

*Prince Mohammad Bin Fahd University*  
(Under Registration)

✦ **UNDERGRADUATE CORE** ✦  
**CURRICULUM DESIGN**

**Final Report**

28 May 2004

**TEXAS INTERNATIONAL EDUCATION CONSORTIUM**

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 **PREFACE**

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This report, *Undergraduate Core Curriculum Design*, is submitted in fulfillment of Item IV.G of the Contract between the Texas International Education Consortium (TIEC) and the Prince Mohammad Bin Fahd University (PMU) Founding Committee to facilitate the establishment of the PMU. This report is the final version of the deliverable *Undergraduate Core Curriculum Design*. It was prepared by the TIEC Project Management Team and a team of experts from several TIEC-affiliated universities who are experienced in undergraduate education and curricula.

The *Undergraduate Core Curriculum Design* lays the foundation for all of the PMU degree programs in two ways.

First, it presents the set of academic competencies that all PMU graduates are to achieve. In addition, the report outlines how these competencies are to be assessed, including specific courses that are part of the assessment process and required for all PMU students.

Second, the report describes and presents the syllabi for a set of core academic subjects that are to be included in all degree programs. The core subjects include courses in mathematics, natural and physical sciences, and social and behavioral sciences. Minimum requirements in each of the three areas are established for all degree programs, and additional courses have been designed to be used as needed by the specific academic majors. The core curriculum also specifies subjects in Islamic Studies, Arabic Language, and physical education, but these courses are not included in this report. They are to be prepared by PMU faculty.

All of the teams that developed the PMU degree program majors used this document as the starting point for the design of the degree programs.

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**Nick L. Poulton, Ph.D.**

President

Texas International Education Consortium

28 May 2004

# Prince Mohammad Bin Fahd University

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Dammam, Saudi Arabia

## UNDERGRADUATE CORE CURRICULUM DESIGN

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# UNDERGRADUATE CORE CURRICULUM DESIGN

## I. EXECUTIVE SUMMARY

The integrated institutional structure for the new Prince Mohammad Bin Fahd University (PMU) will be based on the North American model of education, English as the language of instruction, and a number of individual courses and subject areas that must be mastered by every student. A distinguishing characteristic of the PMU, which will set the university apart from existing institutions in the Kingdom of Saudi Arabia, will be its commitment to a set of six competencies and learning outcomes that will be integrated throughout the curriculum in a developmental manner.

This report presents the program designed to create those competencies and learning outcomes. The Undergraduate Core Curriculum, as described in this document, will consist of three components.

- **The Assessment Capstone Series** consists of three courses required of all PMU students. The first two courses are developmental building blocks designed to increase the success of the third and final capstone course taken during the student's senior year. The Assessment Capstone Series will measure the student's success in achieving the six learning outcomes.
- **The University Core Curriculum** contains additional courses required of all PMU students. Four courses in written, oral, and professional communication, as well as three other courses in designated competencies will develop six learning outcomes that will distinguish PMU graduates. The University Core Curriculum also will include required courses in Arabic Language, Islamic Studies and physical education.
- **The College Core Curriculum** prescribes academic subjects which PMU students will be required to master. Each college of the university (Engineering, Information Technology, and Business Administration) will determine the specific College Core courses that will be required of its students. All students, however, will be required to successfully complete courses in each of three College Core fields: natural and physical sciences, mathematics, and social and behavioral sciences.

Throughout the Core Curriculum, all assignments will involve a set of learning outcomes, and expectations will be articulated by examples and models. Faculty will lead students to think critically with a purpose beyond the classroom, and assignments will include reasoning and writing for oral presentations. Critical thinking experiences in the Core Curriculum will stress reasoning as a means of discovery and a tool for increasing understanding in both university courses and the student's personal life. Reasoning will be recognized as a broad, extra-academic and life-enhancing ability superior to narrow, insulated mechanical skills.

The purpose of the Core Curriculum will be to furnish PMU students with a seamless education, from the Preparation Year Program, to graduation in an academic program major, and then to employment. Those faculty members teaching in the Preparation Year Program must be fully aware not only of the content of their individual programs, but also of the objectives and expectations of the Core Curriculum – especially the University Core Curriculum and the Assessment Capstone Series. Similarly, faculty teaching in PMU colleges must incorporate into the university's academic majors the content and processes taught in the University Core Curriculum. This attention to PMU competencies will be vital for students to be evaluated successfully in the final Assessment Capstone course given during the senior year.

For this seamless process to be successful, the PMU must employ teaching faculty committed to using the concepts, processes, and technologies taught in the University Core Curriculum. The PMU Teaching Development Center will play an important role in creating these abilities among faculty who do not have adequate backgrounds to be successful in this context.

Together with the Learning Resources Center and the programs it provides for students, the Teaching Development Center will provide a framework for an evolving learning and assessment process that will shape not only the curriculum, but the university's graduates as well.

## **II. FOUNDATION FOR THE PMU EXPERIENCE**

### **A. CORE CURRICULUM RATIONALE**

A significant challenge to Saudi Arabia today is the need to increase the number of skilled and knowledgeable citizens who can ensure the Kingdom's economic and social advancement. More people need to be educated through the undergraduate degree and beyond. This need calls for expanding access to higher education, but an increased number of institutions alone will not satisfy the need. It is imperative that the education provided to graduates adequately prepares them for personal and professional success and assists them in enhancing life in their communities.

University graduates must be able to function in an evolving world – a rapidly changing, unpredictable, globally interconnected, and technologically driven world. They need to be comfortable in diverse communities and global societies. They must be able to set goals and manage complex, difficult pathways to success, and possess the skills to learn, communicate and solve problems using sophisticated technologies. They must be able to think critically and independently. They must have the self-confidence and persistence to succeed despite difficult challenges. Most of all, they need to reflect critically on their actions in business and civic life with a commitment to act responsibly and to influence others.

The PMU will prepare students to be lifelong learners with the intellectual and emotional skills and adaptability required to conquer the great changes that they will undoubtedly experience during their adult lives. The university will provide them with the foundation they need to develop intellectual skills, practical skills, and emotional sensitivities to prepare them to think, feel, and act competently in a complex, diverse, and constantly changing world. The university's Undergraduate Core Curriculum, and especially the diverse academic components of the College Core Curriculum, will enable students to have or to locate the information they need to make informed decisions and hold responsible opinions about their lives and the world in which they live.

The PMU Core Curriculum will be a vital component of ensuring learning outcomes and instilling competencies in the university's graduates. The curriculum's courses and programs will develop broad learning and thinking capabilities that will complement the academic majors' specific professional skills to create a unique kind of university graduate for the Kingdom of Saudi Arabia.

## **B. LEARNING OUTCOMES RATIONALE**

Students who enroll in university studies often have little experience with inquiry, research, or scholarly discourse. They expect instead that they can satisfy academic requirements simply by restating content provided by their teachers. Thus, many students are poorly prepared to assume the responsibilities associated with university-level scholarship.

Needless to say, subject content is critically important. Facts, concepts, and theoretical structures of mathematics, science, history, communications, and other areas are the building blocks for learning. However, the assumption that students will be well educated by completing an academic program that requires them merely to absorb content produces educational results opposite of those needed for individual and national advancement in a scientific and technological world.

To meet the needs of today's technological world, the best educational institutions now place emphasis on learning outcomes. They concentrate on what students learn rather than what teachers teach. These institutions are developing means to determine that students not only know about their subjects, but that students can use this knowledge effectively in the workplace.

The PMU Undergraduate Core Curriculum is designed to help students develop intellectual capabilities that will enable them to engage in lifelong learning.

Before PMU students graduate, they will be expected to integrate and apply their knowledge and skills to deal with actual situations and challenges. A PMU graduate will be ready for professional responsibilities, able to take initiative, and assume leadership. What is more, a PMU graduate will be prepared to continue to improve his or her competencies in the coming years.

## **C. ENSURING AND ASSESSING OUTCOMES**

The PMU curriculum will introduce students to six learning outcomes. Students then will be assessed, both in their major coursework as well as in the assessment courses to determine the extent to which they have achieved success in meeting the outcomes. This independent assessment will stress to students the critical importance of the university learning outcomes to their overall success as students, graduates, and professional practitioners.

## 1. Six Distinctive Competencies

The six designated PMU learning outcomes address what PMU graduates will need to know, and what they must be able to do, in order to be successful in their chosen fields and to contribute to the development of their community and the Kingdom. The six PMU learning outcomes are:

- **Communication:** the ability to communicate effectively in both English and Arabic in professional and social situations.
- **Technological Competence:** the ability to use modern technologies to acquire information, communicate, solve problems, and produce intended results.
- **Critical Thinking and Problem Solving:** the ability to reason logically and creatively to make informed and responsible decisions and achieve intended goals.
- **Professional Competence:** the ability to perform professional responsibilities effectively in both local and international contexts.
- **Teamwork:** the ability to work effectively with others to accomplish tasks and achieve group goals.
- **Leadership:** the ability to be informed, effective, and responsible leaders in family, community, and the Kingdom.

These six learning outcomes are intended to ensure that PMU students also will possess knowledge and abilities associated with mastery of the theoretical structures and methodologies of academic disciplines and professional competencies. This will further enhance their ability to function effectively as a practitioner and scholar in a selected field.

## 2. Importance of Learning Assessment

The PMU will assess students' mastery of the university's designated learning outcomes in order to ensure that students have the ability and skill to use their professional preparation and knowledge effectively. (A discussion of criteria that might be used in this assessment is included in this report's Appendix A: Measuring Degrees of Success.)

Such abilities and skills are best developed by practicing learning outcomes with the intention of improving future performance. Faculty cannot transmit high level intellectual abilities solely through lectures and assignments. Students must engage in activities that allow them to learn from experience. The process of engaging in applied learning, meeting learning expectations, and receiving feedback also gives students the experiences they need to gain new insights, deepen their understanding, and improve ability and skills.

The PMU learning assessment process will help students learn how to use self-reflection and feedback to improve their decisions and actions. This skill is at the heart of the ability to develop higher level intellectual abilities.

### **III. THE LEARNING OUTCOMES PROCESS**

The intellectual abilities and skills associated with the university's prescribed learning outcomes will be developed over a period of time across all aspects of the university – the Assessment Capstone Series, University Core Curriculum, College Core Curriculum, and academic majors in the university's three colleges.

#### **A. PRINCIPLES OF LEARNING AND ASSESSMENT**

Learning outcomes and their assessment at the PMU will be guided by the following principles:

- **Utilization** – Learning techniques and assessments will be used frequently.
- **Engagement** – Learning will be an active, not a passive, process.
- **Feedback** – Learning will incorporate a method of evaluation that effectively communicates techniques for improvement to students.
- **Repetition** – Learning will instill PMU values and learning outcomes through regular, repeated functions.

The levels of performance expected will be communicated through formal and informal feedback throughout the students' university careers. Emphasis will be placed on reinforcing students' strengths and motivating them toward greater achievements. Students will be reminded constantly that their intellectual abilities and skills can always be improved.

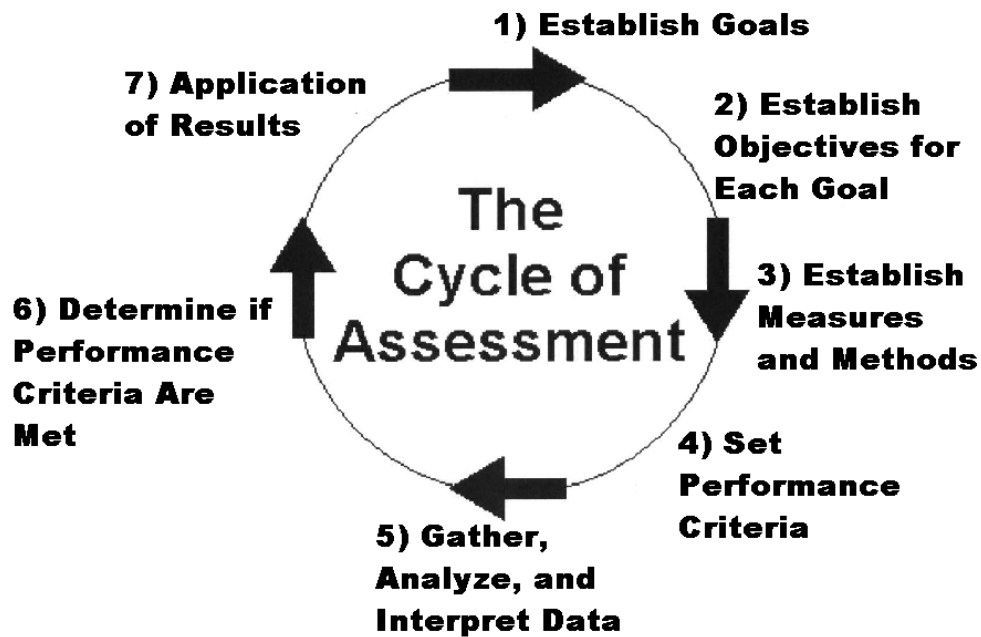
#### **B. THE ASSESSMENT CYCLE**

The cycle of assessment at the PMU will evaluate the extent to which students achieve prescribed learning outcomes. This cycle will be a three step process consisting of two developmental building blocks and a final capstone experience. The first two stages will be designed to enhance the student's ability to succeed in the third. All three assessment steps, however, will measure the students' success in achieving the university's six learning outcomes. (The courses prescribed for this process are described in detail in Section IV., The PMU Assessment Capstone Series.)

##### **1. The Role of the University's Colleges**

To ensure that the PMU learning outcomes and assessment process is woven throughout all areas of the university, each college will be responsible for implementing and adjusting the assessment criteria. The college will provide direction to ensure the appropriate outcomes and criteria are updated; that appropriate measures are used; that relevant data are collected, analyzed, and interpreted; that performance criteria are established; and that these results are reported and utilized to improve programs.

The following model illustrates the way the colleges will continually assess whether or not their students are achieving PMU learning outcomes.



## **2. Developing Competencies in Students**

The cycle of assessment is illustrated as a circle because it is an ongoing, never-ending process. The development of students also is ongoing throughout their university experience and subsequent professional lives. No two students will develop competencies at the same time or the same rate. However, the PMU learning outcomes and competencies are based in shared behaviors. Among the behaviors that the university will foster and continually assess are the following:

### **a. Shared Competencies**

- Continuous self-directed learning
- Initiative
- Results and achievement orientation
- Planning and organizing
- Teaming and relationship arrangement
- Quality and continuous improvement
- Communication
- Coaching
- Consulting
- Critical thinking and problem solving
- Group facilitation
- Leadership
- Persuasion and influence
- Project management
- Self-management
- Visioning
- Work collaboration

## **b. Technology Competencies**

- Strong proficiency in personal computer use (including word processing, spreadsheets, presentation, database, Internet, and e-mail)
- Basic programming and principles of database development and management
- Fundamentals of project management

## **3. A Tool for Institutional Improvement**

All assessments will provide information for improving college programs as well as determining student achievement. The ongoing evaluation itself is important because:

- Assessment helps the university establish academic accountability.
- Assessment is an integral part of a plan for college improvement.

To achieve these goals, the colleges will use both direct and indirect assessment measures. Direct measures will include such instruments as standardized tests and exams. Indirect measures will include student surveys that reflect satisfaction with their educational experience and assess their preparation for employment or graduate and professional schools. Both measures supplement each other.

The learning-outcomes process and its related assessment procedures will be published in print and electronic format and made available annually to students and faculty. Faculty will share responsibility for assisting students in understanding these processes.

*NOTE: Though the results of student assessment will be valuable tools in evaluating the effectiveness of PMU educational programs and will provide guidance in modifying or improving programs, they should not be used for assessing faculty performance. Faculty will be assessed through processes created and implemented by their individual colleges in association with the Teaching Development Center.*

## **C. SUPPORT FOR THE OUTCOMES PROCESS**

Coordination and organization will be necessary to turn the university's outcome- and assessment-oriented educational approach into reality. Faculty, administrators, and students will need support as they work together to ensure success for the PMU's integrated learning experience.

### **1. Teaching Development Center / Learning Resources Center**

The central point in which all these activities will come together will be the PMU's Teaching Development Center. (The center will be the subject of the later report *Teaching Development Center*.) However, it will be necessary to make connections with other areas to ensure that the entire university is infused with programs and processes for developing PMU learning outcomes and competencies.

The Dean of the Core Curriculum and Preparation Year Program, the deans of the three academic colleges, the Director of the Teaching Development Center, and the Director of the Learning Resources Center will work closely together in support of this effort. (For descriptions of the duties and responsibilities of each of these university officials, see the report *PMU Organization*.) These university leaders will ensure that the process is managed efficiently and effectively with regard to student record keeping, reporting, and similar administrative requirements. They also will ensure that faculty agree on and follow pedagogical approaches that will achieve the university's learning outcome-oriented goals.

It may be desirable to identify this function as an official organization of the university, with a name such as "The Center for Learning Assessment." Regardless of how the function is structured, however, it will be necessary for it to provide a distinct set of support services.

#### **a. Support for Students**

Using the student-oriented programs of the Learning Resources Center (LRC), the assessment program will offer an environment in which students will be constantly reinforced in developing PMU learning outcomes and competencies. Two examples of the many programs that can occur in the LRC are:

- Workshops designed for the Preparation Year Program will be able to enforce learning outcomes and behaviors as they assist students with their out-of-class assignments. (For more on these programs see the report *Preparation Program Design*.)
- Upper-class students proficient in the subject matter taught in the University Core Curriculum, College Core Curriculum, or academic majors, will be able to use the LRC as a center for tutoring beginning students.

A complete description of the functions of the LRC will be provided in the report *Learning Resources Center*.

#### **b. Support for Faculty**

The faculty-oriented programs of the PMU Teaching Development Center will assist in orienting faculty not familiar with the outcomes approach to this style of education. It will coordinate training and certification of all instructors who assess students. It will promote improvement of the learning-outcomes program overall.

For the learning-outcomes process, however, the Teaching Development Center will provide more than teacher training. It will provide a center where teachers can discuss student needs, share instructional methods, agree upon and establish assessment criteria, and work out their own solutions to educational issues.

A learning-outcomes program will require faculty to:

- modify the common practice of independently setting goals and evaluating student performance.
- share responsibility for facilitating specific student learning.
- engage in cross-college discourse about ways to improve the learning assessment process.
- shift the emphasis from what they will teach students to designing learning experiences that will support the achievement of agreed upon institutional goals.

To achieve these goals, the PMU Teaching Development Center will coordinate professional development activities that focus on achieving faculty consensus concerning the interpretation of learning outcomes; developing common rules for students concerning the presentation and defense of their learning documents; and improving pedagogy and learning assessment processes.

## **2. Courseware Management System**

The technology-infused and enriched environment of the PMU will play a significant role in facilitating an outcomes- and assessment-based approach to university education.

### **a. Support for Students**

Using the university's courseware management system (CMS), students will be able to electronically assemble, present, and obtain assessment feedback on their assignments and projects, ongoing assessment programs, and long-term capabilities development. Among its many functions, the CMS will enable students to:

- assess their own work and review their progress.
- engage in independent learning tasks and team-based projects, discussion forums, and file exchange.
- access current information for their courses.
- store cumulative records including work samples over time.

Students will be able to use the management system through graduation and beyond, providing employers rich information about the qualifications and qualities of the graduate as a prospective employee.

### **b. Support for Faculty**

Faculty will be able to use the CMS to review and share materials and pedagogical strategies, interact with other faculty concerning course content and pedagogy, and work to improve the academic program. Among its functions, the CMS will enable faculty to:

- enhance communication with students.
- share content from one course to another.
- create specific sequences of learning for courses.
- design and manage customized courses and activities based on prerequisites, prior work, or results of testing.

The CMS gives faculty powerful tools for managing multiple programs, along with skills and competencies.

For further information on the courseware management system proposed for the PMU, see the report *PMU Infrastructure Specifications*.

### **c. Support for Common Goals**

The CMS also will enable a common course syllabus format, which will provide students with easy access to information about course objectives and course alignment with university learning outcomes. It will allow faculty to review and share materials and pedagogical strategies. This sharing will promote faculty interaction about course content and pedagogy and will result in improvement of the academic program.

A common format and publicly posted syllabi will promote consensus among faculty and students about learning priorities.

#### IV. THE PMU ASSESSMENT CAPSTONE SERIES

##### A. SERIES OVERVIEW

Key	Title
ASSE 2111	Learning Outcome Assessment I
ASSE 3211	Learning Outcome Assessment II
ASSE 4311	Learning Outcome Assessment III

*6 semester hours – Required*

Every PMU student will take three credit-bearing courses associated with learning outcomes and assessments. These courses will be offered during the students' sophomore, junior, and senior years. They begin with an orientation to the assessment process and build to a comprehensive program that incorporates all of the PMU learning outcomes.

As a condition of graduation, each student must successfully complete these three courses and demonstrate a mastery of PMU competencies and learning outcomes.

##### B. SERIES COURSES

The Assessment Capstone Series includes the following three courses. Complete syllabi for these courses are found in Section VII., Course Syllabi.

###### 1. ASSE 2111: Learning Outcome Assessment I

This course will be taken during the first semester in the sophomore year. It will orient students to learning-outcomes expectations, the development of a learning portfolio, and the assessment process. During the course, all students, regardless of major, will complete a set of projects that involve writing, oral presentations, decision-making, problem solving, and technology. The specifics of each assignment, however, will be tailored to the major. The course will carry one hour of credit.

###### 2. ASSE 3211: Learning Outcome Assessment II

The course will be taken during their first semester of the junior year. Building on ASSE 2111, the course will provide additional depth to learning-outcomes expectations, the development of a learning portfolio, and the assessment process. Like ASSE 2111, it will tailor assignments within the assessment framework so that they will be relevant to students' majors. This two credit-hour course will prepare students for the final capstone experience, ASSE 4311, which will fully integrate assessment of competencies with the major field of study.

### **3. ASSE 4311: Learning Outcome Assessment III**

This course will be taken during either the first or second semester in the senior year, depending on the student's major degree program. It will require students to demonstrate the full range of PMU competencies and learning outcomes as they complete a capstone project under direction of their college faculty. Students will be expected to take full responsibility for planning, managing and completing a project that requires them to synthesize, integrate and apply their knowledge and skills to produce research or other creative or professional work. The course will carry three hours of credit.

At the culmination of ASSE 4311, a summative assessment of the student's satisfactory completion of PMU assessment requirements will be conducted and documented by the course instructors. A report of this assessment will be included in the student's permanent university record and must be approved by the dean of each student's college in consultation with Dean of the Core Curriculum and Preparation Year before graduation.

Because departmental requirements and student assessment projects will vary from college to college, ASSE 4311 will be either cross-listed with a corresponding course name from the major department, or a notation concerning the nature of the course will be made on the student's transcript. The method used to differentiate ASSE 4311 courses and projects will be at the discretion of the PMU Registrar.

## **C. CAPSTONE ADMINISTRATION**

The three courses in the Assessment Capstone Series will be administered and housed in the office of the Dean of the Core Curriculum and Preparation Year. In overseeing the series, the dean will work closely with the Director of the Teaching Development Center, Director of the Learning Resources Center, Chair of the Core Curriculum, Associate Chair of the Core Curriculum, and deans, department chairs, and associate chairs of the colleges of engineering (including interior design), information technology, and business administration.

The Dean of the Core Curriculum and Preparation Year will be responsible for the following:

- Orientation of faculty, administrators, and students to the expectations of PMU learning outcomes and the process of assessment
- Coordination of faculty development in learning assessment
- Training and certification of faculty assessors
- Scheduling, assigning faculty, and coordinating ASSE courses
- Maintenance of official student assessment records
- Liaison with college deans and faculty

The Dean of the Core Curriculum and Preparation Year, and the Chair and Associate Chair of the Core Curriculum will assign faculty from the staff of the Core Curriculum program to teach the first two assessment courses, ASSE 2111 and ASSE 3211. These faculty members may be specialists in assessment, or they may be members from the program's academic disciplines who have completed assessment training and achieved certification through the Teaching Development Center. The faculty who teach ASSE 2111 and ASSE 3211 will work closely with faculty from the colleges of engineering (including interior design), information technology, and business administration to develop meaningful exercises that will gauge the extent to which students are achieving the six university competencies.

The deans of the three PMU colleges, in consultation with Dean of the Core Curriculum and Preparation Year, will assign faculty from each college to teach the final assessment course, ASSE 4311.

As part of the program, each student will receive feedback from a diverse panel of assessors, also assigned by the dean. At the core of that panel will be two or more faculty members, one of whom has not instructed the student in a course. Other assessors may include university staff, upper level students, and community representatives.

Each college will establish the performance standards required of its students for graduation. Standards will take into consideration the requirements for successful professional performance in the field the student is preparing to enter.

The Teaching Development Center will provide assistance to faculty in developing sequence and content for all assessment courses. The goal will be to collaboratively design pedagogy and content that will assist students to achieve course objectives. An ongoing curriculum development process will stimulate the improvement of the faculty's teaching methods and assessment skills and will ensure that assessment curriculum undergoes continuous improvement.

The Dean of the Core Curriculum and Preparation Year will evaluate the performance of faculty assigned to teach ASSE 2111 and ASSE 3211. The deans of the three colleges, together with the Dean of the Core Curriculum and Preparation Year, will evaluate the performance of faculty assigned to teach ASSE 4311.

## D. ASSESSMENT PROCESS

In order for students to make steady and satisfactory progress toward gaining the required PMU learning outcomes and competencies, each must understand his or her level of achievement at any given time. The Assessment Capstone Series is designed to provide students with formal and informal feedback concerning their performance throughout their university careers. This three-step series also will ensure that students achieve the required performance levels before graduation.

### 1. Evaluation Exercises

As the student progresses through the three-step assessment process, exercises developed by faculty of the college in which the student is enrolled will be used to determine student success in achieving PMU learning outcomes and competencies. Individual and group exercises will be administered under standardized conditions. These will be designed to simulate the skills and abilities from the PMU learning outcomes that are most essential for successful performance in the student's profession.

Assessment capstone exercises will include:

- **In-Basket Exercise:** a variety of memos, letters, and documents of varying importance. Students will prioritize and respond to the documents.
- **Leaderless Group Discussion:** specific problems in which students are instructed to attempt to reach a consensus within a specified amount of time. This exercise measures qualities such as decision making, leadership, teamwork, cooperation, and interpersonal skills.
- **Oral Presentation Exercise:** an oral presentation, using technological tools, in which students must defend their positions and recommendations concerning a specific issue.
- **Role-Play Exercise:** a hypothetical problem dealing with a subordinate, irate citizen, or member of the community. This exercise measures skills such as communication, problem solving, and interpersonal relationships.
- **Written Report / Analysis Exercise:** a student is presented with a job-related topic and is instructed to write a report, position statement, or outline of a new policy.
- **Technology Inventory:** Ability to demonstrate the use of spreadsheets, hi-tech presentations, telecommunications, graphics, and the Internet.
- **Portfolio Development:** a strategically organized, written, and visual documentation and reflection of student performances and accomplishments over the four university years.

## **2. The Student Portfolio**

As a culmination and a record of the evaluation activities contained in the Assessment Capstone Series, each student will document his or her achievement of learning outcomes. The student portfolio will include work products or performance descriptions that the student has produced in class or during out-of-class or work-based activities.

Such work products might be class assignments, research or project reports, written feedback or evaluations from others (such as team mates and internship employers). The portfolio also can include documentation produced specifically for the portfolio, such as essays that faculty might assign on the capstone experience.

The portfolio will form one basis for the student's assessment report, which will be compiled by the student's advisory panel. A final assessment report covering all activities in the three courses of the series will become part of each graduating senior's permanent university record.

Equally important, the portfolio will become tangible evidence of achievements that the student can take to employers or others in the community. In compiling this documentation, students will make extensive use of the portfolio capabilities in the university's Courseware Management System (CMS). (For a discussion of CMS capabilities see Section III., Support for the Outcomes Process.) Even after graduation, the online portfolio will be available for students to access and utilize in their professional careers.

## V. THE PMU UNIVERSITY CORE CURRICULUM

### A. CURRICULUM OVERVIEW

Key	Title
COMM 1311	Written Communication
COMM 1312	Writing and Research
COMM 2311	Oral Communication
COMM 2312	Technical and Professional Communication
UNIV 1211	Professional Development and Competencies
UNIV 1212	Critical Thinking and Problem Solving
UNIV 1213	Leadership and Teamwork

*18 semester hours – Required*

Key	Title
	Arabic Language*
	Islamic Studies*

*14 semester hours – Required*

*(1 two semester-hour course each semester for 7 semesters)*

Key	Title
	Physical Education*

*2 semester hours – Required*

*(Physical Education is typically taken during the Freshman year.)*

The University Core Curriculum will be an approach to knowledge rather than the memorization of knowledge. It will empower students to deal with complicated issues by mastering both the intellectual and the practical. It will develop the ability to think critically. It will prepare students to become the creative problem solvers that today's and tomorrow's globally interdependent world will require.

The courses in the PMU University Core Curriculum will give students a solid grounding in practical abilities. These courses, however, will be practical not because they train students for employment. They will be practical because they will cultivate analytical skills, oral and written communication, decision making, ethics, leadership, and teamwork. Through the University Core Curriculum, PMU students will connect with the larger community as much as they do to the university.

*\*NOTE: Courses in Arabic Language, Islamic Studies, and Physical Education are requirements of the Saudi Ministry of Education. Course descriptions and syllabi, therefore, will be developed by the PMU faculty or by local experts prior to the opening of the university and are not subjects of this report.*

Students in the University Core Curriculum will make full uses of diverse and inclusive pedagogical strategies as they prepare for the shifting knowledge, growing need for collaboration, and new ethical concerns that will characterize the 21<sup>st</sup> century.

## **B. LEARNING OUTCOMES MEASUREMENTS**

The University Core Curriculum will enroll students from the very beginning of their university experience. The first year of studies following the Preparation Year Program, in fact, will be taken up nearly entirely with these required courses and courses from the College Core Curriculum. It is intended that students complete courses in the University Core as soon as possible in order to achieve the grounding in PMU learning outcomes that will ensure their success in upper level studies. This grounding will be necessary both for their major programs in the university's colleges and in the Assessment Capstone Series.

Courses in the University Core Curriculum will focus on specific learning outcomes and competencies chosen to ensure students' later academic and professional success. Though some of these abilities will be defined as particular courses at the beginning level, students will be expected to extend and develop these abilities through all aspects of their university career. Instructors in all courses and at all levels will be expected to teach classes, run activities, and create assignments that encourage and assist students in further developing the learning outcomes introduced in the University Core Curriculum.

In measuring whether or not students have achieved the desired PMU learning outcomes, the university will assess students' proficiency in a number of concrete functions that are necessary to success in both academic and professional environments. The functions will include:

### **1. Clarity of Writing**

The writing component of the program will encourage and evaluate written expression of thought. It will provide students with opportunities to explore ideas and build connections between content areas. Specifically, students will:

- Demonstrate the capacity to use various writing forms, (for example, in-class responses, journals, notebooks, reports, argumentative essays, research papers, and others) to achieve the specific purposes of the course.
- Exemplify ethical writing practices (that is, avoid plagiarism and make use of an appropriate style of attribution and citation) in all forms of written communication.
- Demonstrate the capacity to effectively integrate multiple sources (primary and secondary, electronic and print) into writing assignments.

- Demonstrate improvements in written expression by utilizing techniques such as peer review, multiple drafts, and revising assignments following feedback.

## 2. **Persuasive Speaking**

The program will develop students' skills of oral communication using activities that range from informal discussion to formal presentation. Specifically, students will:

- Clearly state questions, concerns, and ideas so that both the instructor and other students can understand the speaker's intent.
- Verbally condense larger amounts of information into concise, condensed analysis.
- Discuss topics in various size groups in a manner that contributes to the group without overpowering others.
- Give a clear, organized and accurate oral presentation of course material (for example, summaries of readings, research projects, analyses of arguments, or persuasive speeches).

## 3. **Reasoned Thought**

This component will develop students' reasoning abilities by incorporating reasoning tasks and practices into courses and assessments. Specifically, students will:

- Identify and state arguments.
- Identify the main point in a passage or essay and state the reasons that support a given choice.
- Identify assumptions and state the implications of an argument, passage, or theory.
- Critically evaluate arguments in terms of the strength of evidence and reasoning.
- Write essays that come to well-reasoned conclusions and solutions, supported by relevant evidence and tested against relevant criteria and standards.

## 4. **Quantitative Analysis**

Students will develop their problem-solving abilities through the use of logic and reasoning. Assignments will focus on identifying, analyzing, categorizing and communicating quantitative relationships. Specifically, students will:

- Translate problems into mathematical form.
- Construct and interpret visual representations of mathematical relationships.
- Determine quantitative relationships and solutions to problems.

- Clearly communicate quantitative relationships and solutions.
- Apply mathematical concepts to real world situations.
- Draw inferences from data that could be incomplete under conditions that are uncertain.

## 5. **Applied and Professional Research**

Assignments that require students to locate and use information that supplements information provided in courses will ensure that PMU graduates can formulate researchable questions and identify resources, and utilize their findings. Specifically, students will:

- Identify types of resources necessary to formulate a researchable question.
- Utilize credible resources as a tool for academic research.
- Draw conclusions based on the results of the research.
- Document research findings, using accepted forms of scholarly citation.
- Communicate the outcome of the research findings.

## 6. **Information and Computer Competencies**

All PMU courses will incorporate components that assist students in acquiring basic skills to research and critically evaluate information with the use of information technology. Specifically, students will:

- Determine the extent of information needed.
- Utilize computers to create documents and to retrieve and communicate information effectively and efficiently.
- Evaluate information and its sources critically.
- Incorporate selected information into the student's knowledge base.
- Use information effectively to accomplish a specific purpose.
- Understand many of the ethical, legal, and social issues surrounding the use of information sources.

## VI. THE PMU COLLEGE CORE CURRICULUM

### A. CURRICULUM OVERVIEW

#### 1. Mathematics

Key	Title
MATH 1311	Finite Mathematics for Students of Business
MATH 1312	Calculus for Students of Business
MATH 1313	Statistical Methods
MATH 1321	Pre Calculus Mathematics
MATH 1422	Calculus I
MATH 1423	Calculus II
MATH 1324	Calculus III
MATH 2331	Linear Algebra
MATH 2332	Differential Equations

*6 semester hours (two 3-hour courses) must be taken.  
Colleges designate specific required courses, if any.*

#### 2. Natural and Physical Sciences

Key	Title
BIOL 1411	Introductory Biology
CHEM 1411	Introductory Chemistry
CHEM 1421	Chemistry for Engineers I
CHEM 1422	Chemistry for Engineers II
GEOL 1411	Introductory Physical Geology
PHYS 1411	Introductory Physics
PHYS 1421	Physics for Engineers I
PHYS 1422	Physics for Engineers II

*8 semester hours (two 4-hour courses) must be taken.  
Colleges designate specific required courses, if any.*

#### 3. Social and Behavioral Sciences

Key	Title
ECON 1311	Introduction to Macroeconomics
ECON 1312	Introduction to Microeconomics
GEGR 1311	World Regional Geography
HIST 1311	World Civilizations, 1600 - Present
PSYC 1311	Introduction to Psychology

*6 semester hours (two 3-hour courses) must be taken.  
Colleges designate specific required courses, if any.*

In Saudi Arabia, the education provided to students can be misaligned with the competencies they will need for success in the 21<sup>st</sup> century. This is particularly true for the rote education that students typically receive in their secondary schools. It also can be true at the university level, if the educational philosophy assumes that the institution's role is to pass knowledge to unquestioning students and that the students' role is to memorize, recite, and retain what they have been taught. The PMU philosophy will implement a more effective academic program.

This program will provide students with both subject-area expertise and learning outcomes that will assist them in achieving their professional and personal goals.

## **B. SUBJECT AREA EXPERTISE**

The PMU College Core Curriculum is designed to ground students in subjects that all competent, well-educated persons should master. The knowledge and skills gained in these courses will enhance their future ability to contribute to society, even if their chosen profession is a different field. As such, the number of credit hours designated for each area represents a minimum exposure that every PMU student should experience.

However, the courses in the College Core Curriculum also are designed to provide the foundation for more advanced academic studies. It is expected, therefore, that many if not most PMU students will take a number of courses from the College Core Curriculum beyond the minimum required. This will be especially true in the engineering and information technology, which will require a number of advanced mathematics courses. Similarly, certain majors will require students to take more than the minimum of two courses from the natural and physical sciences.

To accommodate the various needs of the university majors, the College Core Curriculum is designed to be flexible. While all students must take at least two courses from each of the three areas, the exact courses required, choices of electives, and requirements beyond the minimum number of credit hours will be specified by the degree programs for each major.

*NOTE: Course requirements for PMU degree programs will be described in detail in the curriculum design reports for each academic program: Engineering, Information Technology, Business Administration, and Interior Design.*

## C. SUBJECT AREA LEARNING OUTCOMES

By their nature, the three broad areas represented in the PMU College Core Curriculum – Natural and Physical Sciences, Mathematics, and Social and Behavioral Sciences – are well suited to instilling the desired PMU learning outcomes of critical thinking and problem solving.

The manner in which the PMU faculty will address these subjects, working closely with instructors across disciplines and drawing upon resources provided by the Teaching Development Center, will infuse the academic experience with skills in communication, technology, teamwork, and leadership.

Coordination among the College Core Curriculum, the University Core Curriculum, and the Assessment Capstone Series will reinforce each of the PMU learning outcomes and guide students toward the professional competencies they will need following graduation.

### 1. Mathematics

Mathematics provides an approach to problem solving through logic and reasoning. It is used to identify, analyze, generalize, and communicate quantitative relationships.

Learning outcomes for students completing the Mathematics requirement will be:

- Knowing the fundamental notation and rules of a mathematical system.
- Recognizing problems to which mathematics can be applied.
- Translating problems into mathematical form.
- Being able to construct and interpret visual representations of mathematical relationships.
- Constructing logical and valid mathematical arguments.
- Determining mathematical relationships and solutions to problems.
- Communicating mathematical relationships and solutions.

### 2. Natural and Physical Sciences

The goal of the natural and physical sciences is to better understand nature. The natural and physical sciences systematically study natural phenomena. They do so by observing nature, by collecting and analyzing data, by forming, testing, and revising hypotheses, and by developing theories.

Learning outcomes for students completing the Natural and Physical Sciences requirements will be:

- Understanding what the realm of science is, and why science is important to their lives.
- Comprehending current principles and theories used to explain natural phenomena and understanding the role of theories in science.
- Seeing science as a process of conducting systematic observation, formulating and testing hypotheses, collecting and evaluating data, recognizing sources of error and uncertainty in experimental methods, and disseminating results.
- Developing an understanding of how human activity affects the natural environment.
- Making informed judgments about science-related topics and policies.

### **3. Social and Behavioral Sciences**

The social and behavioral sciences are characterized by their application of both rational and empirical methods to studying the ways in which individuals, organizations, and societies are influenced by the environment as well as by personal and societal goals.

Learning outcomes for students completing the Behavioral and Social Sciences requirement will be:

- Being able to use a variety of theories to explain human behavior.
- Describing how the study of human behavior is founded on empirical and scientific observation.
- Recognizing the effects of the environment on individual behavior and recognizing the effects of social institutions and processes on human interaction.
- Understanding significant social, economic, and political developments in Western and non-Western history.
- Grasping the interaction of Western and non-Western cultural traditions.

## **D. GENERAL REQUIREMENTS FOR FACULTY**

### **1. Subject Area Faculty**

#### **a. Responsibilities**

Faculty assigned to teach in the Core Curriculum will have the primary teaching responsibilities for the college's academic courses. These will include selecting texts, preparing course syllabi, planning in-class team activities, constructing student assessments, keeping grade records, supervising laboratory sessions, and holding regular office hours.

In addition, faculty in math, chemistry, and physics will write placement examinations that will be administered to students who wish to take certain courses in these fields. (For a discussion of the Core Curriculum faculty's involvement in the PMU admissions and placement process, see the report *PMU Admissions Plan*.)

#### **b. Degrees and Experience**

The faculty should hold a doctoral degree in the discipline in which they teach with at least two years of teaching experience at the college level. For faculty teaching lower level courses, a masters' degree with at least 18 graduate semester hours in the discipline in which they teach may be allowed, at the discretion of the Dean of the Preparation Year and Core Curriculum and the chair of the academic department involved.

For all faculty, preference will be given to persons who possess prior experience in teaching in cooperative and collaborative learning.

#### **c. English Language**

Because the university is to teach students in English, all faculty must have achieved proficiency in the English language. Preference will be given to faculty who are either native English speakers or have achieved native-level proficiency as demonstrated by a band score of 8.0 or higher on the IELTS, with minimum component test scores of at least 7.5.

#### **d. Student-Centered Approach**

For some faculty, student-centered learning may be a challenge that requires training, guidance, and support from the staff of the PMU Teaching Development Center (to be described in the report, *Teaching Development Center*).

Willingness to undertake professional development activities necessary to learn how to implement student-centered cooperative and collaborative methodologies therefore will be a necessity, along with sensitivity to Arab culture.

## **2. Assessment Capstone Series Faculty**

### **a. Responsibilities**

Certain faculty within the Core Curriculum will be assigned to teach the first two assessment courses, ASSE 2111 and ASSE 3211 in the Assessment Capstone Series. These faculty may be specialists in assessment, or they may be members from academic disciplines who have completed assessment training and achieved certification through the Teaching Development Center. (For additional discussion of faculty responsibilities in the assessment series, see section IV. C. Capstone Administration of this report.)

As with subject-area faculty, these faculty members will be responsible for selecting texts, preparing course syllabi, planning in-class team activities, constructing student assessments, keeping grade records, supervising laboratory sessions, and holding regular office hours.

### **b. Degrees and Experience**

Assessment faculty should hold a doctoral degree with at least two years of teaching experience at the college level. Degrees for faculty who teach assessment courses only may be in any field (including specialties such as education or psychology). Masters degrees may be permitted in some instances, at the discretion of the Dean of the Preparation Year and Core Curriculum.

### **c. English Language**

All faculty must have achieved proficiency in the English language. Preference will be given to faculty who are either native English speakers or have achieved native-level proficiency as demonstrated by a band score of 8.0 or higher on the IELTS, with minimum component test scores of at least 7.5.

### **d. Student-Centered Approach**

PMU faculty who teach assessment courses will work closely with the staff of the Teaching Development Center to develop and improve their assessment skills. They also will work with faculty from the colleges of engineering (including interior design), information technology, and business administration to assist in building and assessing the distinctive competencies that the PMU wishes its students to acquire.

In all faculty activities, willingness to undertake professional development activities necessary to learn how to implement student-centered cooperative and collaborative methodologies therefore will be a necessity, along with sensitivity to Arab culture.

## E. STUDENT/FACULTY RATIO

In order to enhance opportunities for class participation and individual attention, the student/faculty ratio in the PMU Core Curriculum classes and labs will be kept as low as possible.

Certain introductory courses may be taught via large lectures or a combination of large lectures and smaller sections. Calculus courses will be taught via a combination of classes and smaller recitation sections.

<b>SUBJECT</b>	<b>Optimum In-Class Ratio</b>	<b>Optimum Lab Ratio</b>	<b>Maximum In-Class Ratio</b>	<b>Maximum Lab Ratio</b>
<b>UNIV</b>	25/1		30/1	
<b>ASSE</b>	25/1		30/1	
<b>COMM</b>	25/1		30/1	
<b>Lab Sciences, Social and Behavioral Sciences</b>	70/1 Lecture 25/1 Class	22/1	75/1 Lecture 30/1 Class	24/1
<b>Math</b>	25/1		30/1	

## VII. COURSE SYLLABI

### A. COURSE NUMBERING SYSTEM

A common system for naming courses will be applied throughout all academic programs at the PMU. The system is structured as follows:

Each course title begins with four letters that indicate the subject matter of the course. In the report *Undergraduate Core Curriculum*, these letterings include:

- ASSE            Assessment Capstone Series
- COMM          Communications (written and oral),  
University Core Curriculum
- UNIV           Learning Outcomes courses,  
University Core Curriculum
- BIOL            Biology, College Core Curriculum
- CHEM          Chemistry, College Core Curriculum
- GEOL          Geology, College Core Curriculum
- PHYS          Physics, College Core Curriculum
- MATH          Mathematics, College Core Curriculum
- ECON          Economics, College Core Curriculum
- GEGR          Geography, College Core Curriculum
- HIST          History, College Core Curriculum
- PSYC          Psychology, College Core Curriculum

The letters are followed by four numbers:

- First digit indicates the earliest year a course can be taken. A number 1 course may be taken at any time.
- Second digit indicates credit hours. Most courses carry 3 hours of credit. Science courses with labs carry 4 hours of credit. A small number of courses carry 1 or 2 hours of credit.
- Third digit indicates a course that is part of a group or family of courses. For example, the three general math courses are assigned the number 1 and the four calculus courses are assigned the number 2. More advanced math courses are assigned the number 3.
- Fourth digit serves only to differentiate courses from one another within a family. For example, the four calculus courses are numbered 1, 2, 3, and 4. The two economics courses are numbered 1 and 2.