aging examination was introduced on November 19, 2013. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE PSYCHOLOGY OF ADULTHOOD & AGING EXAMINATION		
	EXAMINATION FORM	
	G	H
<b>Number of examinees</b>	120	127
<b>Number of items</b>	120	120
<b>Average of percent-correct scores</b>	72.39	69.55
<b>Standard deviation of percent-correct scores</b>	11.32	10.47
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.72	.70
<b>Average item-total correlation (point-biserial)</b>	.23	.20
<b>Proportion of item-total correlations less than .15</b>	.21	.38
<b>Internal consistency (KR20)</b>	.85	.82
<b>Standard error of measurement in percent- correct scores</b>	4.33	4.5

## Research Methods in Psychology (356)

The Research Methods in Psychology examination is based on material that corresponds to a one-semester, three-credit, upper-level undergraduate course in research methods. The examination measures understanding of the course material as well as the ability to apply this understanding in specific research situations. The examination assumes a background in introductory psychology and elementary statistics.

### Description of the Examination

The Research Methods in Psychology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Experimental Psychology and the Scientific Method	5
II. Research Ethics (APA Guidelines)	7
III. Alternatives to Experimentation (Nonexperimental Designs)	25
IV. Basic Concepts of Experimental Research	25
V. Experimental Research Designs	20
VI. Data Analysis and Interpretation	10
VII. Writing Research Reports	8

The Research Methods in Psychology examination is developed, scored, and evaluated using IRT methods. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Research Methods in Psychology examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

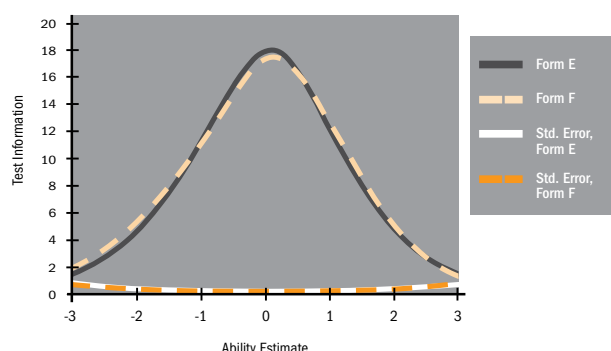
The Research Methods in Psychology examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Research Methods in Psychology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of July 11, 2011 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE RESEARCH METHODS IN PSYCHOLOGY EXAMINATION		
	EXAMINATION FORM	
	E	F
Number of examinees	381	424
Number of items	120	120
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.69	.70
Average item-total correlation (point-biserial)	.32	.30
Proportion of item-total correlations less than .15	.02	.02
Internal consistency (KR20)	.92	.91

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM E	FORM F
	%	%
A	13	12
B	39	38
C	35	37
D	9	9
F	4	3

### Test Information Functions for Alternate Forms

Research Methods in Psychology (356)





## Science of Nutrition (259)

The examination in Science of Nutrition measures knowledge and understanding of material typically taught in a three-credit, undergraduate, lower-level, one-semester course in Science of Nutrition. The content of the examination corresponds to course offerings such as Introduction to Nutrition, Principles of Nutritional Science, Human Nutrition, or Nutrition Science. No prior knowledge of nutrition is required for this examination; however, students are expected to have a basic understanding of human physiology, biology, and chemistry. This examination tests for a knowledge of facts and terminology, an understanding of concepts, and for the student's ability to apply the concepts learned in Science of Nutrition. This exam is at the undergraduate level.

### Description of Examination

The Science of Nutrition examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Overview of Nutrition</b>	15
<b>II. Macronutrients</b>	25
<b>III. Water and Micronutrients</b>	25
<b>IV. Physiology of Nutrient Utilization</b>	15
<b>V. Consequences of Energy Balance</b>	20

The Science of Nutrition examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Science of Nutrition examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Science of Nutrition examination was introduced on November 19, 2013 and we are presently acquiring data for statistical analysis.

## Social Psychology (357)

The Social Psychology examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, upper-level course in a baccalaureate program. The examination measures knowledge and understanding of the theories and principles of social psychology and the ability to apply this information to everyday life examples. The content of the examination consists of nine major categories: methodology, social cognition and perception, the self, attitudes, group decisions, attraction, helping, prejudice, and applications. Knowledge and understanding of research methods in psychology is assumed.

Examinees will be expected to demonstrate basic knowledge of research methods (types of design, validity, and ethical concerns), comprehension of major theories and phenomena within social psychology, and the ability to apply this knowledge to examples of social psychology events in everyday life.

### Description of the Examination

The Social Psychology examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Overview of Social Psychology and Methodology</b>	10
<b>II. Social Cognition and Perception</b>	10
<b>III. The Self</b>	10
<b>IV. Attitudes</b>	10
<b>V. Group Decisions</b>	15
<b>VI. Attraction</b>	10
<b>VII. Prosocial Behavior and Altruism</b>	10
<b>VIII. Stereotyping, Prejudice, and Discrimination</b>	15
<b>IX. Applied Social Psychology</b>	10

The Social Psychology examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Social Psychology examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acccredit](http://www.acenet.edu/acccredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Social Psychology examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Social Psychology examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of July 11, 2011 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE SOCIAL PSYCHOLOGY EXAMINATION		
	EXAMINATION FORM	
	F	G
Number of examinees	257	251
Number of items	120	120
Average of percent-correct scores	74.23	75.04
Standard deviation of percent-correct scores	14.37	14.32
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.74	.75
Average item-total correlation (point-biserial)	.33	.33
Proportion of item-total correlations less than .15	.02	.07
Internal consistency (KR20)	.92	.92
Standard error of measurement in percent- correct score units	4.07	4.05

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM F	FORM G
	%	%
A	21	29
B	37	34
C	31	24
D	10	11
F	2	2

## Spanish Language (102)

The Spanish Language examination measures knowledge and understanding of material typically taught in a two-semester, undergraduate course sequence in elementary Spanish. The content of the examination corresponds with course offerings such as Elementary Spanish. It assesses basic Spanish language proficiencies in the areas of receptive skills, expressive skills, and cultural skills (applying language proficiencies within authentic cultural contexts), through four question types: listening comprehension (using audio cues), reading comprehension, verbal communication, and grammar.

### Description of the Examination

The Spanish Language examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Communicative Objectives	20
II. Vocabulary and Pronunciation	20
III. Structures	20
IV. Reading and Listening Comprehension	30
V. Cultural Connections and Comparisons	10

The Spanish Language examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Spanish Language examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Spanish Language examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Spanish Language examination was introduced on June 3, 2010. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE SPANISH LANGUAGE EXAMINATION		
	EXAMINATION FORM	
	A	B
Number of examinees	71	55
Number of items	100	100
Average of percent-correct scores	80.39	74.31
Standard deviation of percent-correct scores	18.05	19.55
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.80	.74
Average item-total correlation (point-biserial)	.45	.46
Proportion of item-total correlations less than .15	.11	.04
Internal consistency (KR20)	.96	.96
Standard error of measurement in percent- correct score units	3.67	4.02

## Statistics (210)

The Statistics examination is based on material typically taught in an introductory, one-semester undergraduate course in Statistics. It measures knowledge and understanding of the fundamental concepts of descriptive and inferential statistics and is designed to correspond to a service course applicable to many majors. A basic knowledge of algebra is assumed. Questions about the meaning and application of basic statistical ideas are included.

Some of the questions involve calculations. A basic 8-function calculator—similar to that provided as part of the basic software package for an entry-level personal computer—will be available on screen at Pearson Professional Centers. The formulas and table referred to in this guide will be provided with the examination.

### Description of the Examination

The Statistics examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Overview of Statistics</b>	5
<b>II. Summarizing, Organizing, Describing Data</b>	20
<b>III. Regression and Correlation</b>	10
<b>IV. Basic Probability Theory</b>	10
<b>V. Probability Distributions</b>	10
<b>VI. Sampling</b>	10
<b>VII. Statistical Estimation</b>	15
<b>VIII. Hypothesis Testing</b>	20

The Statistics examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Statistics examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Statistics examination contains a total of 72 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Statistics examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of October 29, 2009 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE STATISTICS EXAMINATION		
	EXAMINATION FORM	
	A	B
Number of examinees	193	191
Number of items	72	72
Average of percent-correct scores	51.88	55.72
Standard deviation of percent-correct scores	20.92	19.74
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.52	.56
Average item-total correlation (point-biserial)	.42	.39
Proportion of item-total correlations less than .15	.02	.02
Internal consistency (KR20)	.93	.92
Standard error of measurement in percent-correct score units	5.59	5.64

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM A	FORM B
	%	%
A	4	5
B	16	15
C	37	44
F	44	37

## Weather and Climate (171)

The examination in Weather and Climate measures knowledge, understanding and practical application of material typically taught in a one-semester, three-credit, lower-level undergraduate course in Weather and Climate I. The content is drawn from that commonly included in courses with such titles as Weather and Climate I, Introduction to Atmospheric Science, Introduction to Weather and Climate, or Introduction to Meteorology. The examination tests for comprehension of college level meteorology and atmospheric science skills and concepts. The examination measures knowledge and understanding of the following major themes: observing, analyzing, describing, and diagramming the basics of major atmospheric processes including, energy, pressure, wind, precipitation, air masses, fronts, storm systems, and basic climate and weather patterns and understanding the physical processes and mechanisms underlying weather and climate behaviors and phenomena.

### Description of the Examination

The Weather and Climate examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Characteristics and Behaviors of the Atmosphere</b>	30
<b>II. Hydrologic Cycle and the Atmosphere, Weather, and Climate</b>	20
<b>III. Forms of Weather</b>	20
<b>IV. Human Factors</b>	15
<b>V. Climate</b>	15

The Weather and Climate examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Weather and Climate examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Weather and Climate examination was introduced on November 19, 2013 and we are presently acquiring data for statistical analysis.

## World Conflicts Since 1900 (367)

The World Conflicts Since 1900 examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, upper-level course in international relations dealing with the origins of the major international conflicts. The content of the examination is drawn from that commonly included in courses with such titles as The Causes of War, International Relations, Twentieth Century Conflicts, and Global Conflicts. The examination assumes a familiarity with modern world history and introductory international relations.

The examination tests for a knowledge of facts and terminology, an understanding of concepts, and the examinee's ability to apply this knowledge and understanding in an analysis of contemporary events.

### Description of the Examination

The World Conflicts Since 1900 examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Case Studies</b>	33
<b>II. Theories: Competing Views</b>	33
<b>III. Contemporary Sources of Conflict</b>	34

The World Conflicts Since 1900 examination is developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The World Conflicts Since 1900 examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The World Conflicts Since 1900 examination was introduced on December 3, 2012. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE WORLD CONFLICTS SINCE 1900 EXAMINATION		
	EXAMINATION FORM	
	F	G
Number of examinees	73	80
Number of items	120	120
Average of percent-correct scores	71.71	69.36
Standard deviation of percent-correct scores	14.65	13.44
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.72	.69
Average item-total correlation (point-biserial)	.32	.28
Proportion of item-total correlations less than .15	.10	.21
Internal consistency (KR20)	.92	.90
Standard error of measurement in percent-correct score units	4.19	4.32

## World Population (358)

The World Population examination measures knowledge and understanding of material that corresponds to a one-semester, three-credit, upper-level course in world population offered in sociology or geography. Excelsior College, the test developer, grants three (3) semester hours of upper-level undergraduate credit to examinees who receive a letter grade of C or higher on this examination. The examination assumes knowledge of content included in lower-level arts and sciences courses, and requires basic college-level mathematical skills. Familiarity with the content of lower-level social sciences courses (for example, sociology, geography, economics) is helpful in learning the content of the examination.

The examination tests for a knowledge and understanding of the subject matter and of interrelationships among human population, society, and the environment. It tests for the ability to demonstrate interpretive skills, including the interpretation of tabular and graphed data; to analyze information; and to apply critical thinking.

### Description of the Examination

The World Population examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Overview of the World's Population</b>	15
<b>II. Demographic Perspectives</b>	10
<b>III. Fertility</b>	15
<b>IV. Mortality</b>	10
<b>V. Migration and Urbanization</b>	15
<b>VI. Case Studies and the Future of World Population</b>	15
<b>VII. Population Issues</b>	20

The World Population examination is developed, scored, and evaluated using CTT methods. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the World Population examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The World Population examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The World Population examination was introduced on July 11, 2011. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE WORLD POPULATION EXAMINATION		
	EXAMINATION FORM	
	H	I
<b>Number of examinees</b>	123	138
<b>Number of items</b>	120	120
<b>Average of percent-correct scores</b>	72.2	72.76
<b>Standard deviation of percent-correct scores</b>	12.1	10.78
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.72	.73
<b>Average item-total correlation (point-biserial)</b>	.26	.23
<b>Proportion of item-total correlations less than .15</b>	.17	.28
<b>Internal consistency (KR20)</b>	.88	.85
<b>Standard error of measurement in percent-correct score units</b>	4.26	4.24



Psychometric Information  
for UExcel Examinations in

# Business

## Business Ethics (323)

The Business Ethics examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, upper-level, one-semester course in business ethics. The content of the examination is designed to assess mastery of business concepts, principles, and knowledge related to business ethics. In addition to factual knowledge, the exam evaluates examinees' abilities to analyze and solve ethical problems, understand relationships, and interpret material. The exam may contain questions that require critical thinking and interpretation of situational factors related to the interaction of business, government, and society.

### Description of the Examination

The Business Ethics examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Overview and Macro Issues</b>	10
<b>II. A Managerial Perspective</b>	10
<b>III. Internal Stakeholders' Ethical Considerations</b>	25
<b>IV. External Stakeholders' Ethical Considerations</b>	25
<b>V. Government as a Special External Stakeholder</b>	20
<b>VI. International Considerations in Business Ethics in Business Ethics</b>	5
<b>VII. Technological Considerations</b>	5

The Business Ethics examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Business Ethics examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously. The Business Ethics examination was introduced on January 30, 2013 and we are presently acquiring data for statistical analysis.

## Business Law (255)

Business Law examination measures knowledge and understanding of material typically taught in an introductory one-semester, three-credit, undergraduate course in Business Law. The examination tests for comprehension and understanding of Business Law in pursuit of organizational goals and strategies. This examination specifically tests for a familiarity with the key legal issues and terms related to business law as well as an application of the legal tools needed to deal with real world legal/business issues within the US legal environment. The exam requires an understanding of sources of law, dispute resolution, business ethics, criminal law as it relates to business, tort law, contracts, agency law, the various types of business organizations and the matters of real and intellectual property under US law.

### Description of the Examination

The Business Law examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Introduction to Business Law</b>	20
<b>II. The US Constitution</b>	10
<b>III. Ethics, Criminal, and Tort Law</b>	20
<b>IV. Contracts</b>	30
<b>V. Agency, Business Organizations, and Property</b>	20

The Business Law examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Business Law examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously. The Business Law examination was introduced on July 1, 2012 and we are presently acquiring data for statistical analysis.

## Financial Accounting (253)

The Financial Accounting examination measures knowledge and understanding of material typically taught in a one-semester three-credit, lower-level course in the Financial Accounting.

The examination tests for Knowledge of facts and terminology, and understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of basic financial accounting in pursuit of organizational goals and strategies, and for the familiarity with the technical skills of financial statements, accounting information systems, operating decisions, and financing decisions. As a manager/accountant, the examinee should be able to identify relevant information and the appropriate methods for analyzing information and working in a financial, global and ethical environment.

### Description of the Examination

The Financial Accounting examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Financial Accounting &amp; Reporting</b>	15
<b>II. Accounting, Information Systems &amp; Internal Controls</b>	25
<b>III. Operating Activities</b>	25
<b>IV. Investing and Financing Activities</b>	25
<b>V. Other Dimensions of Financial Reporting</b>	10

The Financial Accounting examination examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Financial Accounting examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Financial Accounting examination was introduced on January 27, 2012 and we are presently acquiring data for statistical analysis.

## Human Resource Management (351)

The Human Resource Management examination measures knowledge and understanding of material that corresponds to a one-semester, three-credit, upper-level survey course at the undergraduate level. The examination corresponds to a course required of management majors usually taken in the junior or senior year. Examination content is drawn from that commonly included in courses titled Human Resources, Human Resource Management, or Personnel Administration. The examination tests for a knowledge of facts and terminology, an understanding of human resource management concepts and principles, and the ability to apply these concepts to typical human resource management situations. A knowledge of basic management concepts is assumed.

### Description of the Examination

The Human Resource Management examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Strategic Human Resource Management	10
II. Human Resource Management and Multinational Organizations	10
III. Legal Environment	10
IV. Human Resource Planning	10
V. Human Resource Staffing	10
VI. Performance Management	10
VII. Employee Development	10
VIII. Employee Safety, Health, Welfare, and Security	10
IX. Employee Compensation	10
X. Labor Relations	10

The Human Resource Management examination is developed, scored, and evaluated using CTT methods. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Human Resource Management examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Human Resource Management examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Human Resource Management examination was introduced on July 11, 2011. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE HUMAN RESOURCE MANAGEMENT EXAMINATION		
	EXAMINATION FORM	
	J	K
Number of examinees	132	154
Number of items	120	120
Average of percent-correct scores	70.97	69.42
Standard deviation of percent-correct scores	14.21	12.97
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.71	.69
Average item-total correlation (point-biserial)	.30	.27
Proportion of item-total correlations less than .15	.12	.14
Internal consistency (KR20)	.91	.89
Standard error of measurement in percent-correct score units	4.33	4.38

## Labor Relations (352)

The Labor Relations examination measures knowledge and understanding of material typically taught in a one-semester survey, three-credit course usually taken in the junior or senior year of a business, industrial relations, or economics program. Examination content is drawn from that commonly included in courses with such titles as Labor Relations, Labor-Management Relations, Industrial and Labor Relations, or Collective Bargaining. The examination tests for a knowledge of facts and terminology, an understanding of basic concepts, and the ability to apply this knowledge and understanding. Material is primarily focused on U.S. labor relations.

### Description of the Examination

The Labor Relations examination was developed based on the following test specifications (see content guide for details):

CONTENT AREA	PERCENT OF EXAMINATION
I. Overview of Labor Relations in the United States	20
II. American Labor History	10
III. American Labor Law in the Private Sector	10
IV. The Organizing Process	10
V. Collective Bargaining	20
VI. Contract Administration	10
VII. Labor Arbitration	10
VIII. The Public Sector	5
IX. Labor Relations Abroad	5

The Labor Relations examination is developed, scored, and evaluated using CTT methods. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Labor Relations examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Labor Relations examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Labor Relations examination was introduced on July 11, 2011. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE LABOR RELATIONS EXAMINATION		
	EXAMINATION FORM	
	J	K
Number of examinees	77	91
Number of items	120	120
Average of percent-correct scores	70.27	76.15
Standard deviation of percent-correct scores	12.39	10.17
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.70	.76
Average item-total correlation (point-biserial)	.26	.21
Proportion of item-total correlations less than .15	.28	.31
Internal consistency (KR20)	.88	.84
Standard error of measurement in percent-correct score units	4.35	4.09

## Managerial Accounting (254)

The Managerial Accounting examination measures knowledge and understanding of material typically taught in a one-semester three-credit, lower-level course in Managerial Accounting. The content of the exam corresponds with introductory course offerings such as Managerial Accounting.

The examination tests for knowledge of facts and terminology, understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of the fundamentals of basic unit cost, cost flow management systems and processes, budgeting and performance measurement, and cost analysis and pricing decisions.

### Description of the Examination

The Managerial Accounting examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Overview of Managerial Accounting and Cost Concepts</b>	15
<b>II. Job-Order Costing and Process Costing</b>	10
<b>III. Cost behavior Analysis and Cost Volume-Profit Relationships</b>	20
<b>IV. Activity Based Costing</b>	10
<b>V. Profit Planning and Standard Costs</b>	15
<b>VI. Segment Reporting, Decentralization, and Balanced Score Card</b>	5
<b>VII. Short-Term and Long-Term Decision Making</b>	15
<b>VIII. Financial Statement Analysis</b>	10

The Managerial Accounting examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Managerial Accounting examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously. The Managerial Accounting examination was introduced on January 27, 2012 and we are presently acquiring data for statistical analysis.



## Operations Management (420)

The Operations Management examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, upper-level, one-semester course in Operations Management. The content of the examination corresponds to course offerings such as Operations Management, or Operations and Supply Chain Management. No prior knowledge of business is required for this examination; however, examinees are expected to have a strong understanding of business statistics. The exam also assumes a strong understanding of high school algebra. This exam will not test spreadsheet skills. The examination tests for knowledge of facts and terminology, an understanding of concepts and forms, and the examinee's ability to apply the concepts learned in actual operations management.

### Description of the Examination

The Operations Management examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. The Operations and Supply</b>	25
<b>II. Design</b>	25
<b>III. Creating and Managing the Supply Chain</b>	25
<b>IV. Planning and Control</b>	25

The Operations Management examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Operations Management examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously. The Operations Management examination was introduced on January 30, 2013 and we are presently acquiring data for statistical analysis.

## Organizational Behavior (353)

The Organizational Behavior examination measures knowledge, comprehension, application, and analysis of material that corresponds to a one-semester, three-credit, upper-level course at the undergraduate level. The examination corresponds to a course typically required of business administration majors usually taken in the junior or senior year.

Examination content is drawn from that commonly included in courses taught in business or psychology programs with such titles as Organizational Behavior, Organizational Psychology, Behavior in Organizations, Psychology of Business, or Psychology for Managers. The examination primarily concerns the individual and workforce diversity, interpersonal processes and the group, and the organization. A knowledge of the principles of management is assumed. The examination tests for a knowledge of facts and terminology, an understanding of basic concepts, and the ability to apply this knowledge and understanding to typical business situations.

### Description of the Examination

The Organizational Behavior examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Organizational Behavior, the Individual, and Workforce Diversity</b>	40
<b>II. Interpersonal Processes and the Group</b>	35
<b>III. Organizational Processes and Structure</b>	25

The Organizational Behavior examination is developed, scored, and evaluated using CTT methods. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Organizational Behavior examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Organizational Behavior examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Organizational Behavior examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of July 11, 2011 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ORGANIZATIONAL BEHAVIOR EXAMINATION		
	EXAMINATION FORM	
	J	K
Number of examinees	236	246
Number of items	120	120
Average of percent-correct scores	68.93	67.87
Standard deviation of percent-correct scores	14.07	13.98
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.69	.68
Average item-total correlation (point-biserial)	.29	.28
Proportion of item-total correlations less than .15	.03	.07
Internal consistency (KR20)	.90	.90
Standard error of measurement in percent-correct score units	4.44	4.51

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM J	FORM K
	%	%
A	28	9
B	36	40
C	27	31
D	6	17
F	3	4

## Principles of Finance (350)

The Principles of Finance examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, upper-level, one-semester course in Principles of Finance. The content of this examination is drawn from that commonly included in courses with such titles as Finance, Principles of Finance, or Corporation Finance. This examination assumes a familiarity with macroeconomics, microeconomics, financial accounting, and statistics. This exam focuses on balancing finance, marketing, and operating decisions for doing business in multi-currency environments. It also includes the basic role of finance in a corporation and how management decisions are made from the financial perspective.

### Description of the Examination

The Principles of Finance examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Fundamental Finance and Accounting Concepts</b>	25
<b>II. Economics</b>	5
<b>III. Risk Management</b>	25
<b>IV. Quantitative Financial Analysis</b>	35
<b>V. Legal and Social Environment</b>	10

The Principles of Finance examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Principles of Finance examination contains a total of 60 items. The scored items are representative of the content specifications outlined previously. The Principles of Finance examination was introduced on January 30, 2013 and we are presently acquiring data for statistical analysis.

## Principles of Management (251)

The Principles of Management examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, lower-level course in the Principles of Management. The content of the exam corresponds with introductory course offerings such as Introduction to Management, Business Organization and Management, and Fundamentals of Management.

The examination tests for knowledge of facts and terminology, and understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of fundamental management theories and examining the manager's role in today's global business world, the role of managers in the business environment, strategies for planning and decision making, organization and controls, leadership, motivation and staffing, and managing change. This examination will review the evolution of management thought, function and practice and will stress current approaches and emerging concepts.

### Description of the Examination

The Principles of Management examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Introduction to Management and Organizations</b>	10
<b>II. Organization and Human Resources</b>	20
<b>III. Functional Aspects of Management</b>	30
<b>IV. Operational Aspects of Management</b>	20
<b>V. International Management and Contemporary Issues</b>	20

The Principles of Management examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Principles of Management examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Principles of Management examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Principles of Management examination was introduced on July 1, 2012 and we are presently acquiring data for statistical analysis.

## Principles of Marketing (252)

The Principles of Management examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, lower-level course in marketing. The content of the exam corresponds with introductory course offerings such as Introduction to Marketing, Marketing, Basic Marketing, Marketing Concepts, and Marketing Management.

The examination tests for knowledge of facts and terminology, an understanding of marketing concepts and theories, and the examinee's ability to apply this knowledge and understanding within organizational and societal environments. Major topics include marketing strategies and mix, market segmentation, factors affecting the marketing environment, market research, consumer and business buyer behavior, target marketing, product differentiation and positioning, product branding, pricing strategies, the purchase decision process, marketing channels, promotion mix strategies, online and global marketing, marketing ethics, and the marketing plan.

### Description of the Examination

The Principles of Marketing examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Introduction to Marketing</b>	10
<b>II. The Marketplace and Consumers</b>	25
<b>III. Marketing Strategy and Mix</b>	45
<b>IV. Global Marketing</b>	10
<b>V. Social Responsibility and Marketing Ethics</b>	5
<b>VI. The Marketing Plan</b>	5

The Principles of Marketing examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Principles of Marketing examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Principles of Marketing examination contains a total of 120 items. The scored items are representative of the content specifications outlined previously. The Principles of Marketing examination was introduced on July 1, 2012 and we are presently acquiring data for statistical analysis.

## Quantitative Analysis (437)

The Quantitative Analysis examination measures knowledge and understanding of material typically taught in a three-credit, undergraduate, upper-level, one-semester course in Quantitative Analysis. The content of the exam covers the major quantitative techniques and their application to the analysis of business problems. Topics include estimation, hypothesis testing, linear and multivariate regression and correlation, decision theory, linear programming, time series and supply chain management, transportation and assignment models, and inventory management and queuing theory models. A solid grounding in statistics is assumed.

### Description of the Examination

The Quantitative Analysis examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Decision Making Overview and Risk Analysis</b>	10
<b>II. Decision Analysis</b>	15
<b>III. Queuing Theory</b>	10
<b>IV. Integer Programming and Project Scheduling</b>	10
<b>V. Linear Programming</b>	15
<b>VI. Sensitivity Analysis</b>	15
<b>VII. Linear Programming Applications</b>	15
<b>VIII. Distribution and Network Models</b>	10

The Quantitative Analysis examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Quantitative Analysis examination contains a total of 90 items. The scored items are representative of the content specifications outlined previously. The Quantitative Analysis examination was introduced on January 30, 2013 and we are presently acquiring data for statistical analysis.

## Workplace Communication with Computers (256)

The Workplace Communication with Computers examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, lower-level course in Workplace Communications Using Computers. The content of the exam corresponds with introductory course offerings such as Business Communications, Workplace Communications, Introduction to Communication Technology for Business, and Managerial Communications.

The examination tests for the knowledge of facts and terminology, understanding of concepts and theories, and the examinee's ability to apply this knowledge and understanding in an analysis of business communications principles, including the foundations of communication, effective and ineffective teams, interpersonal communication, and diversity within the business environment; how to write effective business messages; how to select the most appropriate technologies to enhance communication within organizations; how to use various message patterns effectively, how to use visual aids and supporting data to enhance communications, and how to use oral and online presentations to improve business communications.

### Description of the Examination

The Workplace Communication with Computers examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Principles of Business Communications</b>	20
<b>II. Writing in a Business Environment</b>	25
<b>III. Technology and Message Patterns</b>	25
<b>IV. Supporting Data and Visual Aids</b>	15
<b>V. Oral and Online Presentations</b>	15

The Workplace Communication with Computers examination has thus far been developed, scored, and evaluated using CTT methods. Examinee's scores are percent-correct scores. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Workplace Communication with Computers examination contains a total of 100 items. The scored items are representative of the content specifications outlined previously. The Workplace Communication with Computers examination was introduced on July 1, 2012 and we are presently acquiring data for statistical analysis.



Psychometric Information  
for UExcel Examinations in

# Education

## Literacy Instruction in the Elementary School (565)

The Literacy Instruction in the Elementary School examination measures knowledge and understanding of material typically taught in a two-semester sequence of upper-level courses in elementary school reading and writing instruction. The content of the examination is drawn from that commonly included in courses with titles such as Reading in the Elementary School, Writing in the Elementary School, Teaching of Literacy, Methods of Teaching Reading, and Reading and Language Arts. The examination assumes a knowledge of content that would be included in such lower-level education courses as Foundations of Education, Educational Psychology, Orientation to Teaching, and Instructional Planning. A knowledge of child development, some learning theory, and instructional planning and implementation, as well as practicum experience, would be helpful in learning the content of the examination.

The examination tests for a knowledge and understanding of the fundamental concepts and principles guiding elementary school literacy instruction; for the ability to apply, synthesize, and evaluate information; and for the ability to read critically.

### Description of the Examination

The Literacy Instruction in the Elementary School examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Theoretical Frameworks	15
II. Emergent Literacy/Beginning Reading	15
III. Identifying and Understanding Words	15
IV. Constructing Meaning: Comprehension and Response	15
V. Writing Instruction	15
VI. The Teacher as Reflective Decision Maker: Implementing a Classroom Literacy Program	15
VII. Assessment and Evaluation	10

The Literacy Instruction in the Elementary School examination is developed, scored, and evaluated using CTT methods. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Literacy Instruction in the Elementary School for three upper-level credits rather than 6. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Literacy Instruction in the Elementary School examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Literacy Instruction in the Elementary School examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of April 11, 2011 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE LITERACY INSTRUCTION IN THE ELEMENTARY SCHOOL EXAMINATION		
	EXAMINATION FORM	
	C	D
Number of examinees	907	903
Number of items	130	130
Average of percent-correct scores	69.63	73.81
Standard deviation of percent-correct scores	12.72	12.31
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.70	.74
Average item-total correlation (point-biserial)	.26	.27
Proportion of item-total correlations less than .15	.07	.03
Internal consistency (KR20)	.88	.89
Standard error of measurement in percent-correct score units	4.41	4.15

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM C	FORM D
	%	%
A	25	33
B	36	37
C	28	22
D	6	6
F	5	2

Psychometric Information  
for UExcel Examinations in

# **Nursing: Associate Level**

## Fundamentals of Nursing (403)

The Fundamentals of Nursing examination measures knowledge and understanding of material that corresponds to a three-credit course in fundamentals of nursing in an associate degree nursing program. The examination assumes a basic knowledge of anatomy and physiology, chemistry, and mathematics. Questions on the examination focus on the health problems of adult patients that are commonly encountered by associate degree nurses in hospital settings.

The examination requires examinees to demonstrate knowledge and understanding of the theoretical framework for each content area as well as the ability to apply this knowledge through use of the nursing process.

### Description of the Examination

The Fundamentals of Nursing examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. The Profession of Nursing</b>	8
<b>II. Communication and Interpersonal Relations</b>	10
<b>III. Protection and Promotion of Safety</b>	25
<b>IV. Comfort, Rest, and Activity</b>	15
<b>V. Nutrition</b>	10
<b>VI. Elimination</b>	11
<b>VII. Oxygenation</b>	10
<b>VIII. Fluid and Electrolyte Balance</b>	11

The Fundamentals of Nursing examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Fundamentals of Nursing examination contains a total of 150 items. The scored items are representative of the content specifications outlined previously, and selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Fundamentals of Nursing examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of September 1, 2006 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE FUNDAMENTALS OF NURSING EXAMINATION

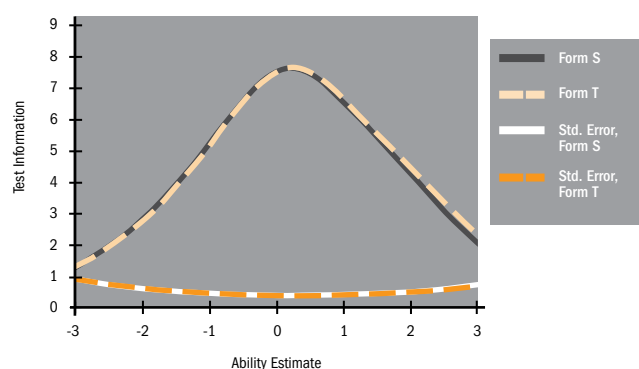
	EXAMINATION FORM	
	S	T
<b>Number of examinees</b>	557	596
<b>Number of items</b>	150	150
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.66	.64
<b>Average item-total correlation (point-biserial)</b>	.25	.25
<b>Proportion of item-total correlations less than .15</b>	.15	.12
<b>Internal consistency (KR20)</b>	.82	.83

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM S	FORM T
	%	%
<b>A</b>	15	13
<b>B</b>	33	31
<b>C</b>	35	36
<b>D</b>	11	12
<b>F</b>	7	9

#### Test Information Functions for Alternate Forms

Fundamentals of Nursing (403)



## Maternal & Child Nursing (associate) (453)

The Maternal & Child Nursing (associate) examination measures knowledge and understanding of maternity nursing and care of both well and ill children from birth through adolescence. It is based on material that corresponds to a six-credit, lower-level course in maternal and child nursing at the associate degree level.

The examination tests for a knowledge and understanding of the theoretical framework related to each content area. The examination further tests for the ability to apply this knowledge by using the nursing process (assessment, diagnosis, planning, implementation, and evaluation) to provide nursing care to the family during the childbearing and childrearing cycles.

### Description of the Examination

The Maternal & Child Nursing (associate) examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Antepartal Care	15
II. Intrapartal Care	10
III. Postpartal Care	15
IV. The Newborn	10
V. The Infant	10
VI. The Toddler	10
VII. The Preschooler	10
VIII. The School-age Child	10
IX. The Adolescent	10

The Maternal & Child Nursing (associate) examination is developed, scored, and evaluated using CTT methods. Examinees' scores are standard scores with a population mean of 50 and standard deviation of 10. Letter grades and diagnostic score reports are provided to examinees.

## Psychometric Information

The Maternal & Child Nursing (associate) examination contains a total of 160 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Maternal & Child Nursing (associate) examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of October 1, 2001 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE MATERNAL & CHILD NURSING (ASSOCIATE) EXAMINATION		
	EXAMINATION FORM	
	M	N
Number of examinees	875	879
Number of items	160	160
Average of percent-correct scores (and standard scores)	66.16 (50.62)	68.58 (51.54)
Standard deviation of percent-correct scores (and standard scores)	10.59 (8.34)	9.74 (8.04)
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.66	.69
Average item-total correlation (point-biserial)	.19	.17
Proportion of item-total correlations less than .15	.24	.35
Internal consistency (KR20)	.86	.84
Standard error of measurement	3.11	3.22

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM M	FORM N
	%	%
A	6	8
B	22	23
C	49	48
D	18	18
F	4	3



Psychometric Information  
for UExcel Examinations in

# **Nursing: Baccalaureate Level**

## Adult Nursing (554)

The Adult Nursing examination measures knowledge and understanding of the health and nursing care of young, middle-aged, and older adults. It is based on material that corresponds to an upper-level, eight-credit sequence of courses in medical-surgical nursing or adult nursing at the baccalaureate level.

The examination tests for a knowledge and understanding of the physiological, developmental, psychological, social, cultural, and spiritual dimensions of health and illness in adults. It tests for the ability to use the nursing process in a variety of settings to deliver health care to adults with actual or potential health problems.

### Description of the Examination

The Adult Nursing examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Core Concepts	10
II. Nursing Management of Clients with Cardiovascular and Hematologic System Dysfunction	10
III. Nursing Management of Clients with Respiratory System Dysfunction	10
IV. Nursing Management of Clients with Urinary System Dysfunction	10
V. Nursing Management of Clients with Reproductive System Dysfunction	10
VI. Nursing Management of Clients with Endocrine System Dysfunction	10
VII. Nursing Management of Clients with Gastrointestinal System Dysfunction	10
VIII. Nursing Management of Clients with Sensory System and Neurological System Dysfunction	10
IX. Nursing Management of Clients with Musculoskeletal System Dysfunction	10
X. Nursing Management of Clients with Immune System and Integumentary System Dysfunction	10

The Adult Nursing examination is developed, scored, and evaluated using IRT methods. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

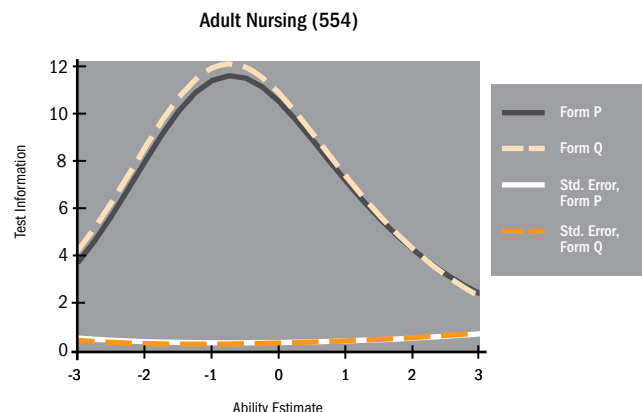
## Psychometric Information

The Adult Nursing examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Adult Nursing examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of October 9, 2008 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ADULT NURSING EXAMINATION		
	EXAMINATION FORM	
	P	Q
Number of examinees	684	667
Number of items	130	130
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.70	.71
Average item-total correlation (point-biserial)	.24	.23
Proportion of item-total correlations less than .15	.15	.18
Internal consistency (KR20)	.87	.85

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM P	FORM Q
	%	%
A	11	9
B	35	41
C	36	34
D	18	15
F	2	2

### Test Information Functions for Alternate Forms





## Maternal & Child Nursing (baccalaureate) (457)

The Maternal & Child Nursing (baccalaureate) examination measures knowledge and understanding of health and illness as it pertains to maternal and child nursing and to the psychodynamics of family functioning. It is based on material taught in an upper-level sequence of eight-credit courses in maternal and child nursing at the baccalaureate level.

The examination tests for a knowledge of the physical, emotional, and psychosocial concepts relevant to the health care of the childbearing and childrearing family. It tests for the ability to utilize the nursing process in the delivery of health care to the individual and family in a variety of settings, and for the ability to apply principles of normal growth and development to nursing management.

### Description of the Examination

The Maternal & Child Nursing (baccalaureate) examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Nursing Management of the Childbearing Family and the Childrearing Family</b>	10
<b>II. Nursing Management of the Normal Pregnancy</b>	25
<b>III. Nursing Management of the Family with a High-Risk Pregnancy and the Family with a High-Risk Neonate</b>	20
<b>IV. Nursing Management of the Well Child and Family</b>	20
<b>V. Nursing Management of the Ill Child and Family</b>	25

The Maternal & Child Nursing (baccalaureate) examination is developed, scored, and evaluated using CTT methods. Examinees' scores are standard scores with a population mean of 50 and standard deviation of 10. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Maternal & Child Nursing (baccalaureate) examination contains a total of 160 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Maternal & Child Nursing (baccalaureate) examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of October 1, 2001 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE MATERNAL & CHILD NURSING (BACCALAUREATE) EXAMINATION

	EXAMINATION FORM	
	P	Q
<b>Number of examinees</b>	1130	1124
<b>Number of items</b>	160	160
<b>Average of percent-correct scores (and standard scores)</b>	72.37 (54.48)	73.31 (55.4)
<b>Standard deviation of percent-correct scores (and standard scores)</b>	9.40 (8.98)	9.37 (8.96)
<b>CLASSICAL TEST THEORY SUMMARY</b>		
<b>Average item difficulty</b>	.72	.73
<b>Average item-total correlation (point-biserial)</b>	.18	.19
<b>Proportion of item-total correlations less than .15</b>	.31	.22
<b>Internal consistency (KR20)</b>	.84	.85
<b>Standard error of measurement in percent-correct score units</b>	3.56	3.50

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM P	FORM Q
	%	%
<b>A</b>	57	61
<b>B</b>	21	22
<b>C</b>	7	7
<b>D</b>	13	9
<b>F</b>	2	2

## Psychiatric/Mental Health Nursing (503)

The Psychiatric/Mental Health Nursing examination measures knowledge and understanding of the theoretical/therapeutic foundations for psychiatric mental health nursing practice, and tests the application of this knowledge and understanding to the nursing care of clients, using the nursing process as an organizing framework.

The examination is based on material that corresponds to an upper-level, eight-credit sequence of courses in psychiatric/mental health nursing at the baccalaureate level.

### Description of the Examination

The Psychiatric/Mental Health Nursing examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
I. Theoretical/Therapeutic Foundations for Psychiatric/Mental Health Nursing Practice	25
II. Nursing Assessment and Nursing Analysis	25
III. Nursing Planning and Nursing Implementation	30
IV. Nursing Evaluation	20

The Psychiatric/Mental Health Nursing examination is developed, scored, and evaluated using IRT methods of analysis. Examinees' scores are ability estimates and cut-scores for letter grades are set on the ability ( $\theta$ ) scale. Letter grades and diagnostic score reports are provided to examinees.

### Psychometric Information

The Psychiatric/Mental Health Nursing examination contains a total of 160 items. The scored items are representative of the content specifications outlined previously, and selected based on the adequacy of their psychometric properties. The following tables and graph provide a summary of psychometric information for two current forms of the Psychiatric/Mental Health Nursing examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of May 26, 2005 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE PSYCHIATRIC/MENTAL HEALTH NURSING EXAMINATION

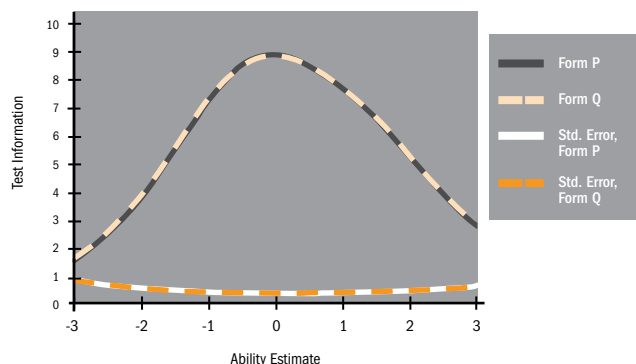
	EXAMINATION FORM	
	P	Q
Number of examinees	879	829
Number of items	160	160
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.64	.64
Average item-total correlation (point-biserial)	.21	.19
Proportion of item-total correlations less than .15	.28	.26
Internal consistency (KR20)	.83	.81

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM P	FORM Q
	%	%
A	8	7
B	20	23
C	40	45
D	21	17
F	11	8

#### Test Information Functions for Alternate Forms

##### Psychiatric/Mental Health Nursing (503)



Psychometric Information  
for Excelsior College Examinations (ECEs) in

# **Nursing: Associate Level**

## Essentials of Nursing Care: Health Safety (488)

The Essentials of Nursing Care: Health Safety examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, lower-level course in Fundamentals of Nursing. The examination tests the concepts and principles related to the application of the nursing roles of provider and manager of care and member of profession when applying the nursing process and concepts of safety (medication, physical, emotional, environmental) to care for patients across the life span who are responding to common health needs related to health promotion, wellness, and self-responsibility. Critical thinking skills and caring behaviors needed to provide and manage care for these patients are stressed. Evidence-based nursing care and standards for nursing practice, as well as ethical, legal, and regulatory concerns specific to these patients are addressed.

### Description of the Examination

The Essentials of Nursing Care: Health Safety examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Nursing Process</b>	10
<b>II. Health, Wellness, and Illness</b>	20
<b>III. Environmental Safety</b>	15
<b>IV. Biological Safety</b>	20
<b>V. Medication Safety</b>	15
<b>VI. Psychological Safety</b>	20

The Essentials of Nursing Care: Health Safety examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Essentials of Nursing Care: Health Safety examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Essentials of Nursing Care: Health Safety examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Essentials of Nursing Care: Health Safety examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of May 10, 2014 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ESSENTIALS OF NURSING CARE: HEALTH SAFETY EXAMINATION		
	EXAMINATION FORM	
	C	D
Number of examinees	255	255
Number of items	130	130
Average of percent-correct scores	70.29	70.38
Standard deviation of percent-correct scores	9.08	8.79
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.70	.70
Average item-total correlation (point-biserial)	.17	.16
Proportion of item-total correlations less than .15	.39	.45
Internal consistency (KR20)	.77	.75
Standard error of measurement in percent-correct score units	4.38	4.38

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM C	FORM D
	%	%
A	9	13
B	26	20
C	45	44
D	20	22
F	1	0

## Essentials of Nursing Care: Health Differences (489)

The Essentials of Nursing Care: Health Differences examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, lower-level course in Fundamentals of Nursing. The examination tests the concepts and principles related to the application of the nursing roles as provider and manager of care and member of profession when applying the nursing process to care for patients across the life span to support health and alleviate common health deviations related to nutrition, elimination, oxygenation, fluid and electrolyte balance, and rest and activity. Critical thinking skills and caring behaviors needed to provide and manage care for these patients are stressed. Evidence-based nursing care and standards for nursing practice, as well as ethical, legal, and regulatory concerns specific to these patients are addressed.

### Description of the Examination

The Essentials of Nursing Care: Health Differences examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Nutrition</b>	20
<b>II. Elimination</b>	15
<b>III. Oxygenation</b>	20
<b>IV. Fluid and Electrolyte Balance</b>	30
<b>V. Activity and Mobility</b>	10
<b>VI. Rest and Sleep</b>	5

The Essentials of Nursing Care: Health Differences examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Essentials of Nursing Care: Health Differences examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Essentials of Nursing Care: Health Differences examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The Essentials of Nursing Care: Health Differences examination was introduced on May 10, 2014. The following table provides some basic psychometric information about two current forms of the examination. More information will be provided once we have sufficient volume of examinees.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE ESSENTIALS OF NURSING CARE: HEALTH DIFFERENCES EXAMINATION		
	EXAMINATION FORM	
	C	D
Number of examinees	132	139
Number of items	130	130
Average of percent-correct scores	68.77	69.7
Standard deviation of percent-correct scores	8.77	7.56
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.69	.70
Average item-total correlation (point-biserial)	.17	.13
Proportion of item-total correlations less than .15	.42	.56
Internal consistency (KR20)	.76	.67
Standard error of measurement in percent-correct score units	4.26	4.32

## Foundations in Nursing Practice (490)

The Foundations in Nursing Practice examination measures knowledge and understanding of material typically taught in a one-semester, three-credit, lower-level course. The examination tests the concepts and principles related to the nursing roles of provider and manager of care and member of profession when applying the nursing process with culturally diverse patients across the life span to promote health and wellness and manage illness when the health care concern is related to pain and discomfort, chronic illness, sensory impairment, or end of life care, or when the primary setting is community health. Critical thinking skills and caring behaviors needed to provide and manage care for these patients are stressed. Evidence-based nursing care and standards for nursing practice, as well as ethical, legal, and regulatory concerns specific to these patients are also addressed.

### Description of the Examination

The Foundations in Nursing Practice examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Functional Assessment</b>	10
<b>II. Pain and Discomfort</b>	20
<b>III. Chronic Illness</b>	10
<b>IV. End of Life Care</b>	15
<b>V. Sensory Impairments</b>	20
<b>VI. Culture and Diversity</b>	15
<b>VII. Community-Based Nursing Care</b>	10

The Foundations in Nursing Practice examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Foundations in Nursing Practice examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Foundations in Nursing Practice examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Foundations in Nursing Practice examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of May 10, 2014 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE FOUNDATIONS IN NURSING PRACTICE EXAMINATION		
	EXAMINATION FORM	
	G	H
<b>Number of examinees</b>	264	256
<b>Number of items</b>	130	130
<b>Average of percent-correct scores</b>	68.46	69.4
<b>Standard deviation of percent-correct scores</b>	7.76	7.26
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.68	.69
<b>Average item-total correlation (point-biserial)</b>	.14	.12
<b>Proportion of item-total correlations less than .15</b>	.49	.62
<b>Internal consistency (KR20)</b>	.72	.68
<b>Standard error of measurement in percent-correct score units</b>	4.11	4.09

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM G	FORM H
	%	%
<b>A</b>	5	5
<b>B</b>	25	29
<b>C</b>	50	50
<b>D</b>	21	16
<b>F</b>	0	0

## Reproductive Health (491)

The Reproductive Health examination measures knowledge and understanding of material typically taught in a one semester, three credit, lower level course in Maternal and Newborn Nursing. The examination tests the concepts and principles related to the application of the nursing roles of provider and manager of care and member of profession when applying the nursing process to the care of patients across the life span with needs related to human sexuality; needs of the childbearing family; congenital anomalies, genetic disorders, and developmental problems; and reproductive disorders. Critical thinking skills and caring behaviors needed to provide and manage care for these patients are stressed. Evidence-based nursing care and standards for nursing practice, as well as ethical, legal, and regulatory concerns specific to these patients are addressed.

### Description of the Examination

The Reproductive Health examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Human Sexuality</b>	10
<b>II. Needs of the Childbearing Family: Preconception</b>	5
<b>III. Needs of the Childbearing Family: Antepartal Period</b>	10
<b>IV. Needs of the Childbearing Family: Intrapartal Period</b>	15
<b>V. Needs of the Childbearing Family: Postpartal Family</b>	25
<b>VI. Congenital Anomalies, Genetic Disorders, and Developmental Problems</b>	20
<b>VII. Reproductive Disorders</b>	15

The Reproductive Health examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Reproductive Health examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Reproductive Health examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Reproductive Health examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of May 10, 2014 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE REPRODUCTIVE HEALTH EXAMINATION		
	EXAMINATION FORM	
	E	F
Number of examinees	234	209
Number of items	130	130
Average of percent-correct scores	69.88	71.61
Standard deviation of percent-correct scores	9.83	10.54
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.70	.72
Average item-total correlation (point-biserial)	.19	.22
Proportion of item-total correlations less than .15	.33	.35
Internal consistency (KR20)	.79	.83
Standard error of measurement in percent-correct score units	4.54	4.36

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM E	FORM F
	%	%
A	14	19
B	12	13
C	49	44
D	24	23
F	0	2

## Health Differences Across the Life Span 1 (492)

The Health Differences Across the Life Span 1 examination measures knowledge and understanding of material typically taught in a one semester, three credit, lower level medical course. The examination tests the concepts and principles related to the application of the nursing roles as provider and manager of care and member of the profession when applying the nursing process to care for patients across the life span who are experiencing health differences related to cardiovascular and respiratory illness or who are experiencing abnormal cell growth. Critical thinking skills and caring behaviors needed to provide and manage care for these patients are stressed. Evidence-based nursing care and standards for nursing practice, as well as ethical, legal, and regulatory concerns specific to these patients are addressed.

### Description of the Examination

The Health Differences Across the Life Span 1 examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Cardiovascular Problems</b>	33
<b>II. Respiratory Problems</b>	33
<b>III. Abnormal Cellular Growth</b>	34

The Health Differences Across the Life Span 1 examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Health Differences Across the Life Span 1 examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

### Psychometric Information

The Health Differences Across the Life Span 1 examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Health Differences Across the Life Span 1 examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of April 12, 2011 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE HEALTH DIFFERENCES ACROSS THE LIFE SPAN 1 EXAMINATION

	EXAMINATION FORM	
	C	D
<b>Number of examinees</b>	3630	3675
<b>Number of items</b>	130	130
<b>Average of percent-correct scores</b>	65.74	66.72
<b>Standard deviation of percent-correct scores</b>	9.25	9.79
<b>CLASSICAL TEST THEORY SUMMARY</b>		
<b>Average item difficulty</b>	.66	.67
<b>Average item-total correlation (point-biserial)</b>	.17	.18
<b>Proportion of item-total correlations less than .15</b>	.31	.26
<b>Internal consistency (KR20)</b>	.77	.79
<b>Standard error of measurement in percent-correct scores</b>	4.42	4.5

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM C	FORM D
	%	%
<b>A</b>	8	13
<b>B</b>	34	37
<b>C</b>	36	33
<b>D</b>	13	8
<b>F</b>	10	10



## Health Differences Across the Life Span 2 (493)

The Health Differences Across the Life Span 2 examination measures knowledge and understanding of material typically taught in a one semester, three credit, lower level medical course. The examination tests the concepts and principles related to the application of the nursing roles as provider and manager of care and member of the profession when applying the nursing process to care for patients across the life span who are experiencing behavioral, regulatory, and metabolic health differences. Behavioral responses include patients with a variety of psychiatric disorders including cognitive impairments; regulatory mechanisms include patients with adrenal, thyroid and parathyroid, pituitary, and kidney disorders; metabolic disorders include patients with liver, gall bladder, and pancreatic disorders. Critical thinking skills and caring behaviors needed to provide and manage care for these patients are stressed. Evidence-based nursing care and standards for nursing practice, as well as ethical, legal, and regulatory concerns specific to these patients are addressed.

### Description of the Examination

The Health Differences Across the Life Span 2 examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Behavioral Responses</b>	40
<b>II. Cognitive Assessment</b>	10
<b>III. Regulatory Mechanisms</b>	25
<b>IV. Metabolic Mechanisms</b>	25

The Health Differences Across the Life Span 2 examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Health Differences Across the Life Span 2 examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Health Differences Across the Life Span 2 examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Health Differences Across the Life Span 2 examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of May 10, 2014 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE HEALTH DIFFERENCES ACROSS THE LIFE SPAN 2 EXAMINATION		
	EXAMINATION FORM	
	E	F
<b>Number of examinees</b>	235	240
<b>Number of items</b>	130	130
<b>Average of percent-correct scores</b>	66.74	64.85
<b>Standard deviation of percent-correct scores</b>	9.17	9.5
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.66	.65
<b>Average item-total correlation (point-biserial)</b>	.16	.17
<b>Proportion of item-total correlations less than .15</b>	.45	.36
<b>Internal consistency (KR20)</b>	.78	.79
<b>Standard error of measurement in percent-correct score units</b>	4.28	4.36

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM E	FORM F
	%	%
<b>A</b>	5	3
<b>B</b>	31	24
<b>C</b>	47	45
<b>D</b>	16	26
<b>F</b>	2	2

## Health Differences Across the Life Span 3 (494)

The Health Differences Across the Life Span 3 examination measures knowledge and understanding of material typically taught in a one semester, three credit, lower level medical course. The examination tests the concepts and principles related to the application of the nursing roles as provider and manager of care and member of the profession when applying the nursing process to care for patients across the life span who are experiencing health differences related to musculoskeletal disorders, infectious and communicable diseases, tissue trauma, and neurological dysfunction. Critical thinking skills and caring behaviors needed to provide and manage care for these patients are stressed. Evidence-based nursing care and standards for nursing practice, as well as ethical, legal, and regulatory concerns specific to these patients are addressed.

### Description of the Examination

The Health Differences Across the Life Span 3 examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Infectious and Communicable Disease Problems</b>	25
<b>II. Tissue Trauma</b>	25
<b>III. Neurological Dysfunction</b>	25
<b>IV. Musculoskeletal Dysfunction</b>	25

The Health Differences Across the Life Span 3 examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Health Differences Across the Life Span 3 examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Health Differences Across the Life Span 3 examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Health Differences Across the Life Span 3 examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of May 10, 2014 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE HEALTH DIFFERENCES ACROSS THE LIFE SPAN 3 EXAMINATION		
	EXAMINATION FORM	
	E	F
Number of examinees	291	264
Number of items	130	130
Average of percent-correct scores	62.58	59.33
Standard deviation of percent-correct scores	7.51	7.45
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.63	.59
Average item-total correlation (point-biserial)	.12	.12
Proportion of item-total correlations less than .15	.63	.65
Internal consistency (KR20)	.69	.68
Standard error of measurement in percent-correct score units	4.22	4.25

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM E	FORM F
	%	%
A	1	2
B	16	11
C	47	55
D	35	33
F	1	0

## Transition to the Professional Nurse Role (495)

The Transition to the Professional Nurse Role examination measures knowledge and understanding of material typically taught in a one semester, three-credit, lower-level medical course on Issues and Trends in Nursing. This examination assesses knowledge and skills related to RN professional role development. The managerial, supervisory, and delegation functions of the RN is introduced and emphasized. Recognition of the differences among the associate, baccalaureate, and graduate-level nursing roles is tested, along with factors affecting the health care delivery system; role functioning of interdisciplinary teams; and the legal, ethical, and education aspects of current nursing practice. Influences of nursing history, nursing organizations, and regulatory bodies impacting nursing functions in the delivery of health care are examined.

### Description of the Examination

The Transition to the Professional Nurse Role examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Forces Influencing the Development of the Nursing Profession</b>	10
<b>II. The Health Care Delivery System</b>	20
<b>III. Foundations of Clinical Nursing Practice</b>	35
<b>IV. The Nursing Profession: Roles and Responsibilities</b>	35

The Transition to the Professional Nurse Role examination is developed, scored, and evaluated using CTT methods of analysis. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Transition to the Professional Nurse Role examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

### Psychometric Information

The Transition to the Professional Nurse Role examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide a summary of psychometric information for two current forms of the Transition to the Professional Nurse Role examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of May 10, 2014 to August 31, 2014.

#### SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE TRANSITION TO THE PROFESSIONAL NURSE ROLE EXAMINATION

	EXAMINATION FORM	
	E	F
<b>Number of examinees</b>	419	431
<b>Number of items</b>	130	130
<b>Average of percent-correct scores</b>	65.16	64
<b>Standard deviation of percent-correct scores</b>	9.56	9.46
CLASSICAL TEST THEORY SUMMARY		
<b>Average item difficulty</b>	.65	.64
<b>Average item-total correlation (point-biserial)</b>	.18	.18
<b>Proportion of item-total correlations less than .15</b>	.33	.41
<b>Internal consistency (KR20)</b>	.80	.80
<b>Standard error of measurement in percent-correct score units</b>	4.22	4.26

#### PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE

GRADE	FORM E	FORM F
	%	%
<b>A</b>	0	0
<b>B</b>	11	9
<b>C</b>	63	61
<b>D</b>	26	29
<b>F</b>	0	0



Psychometric Information  
for Excelsior College Examinations (ECEs) in

# **Nursing: Baccalaureate Level**

## Community-Focused Nursing (546)

The Community-Focused Nursing examination is designed to prepare the registered nurse for transition to baccalaureate-level practice. It is based on material that corresponds to a one semester, four-credit\*, upper-level course at the undergraduate level. The concept of client is expanded to include families, aggregates, and communities within the context of a complex and dynamic environment. Principles of epidemiology, demography, environmental sciences, and political organizations are integrated with nursing concepts and principles to provide a basis for community nursing practice. Analysis and application of selected theories and health promotion/protection and disease prevention strategies are explored. The examination focuses on the synthesis of population-based health and public health concepts to promote, maintain, and restore health of families, aggregates, and communities. Knowledge from practice and readings is used to operationalize the core concepts of critical thinking, communication, research, role development, caring, and cultural competency.

### Description of the Examination

The Community-Focused Nursing examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	PERCENT OF EXAMINATION
<b>I. Concepts, Models, and Theories of Community Health Nursing</b>	15
<b>II. Epidemiology and Health Promotion</b>	15
<b>III. Global Environmental Health</b>	10
<b>IV. Factors Influencing Community Health</b>	15
<b>V. Community as Client: Application of the Nursing Process</b>	10
<b>VI. Roles and Strategies for Community Health Nursing</b>	10
<b>VII. Common Community Health Issues and Specific Aggregates</b>	15
<b>VIII. Community Health Nursing in Specialized Settings</b>	10

The Community-Focused Nursing examination has thus far been developed, scored, and evaluated using CTT methods. Examinees' scores are calculated as percent-correct scores. Letter grades and diagnostic score reports are provided to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Community-Focused Nursing examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acccredit](http://www.acenet.edu/acccredit). Credit is recommended for examinees who achieve letter grades of C or higher.

## Psychometric Information

The Community-Focused Nursing examination contains a total of 130 items. The scored items are representative of the content specifications outlined previously. New forms of the Community-Focused Nursing examination were introduced on May 10, 2014. We are presently acquiring data for statistical analysis.

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\* As of January 1, 2015 Excelsior college will award 3 credits for the Community Focused Nursing examination. However, the examination content will not change.

## Research in Nursing (537)

The Research in Nursing examination measures knowledge and understanding of material typically taught in a one semester three-credit, upper-level course in a baccalaureate program. The examination tests for a knowledge and understanding of the research process and the ability to apply this information to critiquing a research study. The content covered on the examination consists of four major categories: foundations of research, quantitative research, qualitative research, and critique of a research report. A knowledge and understanding of statistics is assumed.

### Description of the Test

The Research in Nursing examination was developed based on the following test specifications (see content guide for details).

CONTENT AREA	QUESTIONS ON EXAMINATION
<b>I. Foundations of Research–multiple-choice</b>	33
<b>II. Quantitative Research–multiple-choice</b>	33
<b>III. Qualitative Research–multiple-choice</b>	14
<b>IV. Critique of a Research Study–free-response</b>	4
<b>TOTAL</b>	<b>84</b>

The Research in Nursing examination is mixed-format. It contains both multiple-choice and free response questions. CTT methods are used for scoring and evaluating this examination. For the multiple-choice section, examinees' scores are calculated as percent-correct scores. The free-response section contains four directives that are each independently rated by three trained content experts. Raw scores on the free-response section can range from 0–20, and will then be converted to percent scores. The multiple-choice section is weighted by 1 and the free-response section is weighted by 1.6. Composite scores are converted to percent scores. Only letter grades are reported to examinees. The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the Research in Nursing examination. For more information, visit ACE CREDIT's website at [www.acenet.edu/acecredit](http://www.acenet.edu/acecredit). Credit is recommended for examinees who achieve letter grades of C or higher.

### Psychometric Information

The Research in Nursing examination contains a total of 84 items. The scored items are representative of the content specifications outlined previously, and were selected based on the adequacy of their psychometric properties. The following tables provide some basic psychometric information for two current forms of this examination. This information is based on the performance of examinees taking this examination for credit nationwide, through the time period of November 19, 2008 to August 31, 2014.

SUMMARY OF PSYCHOMETRIC INFORMATION FOR THE RESEARCH IN NURSING EXAMINATION		
	EXAMINATION FORM	
	E	F
Number of examinees	256	255
<b>MULTIPLE-CHOICE SECTION</b>		
Number of items	80	80
Average of percent-correct scores	63.1	65.51
Standard deviation of percent-correct scores	13.49	13.29
CLASSICAL TEST THEORY SUMMARY		
Average item difficulty	.69	.70
Average item-total correlation (point-biserial)	.26	.23
Proportion of item-total correlations less than .15	.1	.18
Internal consistency (KR20)	.94	.94
Standard error of measurement in raw score units	3.19	3.17
<b>FREE-RESPONSE SECTION</b>		
Number of items	4	4
Average raw scores (and percent-correct scores)	16.31 (40.78)	17.89 (44.73)
Standard deviation of raw scores (and percent-correct scores)	5.65 (14.13)	5.33 (13.33)
CLASSICAL TEST THEORY SUMMARY		
Rating reliability	.91	.87
<b>TOTAL SCORES</b>		
Mean of raw scores (and percent-correct scores)	49.57 (61.92)	51.44 (64.25)
Standard deviation of raw scores (and percent-correct scores)	10.89 (13.57)	10.01 (12.51)
CLASSICAL TEST THEORY SUMMARY		
Reliability	.89	.84
Standard error of measurement in raw scores units (and percent-correct score units)	3.69 (4.60)	4.01 (5.02)

PERCENTAGE OF EXAMINEES ACHIEVING EACH LETTER GRADE		
GRADE	FORM E	FORM F
	%	%
<b>A</b>	33	40
<b>B</b>	20	27
<b>C</b>	34	23
<b>D</b>	11	8
<b>F</b>	3	2





The main concepts for item response theory (IRT) and classical test theory (CTT) are defined in an earlier section of this Handbook. This appendix describes in more technical detail the methods that were used for deriving the psychometric information provided in this Handbook. A list of references is also provided for further information about IRT and CTT.

## Psychometric Methods for Item Response Theory (IRT)

All primary IRT computations were carried out using the statistical program BILOG-MG™. The three-parameter model was specified in all cases. Supplemental procedures were carried out using SPSS®.

The test information functions displayed in the graphs were created by computing the test information at each .25-unit increment between -3.00 and +3.00 along the ability ( $\theta$ ) scale, then plotting the curves through these points. The standard errors of ability estimates displayed in the figures were computed by taking the reciprocal of the square root of the test information value at each .25-unit.

## Psychometric Methods for Classical Test Theory (CTT)

All CTT computations were carried out using SPSS® and Microsoft™ Excel™.

For multiple-choice examinations, the mean item difficulty statistics listed in the tables were computed by first determining the proportion of examinees answering each scored item correctly on a test form, then taking the mean of these proportions. Likewise, the mean item-total correlations were computed by determining the point-biserial correlation coefficients for each scored item (corrected for overlap with the total scores) then taking the mean of these coefficients. The proportions of these item-total correlations that fell below .15 were also determined.

For the multiple-choice examinations, test reliability was computed using the Kuder-Richardson formula 20 (KR20). This measures the internal consistency of the scored items that comprise the examination. The standard errors of measurement were derived from a combination of this reliability coefficient and the standard deviation of observed scores on each form.

For extended response examinations, two reliability coefficients were computed. First was the internal consistency of the items, evaluated using coefficient alpha ( $\alpha$ ). This is a generalization of the KR20 coefficient to accommodate items that have multiple scale points rather than dichotomous scoring. The second type of reliability measures the consistency among raters, or interrater reliability. This was evaluated using an intraclass correlation coefficient appropriate for this particular type of data (see ICC [1, k] in Shrout & Fleiss, 1979). For each examinee, total scores were computed across items for each rater, and interrater consistency among these total scores was the focus of the intraclass correlation analysis. The standard errors of measurement for extended response examinations were derived from a combination of the interrater reliability coefficient and the standard deviation of observed scores on each form.

For mixed-format examinations, separate reliability coefficients are provided for the multiple-choice and extended response sections, using the coefficients described previously. In addition, the reliability of the total (composite) scores was computed using the appropriate formula for weighted sums (see eq. 7-18 in Nunnally & Bernstein, 1994). This formula takes into account the reliabilities of each component, the weights that are applied to each component, and the degree of correlation between the components. Standard errors of measurement for mixed-format examinations were derived from a combination of the composite-score reliability coefficient and the standard deviation of the total scores on each form.

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# UExcel AND EXCELSIOR COLLEGE EXAMINATIONS BY FORMAT AND DEVELOPMENT MODEL

## *Multiple-choice format using Classical Test Theory*

### **Arts and Sciences**

Basic Genetics (250)  
 Bioethics: Philosophical Issues (359)  
 Calculus (150)  
 Contemporary Mathematics (100)  
 Cultural Diversity (545)  
 Earth Science (360)  
 Interpersonal Communication (417)  
 Introduction Macroeconomics (258)  
 Introduction Microeconomics (257)  
 Introduction to Music (362)  
 Introduction to Philosophy (363)  
 Introduction to Psychology (101)  
 Introduction to Sociology (105)  
 Juvenile Delinquency (364)  
 Organizational Behavior (353)  
 Physics (140)  
 Political Science (170)  
 Precalculus Algebra (116)  
 Psychology of Adulthood and Aging (355)  
 Science of Nutrition (259)  
 Social Psychology (357)  
 Spanish Language (102)  
 Statistics (210)  
 Weather and Climate (171)  
 World Conflicts Since 1900 (367)  
 World Population (358)

### **Business**

Business Ethics (323)  
 Business Law (255)  
 Financial Accounting (253)

Human Resource Management (351)  
 Labor Relations (352)  
 Managerial Accounting (254)  
 Operations Management (420)  
 Organizational Behavior (353)  
 Principles of Finance (350)  
 Principles of Management (251)  
 Principles of Marketing (252)  
 Quantitative Analysis (437)  
 Workplace Communication with Computers (256)

### **Education**

Literacy Instruction in the Elementary School (565)

### **Health Sciences**

Human Resource Management (351)  
 Psychology of Adulthood & Aging (355)

### **Nursing: Associate Degree**

Foundations in Nursing Practice (490)  
 Essentials of Nursing Care: Health Differences (489)  
 Essentials of Nursing Care: Health Safety (488)  
 Reproductive Health (491)  
 Maternal and Child Nursing (associate) (453)  
 Health Differences Across the Life Span 1 (492)  
 Health Differences Across the Life Span 2 (493)  
 Health Differences Across the Life Span 3 (494)  
 Transition to the Professional Nurse Role (495)

### **Nursing: Baccalaureate Degree**

Community-Focused Nursing (546)  
 Maternal and Child Nursing (baccalaureate) (457)

## *Multiple-choice format using Item Response Theory*

### **Arts and Sciences**

Abnormal Psychology (459)  
 Anatomy & Physiology (506)  
 Ethics: Theory and Practice (484)  
 Foundations of Gerontology (407)  
 Life Span Developmental Psychology (583)  
 Microbiology (558)  
 Pathophysiology (354)  
 Research Methods in Psychology (356)

### **Business**

Ethics: Theory and Practice (484)

### **Health Sciences**

Foundations of Gerontology (407)

### **Nursing: Associate Degree**

Fundamentals of Nursing (403)

### **Nursing: Baccalaureate Degree**

Adult Nursing (554)  
 Psychiatric/Mental Health Nursing (503)

## *Extended response format*

### **Arts and Sciences**

English Composition (434)  
 College Writing (110)

## *Mixed format using both multiple-choice and extended response components*

### **Nursing: Baccalaureate Degree**

Research in Nursing (537)



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