Polytechnic University of Puerto Rico
DEPARTMENT OF ARCHITECTURE

Request to

The Puerto Rico Council on Higher Education
for Amendment of Authorization to offer a
BACHELOR DEGREE IN ARCHITECTURE

HATO REY, PUERTO RICO
MARCH 1995
Polytechnic University of Puerto Rico
Department of Architecture

Course title:
ARCHITECTURAL REPRESENTATION I

Credits: 3
Codification: ARCC 110

Length: one trimester
Prerequisite: None

Description:

Basic drawing, drafting and rendering techniques (pencil and ink) are introduced to the student as tools for visual and technical communication, essential to the architect’s trade.

This course pertains the use of descriptive geometry and graphics as a means for thinking about space and documenting it, but also expressing and communicating architectural design ideas. An architect’s training is one of ever-increasing consciousness on the need to learn about, understand and command an appropriate graphic vocabulary.

The students will be introduced to the standards and conventions of presentation drawings and representation techniques (renderings). This will help them to express their architectural ideas and projects in a clearer way for future use in design courses.

Course work includes freehand sketching; the conventions and basic rules of architectural drawings on orthogonal type of drawings; axonometric, isometric and oblique projections; perspective; and measured, analytical and conceptual drawings. Basic presentation techniques will be illustrated. Field measuring and recording techniques will be the basis for on-site experiences. The rudiments of model making skills will be also discussed.

Both two and three-dimensionally, the following issues will be addressed recurrently: purpose, message, and medium; but also scale, shade and shadow, and the use of color.
Command of drawing types (axonometrics, isometrics, etc.) will be pursued through different studio and in situ exercises. The subject of computer graphics will be introduced at its most basic, in order to early make students aware early in their training, of the new graphic technologies available to them.

General Objectives:

1. To expose the student to basic drawing and inking techniques, the appropriate instruments for drafting and their use.

2. To provide enough practice opportunities for the student to begin to develop confidence in his (her) drafting abilities.

3. To raise consciousness about each different medium's expressive nature.

4. To confront the student with the efficiency and economy of means with which ideas need to be communicated to the lay person.

5. To initiate students in model-making and the world of computer graphics.

6. To understand drawings as documents which represent the architect; but also as predecessors to the act of building.

Specific Objectives:

1. To teach students to both visualize ideas and draw them.

2. To expose students to computers early in their training.

3. To instill the need of continuous practice of what has been taught in class by keeping a sketchbook or visual annotation at all moments.
5. To develop skills at field-measuring and "as built" recording techniques.

Course contents:

1. Drawing
   Descriptive geometry
   Sketching
   Pencil, charcoal and ink
   Choosing a suitable medium of expression

2. Drafting & model-making
   Field-measuring and recording techniques
   Standards and conventions of orthogonal drawings
   The architect's drawings: plans, sections and elevations
   Axonometric, isometric and oblique projections
   Basic model-making techniques

3. Rendering
   Documentation, expression and communication
   Perspective
   Color applications
   Experimental techniques

4. Introduction to Computer-Aided Design Graphics
   Cybernetics: networking & virtual reality
   Three-Dimensional Representation methods
   CAD: an introduction
   Current trends

Methodology:

1. Drawing trips; field sketching and measurement.

2. Studio lectures.

3. Studio exercises and laboratory experience with computers.
4. Four projects.

5. Assigned readings.

Evaluation

1. Sketchbook.

2. Class participation.

3. Four projects.

4. Two tests on assigned readings and class discussion.

Bibliography:


Polytechnic University of Puerto Rico
Department of Architecture

Course title:
ARCHITECTURAL REPRESENTATION II:
(COMPUTER-AIDED DESIGN)

Credits: 3
Codification: ARCC 210

Length: one trimester
Prerequisite: ARCHITECTURAL REPRESENTATION I

Description:

This course concentrates on the uses of AUTOCAD in architectural practice. AUTOCAD is a computer graphics software package that can be used to draw in two and three dimensions. It is the assumption of this course that in a very short time, a significant amount of architectural drawing will be done on similar graphics software and that every student of architecture should be conversant in the conventions of such software. Lectures will give an overview of the use of computers in architectural practice and laboratory sections will concentrate on architectural problems in AUTOCAD. Work will be done in the computer lab and additional hours of work outside the class time will be required for every hour in class.

General Objectives:

1. To introduce students to computers as a tool for architectural representation.

2. To further the student's resources for presenting and rendering his (her) ideas.

3. To integrate design studio tasks with contemporary / alternative representational methods.

4. To prepare students in a language akin to contemporary professional expectations, proficiency on it, making them better qualified for the job market.
Specific Objectives:

1. To enable students to learn computer language.

2. To make students competitive for the professional world, where CAD is widespread in use.

3. To stimulate students to explore further within a vocabulary their generation feels to be their own.

Course Contents:

1. Computer literacy
   
   Different types of computers
   Operating systems
   Language options
   Communication systems

2. Operating systems
   
   Fundamentals of DOS
   Windows application
   Spreadsheet
   CAD

3. Drafting and design
   
   Drawing and visualizing
   Graphics
   Current applications

4. Autocad/Hands-on experience
   
   Purposes and scope
   Previous and current versions
   Program applications

Methodology:

1. Lectures and class discussions.

2. Laboratory sections at computer lab.
3. Required independent lab work, under supervised lab assistance.

4. Assigned readings.

Evaluation:

1. Laboratory exercises.
2. Two tests.
3. Three Projects.

Bibliography:


NOTE: Given the technical contents of this course, its bibliography is expected both to expand and change by the time the course begins to be offered. A minimal, conceptual bibliography is presented to best reflect the intended scope.
Polytechnic University of Puerto Rico
Department of Architecture

Course title:
ARCHITECTURAL REPRESENTATION III:
(ADVANCED COMPUTER-AIDED DESIGN)

Credits: 3
Codification: ARCC 310
Prerequisite: ARCHITECTURAL REPRESENTATION II

Description:

The prerequisite course, ARCH REPR 301 introduced the architecture student to computers mostly in the 2-D graphics. This course is designed to explore 3D CAD including solids modeling, perspective, sun shots and high resolution post image processing. The course goals’ include:


2. Color solids’ modeling techniques -- including low resolution and high.

3. Use of set replacement techniques in 3D and graphic file interchange.

4. Introduction to color & video imaging and paint programs.

General Objectives:

1. To further the student’s resources for presenting and rendering his (her) ideas.

2. To integrate design studio tasks with contemporary / alternative representational methods.

3. To prepare students in a language akin to contemporary professional expectations, proficiency on it making them better qualified for the job market.
Specific Objectives:

1. To make students dexterous at computer modeling applications.

2. To expose students to the field of computers from a professional's point of view, enabling them to experience the far-reaching possibilities of the medium.

3. To stimulate students to explore further within a vocabulary their generation feels to be their own.

Course Contents:

1. 3D CAD

   Basic modeling concepts
   2D CAD transition to 3D modeling: color solids' modeling
   3D graphics; file interchange
   Modeling complex geometries; related softword

2. Hardware concerns

   Equipment options and capability evaluations
   Matching design priorities with computer capabilities
   Speed and ease of use: acceleration software

3. Software alternatives

   Building type: retail, commercial, industrial, etc.
   Lighting Design
   Energy analysis for energy efficient buildings
   Cost estimating

4. Rendering and animation / hands-on experience

   Autocad
   Windows
   DOS
   Color and video imaging and point programs
   High productivity drafting
Methodology:

1. Lectures and class discussions.

2. Laboratory sections at computer lab.

3. Required independent lab work, under supervised lab assistance.

4. Assigned readings.

Evaluation:

1. Laboratory exercises.

2. Two tests.

3. Three Projects.

Texts:

To be selected at the time the course is offered, to provide up to date material on the subject.

Bibliography:


Polytechnic University of Puerto Rico
Department of Architecture

Course title:
ARCHITECTURAL REPRESENTATION 410:
COLOR & RENDERING

Credits: 3
Codification: ARCC

Length: one trimester
Prerequisites: ARCC 210.

Description:

Theory and practice will be jointly addressed in this course, aimed at involving students with color, its application and possibilities, all related to Architecture. The theories of Farber Birren, Albert H. Munsell and Johannes Itten will be expounded. Notions of shade and shadow, but also, tones, values and hues will be experimented with.

Different rendering techniques shall be presented, discussed and practiced with in diverse classroom and field exercises. Students will repeat exercises as necessary to succeed in command of each medium, whether graphite, ink, pencil, markers, pastels, watercolors, gouaches or oils. Mechanical color applications will also be introduced.

The work of other architects will be examined to gain insight into each medium’s potential applications. From both direct practice and evaluation of preexisting renderings, students will be able to apprehend the wide scope of this field.

In addition to on site activities, students will be asked to produce renderings of buildings of relevance to the history of architecture at both local (regional) and international level.

Specific and General Objectives:

1. To train students in varied rendering techniques.

2. To stimulate experimentation with different media.
3. To expose students to the work of other architects, from the point of view of presentation.

4. To identify individual abilities within students regarding one medium versus the other.

Course Contents:

1. Color Perception
   - Theory
   - Contrast
   - Light, shade and shadow
   - Tones, Values, Hues

2. Rendering Techniques; Qualities rendered by each medium
   - Graphite
   - Ink
   - Colored Pencils
   - Magic Markers
   - Pastels
   - Watercolors
   - Gouaches
   - Oil Paints
   - Mechanical: Zip-a-Tone; Pantone

3. Examining other Architects’ Work
   - The Beaux Arts School
   - Otto Wagner
   - Frank Lloyd Wright
   - Eliel Saarinen
   - Rem Koolhaas

Methodology:

1. Class lectures.

2. Studio exercises and projects.

3. Assigned readings.
Evaluation:

1. Six studio exercises.

2. Two studio projects; one final project.

3. Class participation.

Bibliography:


Polytechnic University of Puerto Rico
Department of Architecture

Course title:
HISTORY 101: INTRODUCTION TO ARCHITECTURE

Credits: 3
Codification: ARHH 101

Length: one trimester
Prerequisite: None

Description:

This is an introductory course on the history of architecture as reflected on the spaces built for human use. Emphasis is placed on the varied and changing definitions of architecture; including long-standing debates on cultural origins and historical forces that have concurrently influenced the building discipline and continue to do so.

General explanations pertaining geography, topography, climate and culture become the backdrop to expound basic concepts in the handling of space perpetuated throughout time.

An awareness of the Caribbean environment is underlined, paying particular attention to the local spatial heritage, within the large framework of inherited styles. After the student's cultural context is acknowledged as point of departure for understanding the transformations of space in time, a historic survey (broad in scope) includes: primitive cultures and the Ancient World; the Middle Ages, the Renaissance; Mannerism, Baroque, Rococo; the 19th century, the Modern Movement and contemporary ideas. Because the course centers on spatial ideas, it is possible to succinctly address the theme by means of this overview.

Fundamental concepts and theories presented in lectures are supported by assigned readings and exercises. A single final-term, historically-oriented, project introduces the student to basic design processes, but also to the appropriate handling of materials through first-hand experience with
materials and craftsmanship. The project is intended to make students aware of all levels at which history extols its pertinence.

General Objectives:

1. To comprehend the diverse cultural, social, historical, and natural influences which shape architectural space.

2. To understand - and question - inherited ideas about space and style, at both local and world-wide level.

3. To appreciate, on a comparative basis, multiple design theories, concepts and processes, particularly relevant to the American experience.

4. To become conscious of key basic urban planning, environmental, and technological innovations, which paved the way for spatial and social change.

5. To develop an initial understanding of current trends and concerns, but also for some of the inherited achievements against which to measure them.

Specific Objectives:

1. To raise the student’s understanding of what is architecture.

2. To provide a general historical background to which students can refer back upon being presented any historical precedent.

3. To excite students about the nature and possibilities of architectural space, its past and present relevance.
Course contents:

1. History as a discipline

   Space as the essence of architecture
   Different conceptions of space
   Mies Van Der Rohe's definition of Architecture
   Events and processes as key to historical inquiry

2. From Antiquity to the Middle Ages

   Caves and the Primitive Man, myth & message
   Object fixation: Egypt, megarons and tholos
   Exterior space in Greece; interior space in Rome
   (agora and atrium as key to each culture)
   Romanesque period
   Space in the feudal city: the longitudinal church

3. From the Renaissance to the 19th century

   Ideas of centralized organization
   Oval space as emblematic of the Baroque
   Rococo's pre-modern conceptions
   Neoclassic conventions vs. renewed social conceptions

4. Turn of the Century, modern and contemporary developments

   Trends predating the Modern Movement
   Modern Space and the modern city
   Postmodernism's reclaim of traditional urbanism
   Deconstructivism's spatial stances

Methodology:

1. Lectures and debate.

2. Site visits.

3. Exams and a written report in a chosen topic.

4. Project related to contemporary application of historical ideas discussed in class, with individual crits.
Evaluation:

1. Quizzes.

2. Class participation and commitment.

3. Three exams.

4. One final project.

Bibliography:


Polytechnic University of Puerto Rico
Department of Architecture

Course title:
HISTORY 201: CARIBBEAN ARCHITECTURE

Credits: 3
Codification: ARHH 201

Length: one trimester
Prerequisite: ARHH 101

Description:

The course is concerned with Architecture as a discipline and the particular sensibilities and contributions of the Latin American and Caribbean cultures towards such an understanding. The course will be based on informal lectures that stimulate students to question, argue and participate. Formal discussions will also help to clarify or further amplify any particular aspect. Related themes include methodologies and historiography; modernity and compositional concerns.

Reference texts will be discussed in class and, in parallel, some will be examined on an individual basis by each student. Most of these texts are thought to be vital to the understanding of the problems to be addressed and, as such, extremely useful for students interested in further expanding the polemics pertaining architecture in Latin America. The professor must grant prior approval for the development of any special project outside the realm of the texts recommended, i.e., choice of another text; bibliographical analysis; or proposals of a prospective nature.

The nature of the final submittal will depend upon the interpretations individually proposed. It could be a paper, a model, graphic representations, etc. The end product must represent a critical mind in operation, eager to expand the limits of research, as we know it now in both our field and countries of interest.

An expanded listing of themes embraces: bibliographical
limitations; the need to trust related fields like Literature, Linguistics, Geography, or Urban Legislation; the weight of the Spanish Colonial heritage (from La guía emocional de la ciudad romántica to Caribbean Style); dominant and peripheral cultures; rewriting the region’s urban history (is it possible?); and, the need to endorse a feasible urbanism.

General Objectives:

1. To help students transcend their understanding of context beyond their immediate, personal approach, to succeed at an enlarged canvas of pertinence, be it at national and/or regional level.

2. Stimulate students to grow knowledgeable about the history of their cultural context.

3. To insert regional history into the traditional, Western culture approach, to better understand the interrelationships that nurture one and the other.

4. To educate students capable of debating about facts and processes affecting the surrounding, contemporary world.

5. To spur, early in the student’s training, and as an outcome of classroom debate, an interest on the need for research related to the Caribbean and Latin America.

Specific Objectives:

1. To teach students about their own culture.

2. To stimulate students to be critical about their surrounding context.

3. To develop a locally-referenced repertoire of architectural examples.

4. To make students aware of history’s own exclusions and the need to amend these.
Course Contents:

1. Apperceptions of Caribbean Architecture
   Prevailing points of view
   The need for a cultural approach, not merely a geographic one
   The pitfalls of Caribbean Style
   Survey of seminal texts
   Debates about native architecture

2. Puerto Rico
   The Colonial Period: urbanism and housing
   Modernism: the definition of a spatial vocabulary
   The 20th century: the ideology of progress
   Contemporary convictions: on preservation

3. Dominican Republic
   Santo Domingo: "Ciudad Primada"
   "De la ciudad primada a la ciudad privada"
   Dominican typologies and variations
   Issues of density and the appropriate scale for a Caribbean urbanism
   A profile of contemporary architects

4. Cuba
   Colonial urbanism
   Growth beyond the walls: the turn of the century
   Public realm achievements, from Forestier to Sert
   The impact of the Modern movement
   The revolutionary efforts, to this day

Methodology:

1. Lectures & debate.

2. Site visits.

3. Assigned readings.
Evaluation:

1. Quizzes.

2. Three tests.

3. One final project (paper) on a chosen topic of interest.

Bibliography:


Polytechnic University of Puerto Rico
Department of Architecture

Course title:
HISTORY 301: HISTORIOGRAPHY

Credits: 3
Codification: ARHH 301

Length: one trimester
Prerequisite: ARHH 201

Description:

In this course, "the history of history" will be examined, to provide students with an acute, critical sense on how to interpret processes and events (past and present). Using the history of Architecture as "text" (surveying from ancient to modern times), students will be able to apprehend history as a science, and grow familiar to the discipline's attributes and limitations.

Historical interpretation and its manipulation shall be focused upon, raising concern about the frontiers of objectivity, its achievements and shortcomings. History shall be studied, scrutinizing key works, representative of both different styles and periods.

The course should prepare students to confront any historical period with a critical outlook, to be able to understand how to go about individually familiarizing him(her)self with a historical subject. That is, once given the appropriate tools, the student should be able to grasp, effectively, the scope of History.

Students will be required to prepare an annotated bibliography pursuant to a topic chosen for such purposes. Basic aspects of research will be addressed. The chosen theme should be of limited breadth for the student not to indulge extensively on gathering information, but rather focus in its analysis and critical evaluation.
General Objectives:

1. Aid the student to come to terms with a profound definition of History, beyond the one that reduces it to "the string of events that once happened."

2. Familiarize students with the wide array of problems History is concerned with and their overlaps.

3. Initiate students in historical research and inquiry, and the critical evaluation of historical texts.

4. Instill confidence in students so that they feel in command of the needed skills to confront historical information of any kind with appropriate judgement.

5. Make the student aware of the diversity of architectural history and traditions throughout the world.

Specific Objectives:

1. To endows students with critical interpretative tools.

2. To present key works of architectural history and theory.

3. Help foster abilities in writing skills.

Course Contents:

1. The nature of historical inquiry

   What is historiography?: what is history?
   The "objective" and "subjective" claims
   Discovering "facts" vs. reconstructing "processes"
   Wholistic and atomized approaches
   History and Sociology

2. The legacy

   Herodotus and other figures from Antiquity
   Medievalists and Illuminists: Croce, Collingwood
3. Caribbean Optics

Surveying basic history texts: from Brau to Scarano, Weiss, Walter Palm, and De Hostos. The Cuban Revolution: Segre et al.

Latin American critics: Gasparini & Gutiérrez

4. Comparative History

Methodology:
1. Lectures and class debate.
2. Assigned readings.

Evaluation:
1. Three tests.
2. One final paper on a chosen topic of interest.

Bibliography:


Rama, Carlos M. *La historiografía como conciencia histórica*. Barcelona: Montesinos, 1981.


Polytechnic University of Puerto Rico  
Department of Architecture

Course:  
HISTORY 401:  
THE HISTORY OF HOUSING

Credits: 3  
Prerequisite: History 301

Description:  
As with all 400-level History courses, this one is of sharp focus on a specific theme and its most characteristic developments along extended chronological parameters of architectural history. In this case, society’s changing attitudes and preferences (both spatial and stylistic) about housing will be examined, from the early settlements of Antiquity (original living units, environmental concerns, the notion of the patio) to contemporary housing solutions (prefabrication ecology, renewed family profiles). Ample historical backgrounds to each period should promote an enhanced understanding of aspects such as: morphology, typology, semiotics and technology.

Multifamily architecture will be the recourse through which to look at solutions from the Middle Ages and the Renaissance, underlining the urban role played by collective housing throughout time. Parisian housing models related to Haussmann’s initiatives will be studied, as well as the ensuing 19th-century concerns with health, sanitation and lodging the working class to improve its efficiency. The varied consequences of importation of these models to the New World will be an important sub-theme

Sevillian corrales and Spanish caseríos will be looked at, with discussions about the German wohnungsfracte, as deemed pertinent. The siedlung and the Vienesse hof shall be analyzed within this extended housing tradition, to reach the Modern Movement’s ideas on planning, the USA’s "New Deal" initiatives, and their dissemination throughout Latin America. Casas de vecindad, ciudades perdidas and Leavitt’s suburban imagery - all of signficance to the Caribbean - are among topics included. Finally, ideas about new town planning endorsed by Duany-Plater Zyberk (and as related to housing) will be studied; the homeless’
predicament, and forward-looking technologies, shall all be addressed. Along the course, related subjects to be concurrently, if marginally, studied are: the role of speculation, the impact of demographics (population patterns, migrations and resettlements), and the inevitability of bureaucratization.

Objectives:

1. Assist students to become aware of basic principles governing settlement and housing patterns in different cultures.

2. To teach about the values, needs and ethics guiding the provision of housing.

3. To promote an understanding of the diversity inherent to architectural history and its traditions throughout time.

4. To allow students to identify recurrent and permanent concerns of mankind regarding habitation.

5. To create consciousness about the multiplicity of factors needed to come together in order for housing to happen.

Texts:

1. Frank E. Brown, *Roman Architecture*


3. Giorgio Grassi, *La construcción lógica de la arquitectura*

4. Vicente Martínez Hernández, *Arquitectura doméstica de la ciudad de México (1890-1925)*

5. Jorge Rigau, *Casas de vecindad y la posibilidad de ser nosotros en la ciudad*

6. Moshe Safdie, *Beyond Habitat*
7. Richard Plunz, *A History of Housing in New York City: Dwelling Type and Social Change in the American Metropolis*

8. Colin G. Clark and Peter M. Ward, "Estancamiento en el ámbito de la vivienda precaria: perspectivas a partir de México y del Caribe", in Jorge E. Hardoy, Richard Morse and Richard P. Schaedel (Eds.), *Ensayos histórico-sociales sobre la urbanización en América Latina*

9. Colin Rowe, *The Architecture of Good Intentions*
Polytechnic University of Puerto Rico
Department of Architecture

Course title:
THEORY 101:
INTRODUCTION TO ARCHITECTURAL THEORY

Credits: 3
Codification: ARCT 101

Length: one trimester
Prerequisite: ARHH 101

Description:

A survey of architectural design history and theory presented through debate, and criticism of the works and ideas of significant architects and architectural theorists throughout time. This lecture course focuses primarily on key design theories whose dissemination throughout the history of architecture has proven decisive for our understanding of the contemporary world. Emphasis is placed on the study of selected architectural theories from the past and their contemporary application. Critical stance on texts examined is a must. Formalism, typologies, gestalt theories (in architecture and urbanism), and planning ideas will be studied against the context which gave birth to them.

As an introduction to the culture of Architecture - concerned with the development of architectural form - this course expounds themes such as: classical theories, zeitgeist, figure-grounds, space and anti-space, monumental vs. residential architecture, gridded and organic cities, the city-in-the-park, contextualism, and deconstruction.

All along the student is expected to succeed at grasping the higher meaning in architecture as advocated for by theorists for centuries.

General Objectives:

1. To provide a basic command of notions of typology, figure ground and related compositional philosophies that lie at the heart of many relevant theories.
2. To properly ascertain the relationship of building to city and the influences of one on the other, as different cultures have chosen to understand these.

3. To develop an all-encompassing understanding of the role of theory in shaping the urban realm.

4. To contrast urban planning ideals and ideas, in order to begin to grasp the essence of contemporary problems.

Specific Objectives:

1. To help students endow with meaning their design work, but also learn to find the meaning of the work of others.

2. To broaden the student's cultural understanding of architecture.

3. To experience theoretical treatises and writings first hand, and, at the same time, to experiment and practice in writing.

Course Contents:

1. Notions about architectural space

   Traditional Space: Alberti, Palladio
   Rudolf Wittkower
   Vitruvius’ The 10 Books of Architecture

2. On Typology

   Quatrémere vs. Pevsner
   Argan, Colquhoun, Moneo
   Caribbean typologies
   Monumental vs. Residential Architecture

3. The figure grounds theory

   Gestalt theories: Cooper, Schumacker, Rowe
   Space and Anti-Space: Peterson
   Notions of Collage: Koetter & Rowe
4. Discussion of 3 texts which are key to the contemporary understanding of architecture

John Summerson, *The Classical Language of Architecture*
Le Corbusier, *Towards a New Architecture*
Robert Venturi, *Complexity and Contradiction in Architecture*

Methodology:

1. Lectures and class debate.
2. Assigned readings.
3. Student presentations.

Evaluation:

1. 3 Quizzes.
2. 3 Exams.
3. 1 Paper.

Bibliography:


Tafuri, Manfredo. Teorías e Historia de la Arquitectura.
Polytechnic University of Puerto Rico  
Department of Architecture

Course title:  
THEORY 201:  
MID-CAREER RESEARCH

Credits: 3  
Codification: ARCT 201

Length:
Prerequisites: ARCT 101, ARHH 301, ARCH 302, ARCS 201, ARCC 210, MATH 122, ATEC 301; and a minimum of 21 credits in electives.

Description:

The mid-career research course intends to allow students, not just to begin identifying areas of personal interest, but also to self-assess areas of ability and skill. The course serves three purposes: (a) as a reading course to help students read, translate, and use the architectural research literature; and (b) as an introductory methods course for students interested in conducting research, (c) as a way to establish special areas of interest in which students might choose to pursue elective courses. The course will consist of seminar discussions, readings, and projects in the development and use of different to information gathering techniques. Various faculty will be invited to describe their research through special lectures, their topics ranging from history to design, theory, structures or technology. Students will be able to choose their own field of interest.

The basic intent is to provide an opportunity for students to do independent, individual study or project work which cannot be implemented within one of the formal courses in the school. It is generally expected that the effort be conceived by the student; that is, it is a student-originated initiative. Students wishing to do independent study must obtain a faculty sponsor who will endorse the proposal and serves as guide, consultant, supervisor and evaluator (for the letter grade).
Students will practice in the selection of research topics, the definition of the problem's scope, planning the investigation, gathering information, research, and the actual writing of the final work. Writing skills will be developed along the course.

General Objectives:

1. To demystify the world of architectural research.

2. To furnish the student with practical skills for reading, evaluating, and using the research literature in design.

3. To describe quantitative and qualitative research methods, instruments, and data analysis techniques relevant in professional design applications.

Specific Objectives:

1. To provide the student with a clear, practical understanding of the design research process so that he or she can plan, design, and carry out a simple but quality study.

2. By describing different methods of research utilization, to demonstrate how research can be incorporated in the design process.

Course Contents:

1. Understanding research as method

   Stages of research
   Definition of the problem: stating an issue
   On data gathering
   Qualitative and interpretative analysis of data
   Quantitative analysis

2. The architect's scope of resources of information

   Surveying the related bibliography
   Resorting to related disciplines
The building as document
Archival research: how and where

3. Diverse approaches to architectural research

   On Design
   On Theory
   On History
   On Structures and Technology

4. On writing well

   Stating the problem
   Outlining ideas
   How to illustrate properly a text
   The need for correction as means of classification

Methodology:

1. Seminar discussions.

2. Lectures and invited lecturers.

3. Assigned readings.

4. Rephrasing of project intention and results.

Evaluation:

1. Preliminary review.

2. Final submission of project in terms of both contents and presentation.

3. Commitment to project relected.

4. Command of language

Bibliography:

(As reference; to be expended according to individual research topics)


Castro, María de los A., María Dolores Luque de Sánchez and Gervasio L. García, *Los primeros pasos: una bibliografía para empezar a investigar la historia de Puerto Rico*.


Course title:
THEORY 401:
ADVANCED ARCHITECTURAL THEORY

Credits: 3
Codification: ARCT 401

Length: one trimester
Prerequisite: ARCT 201

Description:

For the past three decades, architectural criticism and theory have enjoyed increased exposure and philosophic diversity. Contemporary criticism considers a wide-range of questions about the nature of architecture. It goes beyond mere formal analysis and technical guides, to include discussions of architectural relevance, meaning and interpretation.

This course offers the opportunity to read and debate about preeminent writings covering such theoretical approaches to architecture as: phenomenology, Marxism, semiotics, structuralism, post-structuralism, colonialism, and deconstruction.

Readings will include works from diverse, related disciplines. Among those authors considered are: Manfredo Tafuri, Robert Venturi, Colin Rowe, Charles Jencks, Arthur Drexler, Agnes Heller, Klaus Herdeg, Angel Rama, Robert Stern, Demetri Porphyrius and Mark Jarzombeck.

In short, students will be pursuing a definition of their chosen discipline against which they can test their personal conclusions. Such an exploration should help nurture an understanding of ideology's interweavings with Architecture, allowing candidates to establish their own position in regards to these.
General Objectives:

1. To imbue students with the spirit of criticism and the philosophical richness of architectural theory.
2. To raise the student’s capacity for debate.
3. To introduce issues of social pertinence and moral obligation, as understood by succeeding generations.

Specific Objectives:

1. To underline architecture’s multiple meanings in society.
2. To round-off the cultural formation of candidates.
3. To help students give depth to their capstone project, to be initiated upon completion of this course.

Course Contents:

1. The issues

   On architecture’s relevance to society
   Globalization of messages
   The return to the traditional city
   Fragmentation; fractals and chaos theory

2. The Topics

   Phenomenology
   Semiotics
   Structuralism and Post-structuralism
   Colonialism
   Deconstruction

3. The authors

   The Italian school
Latin America's ideological stances  
The North-American point of view  
Recent Caribbean Contentions

4. Pervading theoretical criteria

Scope: frames of reference  
Ideology: frames of precedence  
Contributions: extended value

Methodology:

1. Class lectures & debate.
2. Student presentations of a given topic.
3. Assigned readings.

Evaluation:

1. Two exams.
2. One short paper; one final paper.
3. Class participation.

Bibliography:


Polytechnic University of Puerto Rico  
Department of Architecture

Course:  
STRUCTURES 101:

Credits: 3  
Codification: ARCS 101

Length: one trimester  
Prerequisite: PHYSICS: SCIE 211

Description:

Presentation of themes related to statics, strength of materials and basic analysis of simple structural elements and systems. Students will be introduced to criteria essential to the design and of simple building structures.

To that effect, the course will center on introducing structural concerns in the analysis of simple structural systems. Concepts such as shear, stress & strain, bending, moment, deflections, tension & compression will be addressed. Students interested in a more advanced introduction to engineering work in structures could be allowed, after previous arrangement to that effect, to take a higher level, but comparable course in the Engineering Department.

The topics' outline includes: in the area of statics - Newton's laws, free body diagrams, equilibrium, an introduction to truss and frame analysis; on the subject of mechanics of materials - area moment of inertia, stress, strain, shear and moment diagrams, beam stresses and deflections, and column and beam analysis. Vectors, couples, single-member equilibrium beams, three-force structures, and three-hinged beams, centroids, moments of inertia and trusses will also be discussed.

General Objectives:

1. To initiate students in fundamental aspects of building construction.
2. To introduce the diverse methods of building construction, and their basic properties.

3. To dissect for students the basic themes related to a building's rationale for standing up.

4. To help students become aware of structural (scientific and mathematical) principles governing the built realm.

5. To prepare and stimulate students to identify structural conditions to be tended to in their designs, regardless of building material chosen to execute it.

Specific Objectives:

1. To teach students how physics affect architecture, to initiate them into structural fluency with which to be able to articulate design schemes.

2. To enable students to understand in simple ways how a structure behaves.

3. To foster a "common sense" sensibility in students regarding what a given building can be expected to do in terms of structural performance.

Course Contents:

1. Materials and properties: a comparison of efficiency in terms of cost, effects on planning, physical and aesthetic impact, and the resulting options regarding other building subsystems.

   Steel
   Concrete
   Wood
   Others: plastics

2. Statics and mechanics

   Tension and compression
   Shear
Stress and strain: intensity, elasticity, deformation, failure, and warning characteristics.
Bending and Moment: summing moments; Bending moment stress; Section Modulus of Steel, Wood and Concrete.

3. The behavior of simple structural systems

Equilibrium and stability: external and internal reactions.
Concurrent and Non-Concurrent Force Systems.
Gravity
Deflections and deformations
Moment of Inertia
Vibrations
Statically indeterminate beams
Structural sizing

4. Analysis

Arches
Couples
Truss and frame: joints' calculation methods [joints, section, and graphic (Bow's Notation)]
Single member equilibrium beams
Three-force members
Three-hinged beams
Earthquake design

Methodology:

1. Lectures.
2. Demonstrations.
3. Site visits.
4. Assigned readings.

Evaluation:

1. Four quizzes.
2. Four exams.
Bibliography:


Course:
STRUCTURES 201: STEEL

Credits: 3
Codification: ARCS 201

Length: one trimester
Prerequisite: ARCS 101

Description:

This course addresses steel structures' design, including the design of steel structural beams and columns with and without lateral supports. The properties of steel are discussed and issues of combined axial compression and bending are presented.

Among topics, students will study: specifications and building codes for loads and design methods; analysis and design of tension members; analysis and design of axially-loaded compression members; design of beams; and different types of building connections (welded and bolted).

Familiarity with trade-related terms will allow students to understand the role and potential of elements like steel joists, girders, plates, anchors; the processes of welding and bridging; and the ample variety and applications of metal fabrications, both for roofs and decks.

General and Specific Objectives:

1. Teach students to apply their basic structural knowledge in the manipulation of a specific trade, in this case steel.

2. To expose students to the particulars of steel as a building / structural material.
3. To facilitate an understanding of calculations related to the use of steel.

4. To further the student's understanding of the scientific component of Architecture, as one vital to the security, permanence and appearance of a building or space.

Course Contents:

1. Introduction to the material

   Brief history of iron and steel
   Common applications and markeatability
   Properties of steel/Corrosion and Fire ProtectionAxial Compression and Bending

2. Analysis and Design

   Building Codes for loads
   Beams and plastic design of steel beams
   Columns with and without lateral support
   Tension members
   Framing (basic theory): single floor and multi-storey
   Rigid and composite construction

3. Elements

   Joists
   Girders
   Plates
   Anchors

4. Building Connections

   Welding and Bridging
   Bolts and Rivets
   Special
   Metal Fabrications/ sheet and strip; roofs and decks
   Common usage problems
Methodology:

1. Lectures.
2. Demonstrations.
3. Site visits.
4. Assigned readings.

Evaluation:

1. Four quizzes.
2. Four exams.

Bibliography:


Polytechnic University of Puerto Rico
Department of Architecture

Course:
STRUCTURES 301: CONCRETE

Credits: 3
Codification ARCS 301

Length: one trimester
Prerequisite: ARCS 201

Description:

The third in the structures' sequence, this course addresses the design of reinforced concrete structures, following the ultimate strength method. It is aimed at developing safe, economical and efficient design stances regarding reinforced concrete beams, columns and one-way slabs, according to the A.C.I. codes.

Mechanical properties of plain concrete and steel reinforcement will be examined, as will design methods and requirements. Specific subjects included the course syllabus are: design of rectangular beam sections in bending and for shear; design of continuous beams and one-way slab systems; design of T-beam sections for bending and shear; and development of reinforcement.

General and Specific Objectives:

1. Teach students to apply their basic structural knowledge in the manipulation of a specific trade, in this case, concrete.

2. To expose students to the particulars of reinforced concrete as a building / structural material.

3. To facilitate an understanding of calculations related to the use of concrete.
4. To further the student's understanding of the scientific component of Architecture, as one vital to the security, permanence and appearance of a building or space.

Course Contents:

1. Introduction to the material
   
   Brief history
   Common applications and marketability
   Properties of Concrete, concrete masonry and precast concrete

2. Analysis and Design/Ultimate Strength Design Method
   
   Columns
   Beams (design in bending and in shear)
   I-Beam sections, in bending and in shear
   Continuous Beams
   Reinforcement considerations
   Development of reinforcement

3. Slab Design
   
   One-way slab systems
   Foundations/Footings
   Frame Construction
   Construction Joints

4. Pre-cast, pre-stressed, and post-tensioned
   
   Concrete Shells
   Thermal movement and vibrations
   Common usage problems

Methodology:

1. Lectures.

2. Demonstrations.

3. Site visits.
4. Assigned readings.

Evaluation:

1. Four quizzes.
2. Four exams.

Bibliography:


Course:
STRUCTURES 401: WOOD

Credits: 3
Codification: ARCS 401

Length: one trimester
Prerequisite: ARCS 301

Description:

Traditional architecture in the Caribbean is based, extensively, on wood. In addition, the material is enjoying nowadays a "comeback" in terms of public interest, as not just additions, but full homes are built out of wood. This course addresses the need to inform future professionals on the need to be knowledgeable about wood's properties and possibilities.

Course themes include: foundations, types of framing (balloon or platform); bracing options; partition framing; and roofing and flashing considerations. Students will become familiar with lumber, lumber types and their strength. This being a structures' course, emphasis will be placed in the recognition of what constitutes appropriate transfer of loads and wind stresses, granting attention to hurricane-proof design.

Posts, connections, outside wall frames, special framing for openings and stairs, and typical joints will be discussed. Roof types (i.e. hip, gable...) will be considered in terms of the structural resolution they represent. Existing structures in wood will be visited and analyzed according to classroom discussions. The issue of decay treatment will be tended to, as well as subjects marginally related to the material: sheathing, boards, finishes, windows and glazing, hardware and paint.
General and Specific Objectives:

1. Teach students to apply their basic structural knowledge in the manipulation of wood.

2. To expose students to the particulars of wood as a building / structural material.

3. To facilitate an understanding of basic calculations related to the use of wood.

4. To further the student's understanding of the scientific component of Architecture, as one vital to the security, permanence and appearance of a building or space.

Course Contents:

1. Introduction to the material
   
   Brief history
   Common applications and marketability
   Properties of Wood: physical structure
   Lumber types

2. Design criteria for timber construction
   
   Foundations
   Framing: balloon and platform; partitions
   Bracing Options
   Framing fasteners

3. Beam design/ Axial loads
   
   Connections and trusses
   Loads, deflection; tabular values and adjustment factors
   Wind and hurricane-proof design
   Formwork for concrete

4. Miscellaneous
   
   Sheathing, boards, finishes, roofing
   Windows, glazing and hardware
   Decay treatment; common usage problems
Methodology:
1. Lectures.
2. Demonstrations.
3. Site visits.
4. Assigned readings.

Evaluation:
1. Four quizzes.
2. Four exams.

Bibliography:


Course title:
TECHNOLOGY 101: INTRODUCTION

Credits: 3
Codification: ATEC 101

Length: one trimester
Prerequisites: ARHH HIST 101, ARCT 101

Description:

This course pursues an investigation of building technologies to develop an understanding of the systems that make up a building or a space, and influence the form, texture and character of the built environment. The course intends to provide students having professional career goals with an overview of the theory and practice of building technology in architecture: structural, environmental, and life safety. Students must learn about the individual system requirements and their integration into a total architectural design. The technical theme of this course is to focus on the performance criteria requirements of each building system, each to be explored through class lectures, readings, reports, and a study / detail model.

Subjects to be addressed include: properties and behavior of different building materials, loads, beams and columns, & basic lighting, mechanical and ventilating concepts. Issues of life-safety will be examined through familiarization with the building codes, specifically highlighting issues of occupancy, fire safety, vertical and lateral load requirements and their effect on architecture design.

The critical issues surrounding enclosure of the structural frame are addressed in this introduction to the major building constructions systems. Understanding how a building reacts to thermal loss and gain, air and water movement, electrical and lighting systems, as well as the vertical and horizontal movement of people forms the final part of the course content. In providing students with this overview of
professional concerns, architectural history will be reexamined in terms of technological transformations: from the Pyramids to Hagia Sophia, the Gothic Cathedrals, the 19th Century advent of steel and the skyscrapers will be looked at as the construction problems they were on their own times.

Discussion of Neil Postman's Technopoly at the end of the course helps students to put in perspective the effect of technology in both mainstream and peripheral societies.

General Objectives:

1. To learn about the rigorous demands of building systems on the practitioner, with applicable code variations.

2. To value the role of technology in society appropriately.

3. To achieve an understanding of the purpose, complexity and need of construction details.

Specific Objectives:

1. To investigate building technologies and grow familiar with basic structural principles.

2. To be informed about performance criteria for materials and technologies.

Course Contents:

1. A Cultural and Scientific Understanding of Technology

   Basic introduction to structural concepts
   Architectural History as structural and technical problem-solving
   Semiotics of Structures
   Technopoly, by Neil Postman.
2. Basic Construction Concerns
   Steel
   Concrete
   Wood and Timber

3. Environmental Issues
   Thermal Considerations
   Water and Waste
   Waterproofing
   Community Sustainability

4. Survey of Environmental Controls
   Electricity
   Lighting and Illumination
   HVAC Systems
   Building Protection and Life-Safety Issues
   Acoustics on Buildings

Methodology:
1. Lectures.
2. Demonstrations.
3. Site visits.
4. Assigned readings.

Evaluation:
1. Four quizzes.
2. Four exams.
Bibliography:


Course title:
TECHNOLOGY 201: MATERIALS & METHODS

Credits: 3
Codification: ATEC 201

Length: one trimester
Prerequisite: ATEC 101

Description:

This course covers the means and methods of construction technology and its integration into architectural design. Through the lecture format and textbook reading, the student is asked to consider the options available to the architect in the analysis, construction documents, architectural materials, and structural and mechanical systems. Students - after participating in discussion and debates on the subject - are required to objectively research, analyze and graphically and orally present solutions to building construction concerns.

The course examines the structural resources, construction materials and systems, and the most common electrical, mechanical, communications and transportation systems upon which most buildings are based. Included is an examination of evolving materials, methods and systems in architecture from antiquity to the present with emphasis on 20th-century developments. The course will concentrate on the two themes:

1) understanding the relationship between materials and the techniques used to produce and assemble them, and the architectural concepts which directed their uses, including advanced structural concepts;

2) the role of innovation within architectural practice and the impact of invention outside of architecture on building technology.
General Objectives:

1. To understand the principles embodied in natural laws affecting the science of building.

2. To understand the properties and behavior of building construction materials and systems.

3. To reaffirm the architect’s need to conceive of the multiple subsystems which make up a building as an integrated whole.

4. To grow knowledgeable (and comfortable) about the provenance (history) of our chosen construction methods.

Specific Objectives:

1. Develop intellectual ability in the choice of appropriate building materials.

2. To make students aware of the principles, conventions, standards, applications and restrictions associated with the manufacture and use of existing and emerging construction materials and assemblies.

Course Contents:

1. Construction Materials
   
   Selection Criteria
   Available Alternatives
   Construction Documentation
   Erection Procedures

2. Concrete
   
   Composition and Mix Design
   Formwork & Placement: Sitecast and Precast
   Reinforced and Lightweight Concrete
   Testing and Curing
   Prestressed and Precast Concretes
   Joints and Finishes
3. Wood

Strength and seasoning
Cutting, sawing and grading lumber
Plywood and Glued-laminated lumber
Framing & Joining
Finish Carpentry and Millwork

4. Metals

Ferrous and Non-ferrous
Structural Steel
Cable and Tent Structures: Space Frames, Domes
Lightweight Metal Framing

Methodology:

1. Lectures.

2. Demonstrations.

3. Site visits.

4. Assigned readings.

Evaluation:

1. Four quizzes.

2. Four exams.

Bibliography:


Readings from various trade sources, updated and current to satisfy the student’s curiosity about contemporary developments will also be listed and available.
Polytechnic University of Puerto Rico
Department of Architecture

Course:
TECHNOLOGY 301: SITE PLANNING

Credits: 3
Codification: ATEC 301

Length: one trimester
Prerequisite: ATEC 201

Description:

In this course, site, site analysis, its intervention and conservation, link diverse themes concerning land and the placement of a building on it: geographical, climatic, geological, topographical, and ecological concerns are examined closely. Side by side to considerations on the natural environment, attention is focused on the man-made world, as it pertains site infrastructure. Circulation, service and utility systems (roads, drainage and sewage, among others) are among important themes addressed. So are: erosion, irrigation, vegetation with other purposes than landscaping, solid and toxic waste, contaminants and contamination; zoning, acoustics, etc.

The student will learn how to become informed (and also infer) from site conditions and land-use restrictions. Examining limitations to site development (natural and legal) will underline the need to command existing related regulations, safety requirements and alternate or innovative construction techniques. Familiarity with the basics of soil testing, common drainage solutions, or grading and earthwork techniques shall empower the student to design most effectively.

Topics such as orientation, natural ventilation and illumination, views, accessiblity, alternative ways of impacting the soil (whether, among others, by choice of foundations or methods of temporary support) and landscaping are part of the discussions to be held. Site archaeology will be presented in both practice and legal terms. All types of site improvements will be described, identifying additional
specialized sources and methods to pursue any of the subjects further. Government procedures and requirements concerning site intervention and conservation shall be illustrated through selected case studies.

General Objectives:

1. To identify and understand the natural phenomena that affect the setting for architecture.

2. To propitiate a positive ecological impact of buildings in their setting and on their occupants.

3. To fix responsibilities on the architect regarding global environmental issues.

Specific Objectives:

1. To help students comprehend how a specific site influences and is influenced by its physical characteristics and its ecological context.

2. To aid students in integrating site concerns of common sense to specialized design interests.

Course Contents:

1. The Natural Context

   Building Placement/Orientation and Views
   Winds & Precipitation
   Shadow and Shade
   Vegetation (Seasonal Considerations)

2. Surveying

   Horizontal and Vertical Recording
   Cut & Fill
   Contours/Graphic and Model Representation

3. Sitework

   Soils and Soil Testing
Site Modification and Preparation
Earthwork
Foundations
Temporary Supports

4. Drainage and Slopes

Controls
Retaining Walls
Surface Drainage (Swales, Gutters, Franch Drains)
Underground Drainage (Manholes, Storm-Sewers, Rain drains)

5. Moisture and Thermal Protection

Damproofing; Waterproofing
Roofing and Flashings
Expansion Joints

6. Acoustics

Principles and Materials
Exterior space considerations
Case studies

Methodology:

1. Lectures.

2. Site visits.

3. Assigned readings.

Evaluation:

1. Four quizzes.

2. Four exams.
Bibliography:


Strom, Steven amd Kurt Nathan. *Site Engineering for Landscape Architects*. 2nd Ed.

Course:
TECHNOLOGY 401: ENVIRONMENTAL SYSTEMS

Credits: 3
Codification: ATEC 401

Length: one trimester
Prerequisite: ATEC 301

Description:

This course explains three basic support systems in buildings: electrical, plumbing, and air conditioning. The student is introduced to electrical power systems, the technology of lighting and acoustical controls. After discussions of each systems’ demands, versatility and limitations, they will be experienced in exemplary built projects to be visited. Students will develop plans of intermediate complexity to illustrate their understanding of each trade.

Themes to be studied in detail include: basic physical principles of electricity, illumination and sound. Physical and environmental considerations of each systems will be examined, as well as energy conservation issues pertaining the generation, transmission and distribution of electrical power. Students will be oriented on how to evaluate alternate and alternative artificial lighting systems, learning about basic lighting calculations and the design of simple lighting systems. Acoustical control in buildings will also be addressed. So will be vertical transportation systems like elevators and escalators.

The second part of this course exposes students to plumbing, ventilation systems and air conditioning systems of contemporary use. Codes regulating these sources are commented upon, to inform the student about sources of further specialized study. Main themes of study are: physical principles of heat, heat transfer and fluid dynamics. Comfort standards are introduced and experimented with in quantitative exercises. On plumbing, subjects include: water
supplies, service and disposal systems, and fire protection systems.

Public policies regarding utilities are informed to accurately gauge their decreasing availability and the need for future, creative options regarding each field.

General Objectives:

1. To understand the basic theories of environmental control, lighting, acoustics, building systems and energy management.

2. Be aware of relevant codes and regulatory standards and their application to physical and environmental systems.

3. To fix responsibilities on the architect regarding global environmental issues.

Specific Objectives:

1. Understand the basic elements, organization and design of mechanical and electrical, plumbing, communication, security and vertical transportation systems.

2. To propitiately a positive ecological impact of the energy and water needs of buildings.

Course Contents:

1. Electrical
   
   Basic Physics
   Power Systems/Electrical Equipment
   Calculations
   Safety Considerations
   Lighting Systems
   Artificial Lighting Calculations
   Emergency & Exit Lighting
   Energy Codes
2. Solar Design

Heat Transfer & Loss
Passive and Active Systems
Energy Conservation Issues

3. Communication and Transportation Systems

Telephone, Alarm and Security Systems
Escalators, Elevators and People Movers

4. Mechanical

Heat Transfer and Fluid Dynamics
Plumbing: Water and Waste Systems
Air Conditioning
Fire Protection Systems

5. Sustainability Issues

Methodology:

1. Lectures.
2. Site visits.
3. Assigned readings.

Evaluation:

1. Four quizzes.
2. Four exams.

Bibliography:


General Objectives:

1. Facilitate an understanding of the architect's role in the project's design and construction, in the administration of the construction contract, and in the relationship with others involved in the project.

2. Help students become aware of the associated professional disciplines that make contributions to the project process and of methods for their coordination and management.

3. To analyze professional procedures pursuant to local traditions and conditions.

Specific Objectives:

1. Understand the types of documentation required to render competent and professional service, in terms of both scope and limitations.

2. To present contemporary cases studies in order to illuminate the student's classroom experience with issues relevant to contemporary life.

Course Contents:

1. Design Phase

   The Architect-Owner Agreement
   Purpose and Reach of Construction Documents
   Planning, Execution and Coordination
   On Specifications

2. Contracting

   The Owner-Contractor Agreement
   Bidding Documents
   Cost-Fixing and Negotiation
   Permits

3. Construction

   The Architect's Supervision
Course:
TECHNOLOGY 410:
PRESERVATION TECHNOLOGY

Credits: 3
Codification: ATEC 410

Length: one trimester
Prerequisite: ATEC 401

Description:

With a strong theoretical / historical background, this course aims at enlightening the student about the technical aspects pursuant to historic preservation. Students will become familiar with basic concepts and problems of materials preservation, rehabilitation and conservation.

The availability, properties and decay of diverse materials will be addressed: wood, stone, rubble, terra-cotta and reinforced concrete. Examples for different parts of the world will be discussed, as well as local-Caribbean ones. The following outline on course contents summarizes specific themes to be studied.

Students will come to terms with the fact that historical structures cannot be intervened with as if they were homogeneous entities, even if they belong to the same period or style.

General and Specific Objectives:

1. To endow students with technical knowledge and proficiency regarding building preservation techniques.

2. To promote amongst students a higher level of technical responsibility.
Course Contents:

1. Fundamental Concepts and their technical implications
   Preservation
   Rehabilitation
   Conservation
   Reconstruction
   John Ruskin vs. Viollet-Le-Duc

2. On Identifying Problems, Causes and their Manifestations
   The Building Inspection: steps leading to processes
   Methodologies
   Stains, Fungi, Rotting Corrosion and Cracks
   Efflorescence

3. Tending technically to problems
   **External Causes**
   Climatological: temperature, rain, heat, & humidity
   Biological and Botanical: animals, insects, plant and fungus growth
   Disasters: hurricanes, floods, earthquakes and fires

   **Internal Causes**
   Humidity: changes in temperature between interior and exterior; high water table
   Contaminated air: effects of pollution
   Neglect

4. Laboratory Analysis
   "Argamasa" and mortars: chemical dating
   Effects of "salitre"
   Salts
   Study of particle’s size and color
   Material porosity
   Paint analysis: color reproduction (contents and hues)

5. Specifications Writing
   Compatibility and Durability of Material specified
   Issues of market availability and cost
Methodology:

1. Lectures.
2. Site visits.
3. Laboratory experiments.
4. Testing "in situ".

Evaluation:

1. Four quizzes.
2. Two tests.
3. Two Field Reports.
4. One Final Exam (or Project).

Bibliography:


Del Cueto de Pantel, Beatriz. "La intervención en un edificio histórico: los conceptos fundamentales". Plástica 15, 8:2, 1986.


National Park Service. *Preservation Briefs.* (Journal)

National Trust for Historic Preservation. *Historic Preservation.* (Journal)


Course:
PROFESSIONAL EXPERIENCE 100:
PRACTICE / EXPERIENCE

Credits: 3
Codification: ARPP 100

Length: one trimester
Prerequisite: ARCH 203

Description:

To be taken any moment from sophomore year's last term on, this course allows students to obtain credit for "real-life" experiences which effectively complement their academic training, expanding formal learning horizons in each candidate's personal realm.

Early in their studies - by the time they are equipped with basic studio skills (drafting and model-making), students are urged to get jobs in offices, participate as assistants to research, or travel. In order to insure an in-depth experience at those activities, the student must obtain prior approval, explaining in writing the scope of this endeavor. A faculty member would supervise the student as his (her) chosen activity unfolds. A mid-term report and a final one must be submitted by the student, the latter including evidence of the work developed during that time. Grading criteria would be developed for each category under which a student can register for this course, that of travel being a different one.

For travel - in the case of it being sponsored by Polytechnic University - this course could be the one to allow for preparatory instruction to happen, permitting to teach and test students prior to their departure. In that sense, the course's topic would remain open, depending on the nature and destination of the trip.

Should the student be traveling alone (or without the formal...
auspices of UPPR) a procedure similar to that required for approval of credits earned during practice experience would be followed.

General Objectives:

1. Expand, enhance and diversify the university experience through knowledge acquired outside of it.

2. To teach students to see work and travel as additional means to learn both about the discipline and one's individual interest on it.

3. To realize the cultural-enrichment opportunities travel represents; to learn about how psychology and office dynamics come into play at work.

Specific Objectives:

1. To stimulate students' interests to work and travel; previous work experience will better qualify them for the profession and the job market.

2. To develop interest in the work of other countries and professionals, by coming in close contact with them.

Course Contents:

Contents will vary according to the specific type of student experience.

1. Work Experience

   The Office Environment and the hierarchical organization
   Project stages and procedures
   Differences between studio and office experiences
   Specifics of the student's involvement and work

2. Travel Experience

   Prior Preparation
Cultural studies on country to be visited
Key themes pertaining the country to be visited
Sketchbook

Methodology and Evaluation:

To be established according to type of experience. For work experience, student will be requested to present work produced during the period, and submit a written evaluation of it. For trips, a sketchbook, paper and project presentation can be expected.

Bibliography:

None required for the practice experience; in case of travel, to be chosen according to trip subject.
Course title: 
ETHICS 100

Credits: 3
Codification: ARPP 100

Length: one trimester
Prerequisite: ARCS 401

Description:

This course introduces students to the moral dilemmas inherent to professional practice in a modern society. Its focus is an enlarged one, opting to find examples of relevance in works of literature, rather than in the specifics of a project or the given experience of a practitioner, although the latter will be invited to participate in class discussions.

To be taken towards the completion of a significant amount of credits, the course should excite more mature students to address issues of responsibility, civic obligations and morality. Class discussions will be a must, for debate should greatly enhance the understanding of the problems posed by the many texts to be considered along the trimester.

The Western World's understanding of the individual will be explored looking at Aristotle, Cicero, and Rousseau, among others. The need and difficulties of placing responsibilities will be examined through consideration of texts like Ibsen's The Wild Duck and Dostoevsky's The Brothers Karamazov. Hispanic figures of importance will also be studied, focusing on local intellectuals: Hostos, Marqué, and Díaz Quiñones. Contemporary visions shall allow students to immerse in Heisenberg's "uncertainty principle" and, simultaneously, grow conscious of the implications of a globalized society where disciplines overlap each day more.
General Objectives:

1. To make students aware of the ethical problems posed by modern society.

2. To make students more knowledgeable about the weight of choices to be made in their professional life.

3. To familiarize the student with a body of knowledge from the Western World’s stance on ethics.

Specific Objectives:

1. To strengthen the moral character of candidates.

2. To foster better professional attitudes.

3. To create better citizens.

Course Contents:

1. The Western World’s Understanding of the Individual’s Role in Society
   - Aristotle’s ethics and Cicero’s duties
   - Thoreau and Man in Nature
   - Rousseau’s The Social Contract
   - Fairlie’s Rendering of the Deadly Sins

2. Concern, Responsibility and Guilt
   - Ibsen’s Thorvald: on the idea of “the basic lie”
   - Dostoevsky’s Ivan and Smediakov: on distinguishing responsibilities

3. Hispanic Figures with Relevant Stances
   - Rodó’s Introspective Outlook
   - Hostos’ Morality
   - El puertorriqueño dócil, by Marqués
   - Díaz Quiñones’ La memoria rota
4. Ethics in the Post-Modern World

Heisenberg’s Uncertainty Principle
Erasing Boundaries: Multidisciplinary Efforts
Applicable Legislation Vs. Moral Obligation
The Architect’s Code of Ethics

Methodology:

1. Lectures.
2. Readings.
3. Class debates.
4. Invited practitioners.

Evaluation:

1. Three short papers.

Bibliography:

AIA, Code of Ethics.


Colegio de Arquitectos de Puerto Rico. *Código de Ética*.


The Role of Inspection
Shop Drawings
Change Orders
Project Certifications
Punch Lists and Project Closeout

4. Computer Applications

Database
Spreadsheets
Cad Applications

Methodology:

1. Lectures.
2. Guest lecturers.
3. Assigned readings.
4. Discussion of Case Studies.

Evaluation:

1. Three quizzes.
2. Two exams.
3. One final paper.

Bibliography:


Supplemental readings on up-to-date computer applications to Architecture.
Course:
PROFESSIONAL PRACTICE 502:
MANAGEMENT AND FINANCES

Credits: 3
Codification: ARPP 502

Length: one trimester
Prerequisite: ARPP 501

Description:

The role of the practitioner -- in terms of scope, duties and potential -- is discussed and debated upon in this course from a two-sided approach. First, professional practice is looked at from different standpoints: ethical, financial and managerial. Personnel organization, supervision and payment is discussed, as well as related office procedures.

Contractual obligations are examined, taking into account technical aspects of which any practitioner must be aware of. Case studies are presented for class consideration. Among relevant topics are: business law principles, forms of doing business, local practice traditions, construction management, use of consultants, insurances and record keeping.

Secondly, the architect's active role in the building industry is underlined, to stimulate students to consider future managerial undertakings. On this very specific financial component, among other themes, land acquisition and development costs will be addressed tending simultaneously to considerations of short and long range costs; cost control and market costs (i.e. interests), etc.

General Objectives:

1. Make students aware of the issues, individuals, groups, and resources that shape the project process for various types of practice.
2. Assist students in elucidating the complexities and responsibilities of professional practice, and the different skills that are needed to succeed at it.

3. Communicate to students the implications and potential of economic systems, finance and building costs on specific building projects.

4. Be aware of the roles of value engineering, life-cycle cost analysis, and construction cost estimation in the framework of a design project.

Specific Objectives:

1. Help students become aware of the associated professional disciplines that make contributions to the project process and of methods for their coordination and management.

2. To present contemporary cases studies in order to illuminate the student's classroom experience with issues relevant to contemporary life.

Course contents:

1. Scope and duties of the professional
   
   On management: financial and supervisory aspects
   Architectural Consultants
   Construction Management
   Record Keeping

2. Finances
   
   Accounting Principles
   Cash flow Issues and Internal Cost Control
   Cost Effectiveness
   Insurances

3. Management
   
   Scale and types of offices
   Personnel supervision
   Local practice traditions
   Construction Cost Estimation
Life-cycle cost analysis
Values of Value Engineering
Total Quality Management

4. The Architect as Entrepreneur

Business Law Principles
The Architect's Initiative
Land Acquisition Costs
Development Costs
Market costs
Cost Control

Methodology:

1. Lectures.

2. Guest lecturers.

3. Assigned readings.

4. Discussion of Case Studies.

Evaluation:

1. Three quizzes.

2. Two exams.

3. One final paper.

Bibliography:


Images of the Built Environment: 21st


Polytechnic University of Puerto Rico
Department of Architecture

Course:
PROFESSIONAL PRACTICE 503
LAW AND PROFESSIONAL PRACTICE

Credits: 3
Prerequisite: PROFESSIONAL PRACTICE 502

Description:
In everyday practice, the architect spends considerable time carrying out various administrative tasks and dealing with problems and situations arising from the design and construction of each new building project. In order to do this effectively, a basis knowledge of all the relevant procedures involved is necessary, coupled with an understanding of the broader legal and professional issues that are at stake.

This course is designed to provide and introduction to the architect's responsibilities in private practice by giving a broad legal overview of the wider principles affecting the profession, and concentrating upon the more specific administrative aspects of day-to-day office procedure. The lecture/seminar course covers all major aspects of architectural practice, and students will be expected, within the context of a simulated office format, to react professionally to given situations and problems that are likely to be encountered. This will enable the development of both manual administrative skills in letter-wrting, form-filling, etc. and a practical knowledge and attitude towards architectural practice that will form a substantial basis for registration examinations and the first few years of practice. The course will cover the following areas:

THE ARCHITECT AND THE LAW (U.S. Legal System, major pitfalls in practice and some defenses),

THE BUILDING INDUSTRY (Parties involved in the building process, contractual/tortious relationships to the architect),

THE ARCHITECT IN PRACTICE (Forms of association, office procedures and insurance),

THE ARCHITECTURAL PROFESSION (Structure of Colegio
de Arquitectos de Puerto Rico and AIA),

THE CLIENT (Types of client, forming a relationship, payment and basic/additional services),

LEGAL CONSIDERATIONS (Property law, zoning and building control, legal considerations, i.e., trespass, nuisance)

THE DESIGN PHASE (Costing implications, site problems),

TENDERING AND BIDDING (Selection of the contractor),

SUBCONTRACTORS, SUPPLIERS, AND CONTRACT COMMENCEMENT,

THE CONSTRUCTION PHASE (Architect’s duties and responsibilities, unforeseen circumstances, time and cost considerations),

FINAL PROCEDURES (Successful: finish building and duties, final payment. Unsuccessful: litigation and arbitration).

Objectives:

1. Make students aware of the issues, individuals, groups, and resources that shape the project process, particularly in terms of the legal responsibilities and consequences.

2. Help students become aware of the legal discipline’s contributions to the project process and of methods for its coordination and management.

3. To present contemporary cases studies in order to illuminate the student’s classroom experience with issues relevant to contemporary life.

Texts:

Código Civil de Puerto Rico

Reglamento de Edificación de Puerto Rico

AIA, The Architect’s Handbook of Professional Practice
Course:
PROFESSIONAL PRACTICE 504:
REAL ESTATE DEVELOPMENT

Credits: 3
Prerequisite: PROFESSIONAL PRACTICE 502

Description:
Because economic forces have a decided influence on the development and design of the built environment, this course explores how the built environment is formed by these forces. Planning, Architecture, and construction are part of the private sector real estate development process which is the major generator of the built environment in the U.S. -- generating over 90% of all buildings on an annual basis. This process includes land acquisition, financing, design and construction, securing regulatory approvals, leasing of projects and operating and maintaining them during their life.

This development process is a much larger context than is usually considered in architectural schools or in practice. The importance of development and the developer to the quality of the environment is now beginning to be understood and more architectural and planning schools are encouraging involvement in this area. The persuasiveness of economic influences on the history and present form of our built environment is so great that it can not continue to be ignored by planners and architects.

Professionals must understand and use this knowledge to improve the quality of the environment. As requisite, each student will conduct his (her) own independent project "developing" a building. Use of a computer spreadsheet for this project will be of an essence.

Objectives:

1. To enlarge the student's perspective through an
introduction to the economic forces and the development process which affect our environment

2. To introduce new vocabulary, concepts and variables which are part of the development process.

3. To relate design and economic issues and explore the influence of economics on design

4. To provide the student with a working knowledge of the development process and the calculations used in development including the use of a spreadsheet program.

5. To evaluate the consequences of the various forces in the development process on the quality of the built environment.

Texts:

Supplemental readings to be provided from trade journals.
Polytechnic University of Puerto Rico
Department of Architecture

Course:
PHOTOGRAPHY 101

Credits: 3
Prerequisite: NONE

Description:

Students will be exposed both to the basic principles of black and white photography, its history and pertinence to architecture. Manipulation of a camera will be taught, as well as the basic chemistry of negatives and the printing process. Besides addressing compositional issues (how the "see"), laboratory techniques will be explained and experimented with.

The different types of camera will be explained, including view camera manipulation. Film types, model photography, and techniques for reproduction of documents is part of the course contents. Issues of light, contrast, shades and shadows, filters and texture will be tended to; also the "zone systems", as explained by Ansel Adams for the manipulation of negatives by studying the grey chart. Laboratory practice will be extensive, as well as field training to address best control of shutter speeds, exposures and light meters.

Concurrently, the work of architectural photographers will be examined and discussed: Gabriel Basilico, Ezra Stoller, and Henry Plummer, among others.

Objectives:

1. To broaden the students' resources for architectural representation.

2. To underline design skills and interests through a discipline parallel to Architecture.
3. To heighten the student’s perception of the surrounding world.

4. To expose students to the work of other architects and photographers.

5. To stimulate students to pursue advanced training in photography.

Texts:

Ansel Adams, *The Camera*

Ansel Adams, *The Negative*

Ansel Adams, *The Print*

Tom Grill and Mark Scanlon, *Photographic Composition*

Henry Plummer, *Poetics of Light*
MATH. 111. PRECALCULUS

1994- Catalog Data :

Three Credit-hours. Two-two and one sixth hour lecture periods per week. Relations and functions; curve sketching, rational functions, polynomial functions, synthetic division, remainder and factor theorems; zeros of polynomials; exponential and logarithmic functions, graphs; trigonometric functions and graphs; sine and cosine laws, solutions of right and oblique triangles, identities and trigonometric equations; and inverse functions.

Pre-requisite: :

Placement by Admissions Office or Math. 110.

Textbook :


References :


Coordinator :

Eliezer Cotto, Instructor

Goals :

1. Provide the essential concepts and skills of college algebra, trigonometry and the study of functions, which are needed for further study in mathematics, sciences, and engineering.

2. Knowledge of various types of functions including polynomial, exponential, logarithmic and circular functions and their graphs.

Pre-requisite by topic:

1. Algebraic symbolism and techniques.
2. Algorithmic thinking an essential part of problem solving.
4. Completing the square, quadratic and distance formula.
5. Geometry.
6. Setting up equations: applications.
7. Inequalities.
Topics:
1. Functions and graph (two classes)
2. Linear and quadratic functions, inverse functions (one class).
3. Operations with functions, inverse functions (one class).
4. Polynomial functions, values and zeros of polynomial functions. (two classes)
5. Rational functions. (one class).
6. Graphing algebraic functions. (one class).
7. Exponential and logarithmic functions. (two classes).
8. Exponential and logarithmic equations. (one class).
9. Trigonometry of the right triangle. (one class)
10. Trigonometry functions. (one class).
13. Inverse trigonometric functions and graphs, trigonometric equations. (one class).
14. oblique triangles: sine and cosine laws. (one class).
15. Partial tests. (three classes).
16. Final test. (one class).

Computer Usage: none
Special projects:
ABET Category content: Mathematics

Prepared by: Prof. Eliezer Cotto       Date: August 1994
Math. 122 : Precalculus II

1994 Catalog Data:
Three credit-hours. Two-two and one sixth hour lecture periods per week. Trigonometry and its applications, complex numbers operations and De Moivre's Theorem, matrix and linear algebra, study of systems of linear equations, determinants and Cramer's Rule; sequences, arithmetic and geometric progressions; finite sums and series; vectors; analytic geometry and the conic sections; systems of quadratic equations; the binomial theorem; the study of limits and the rate of change.

Pre-requisite : Math .111 or Placement by Admission Office.

Textbook : Warren L. Ruud and Terry L. Shell
Prelude to Calculus, Wadsworth publishing Co. Second Edition 1993

References :
2. Linda L. Exley & Cincent K. Smith
3. Thomas W. Hungerford & Richard Mercer
4. Franklin Demana, Bert K. Waits & Stanley Clemens:
5. Stanley I. Grossman, Precalculus with applications
Saunders College Publishing (1990)

Coordinator : Ana Ramos, Assistant Professor

Goals :
To provide the essential concepts and skills of college algebra, trigonometry, plane analytic geometry, linear algebra, complex numbers and vectors. Development of student's capacities for problem-solving and critical thinking in mathematics areas.

Pre-requisite by topic:
1. Trigonometry of the right triangle
2. Trigonometric functions
3. Complex numbers and operations
4. Numbers, inequalities, absolute value, completing the square and the quadratic equation and formula
5. Algebraic operations and expressions, laws of exponents
6. Rectangular coordinates and the meaning of graphs
7. Multiplications of binomial containing radicals
8. Plane geometry
9. Distance formula
Pre-requisite by Topic:

10. Graph and the equation of straight line.
13. Graph of a quadratic equation.

Topics:
1. Applications of trigonometry (six classes)
2. Plane analytic Geometry (three classes)
3. Polar coordinates and parametric equations (two classes)
4. Systems of equations and inequalities (seven classes)
5. The binomial theorem (one class)
6. Three partial test (three classes)
7. Final test (one class)

Computer Usage: None
Special projects:
ABET Category Content: Mathematics

Prepared by: Prof. Eliezer Cotto               Date: August 1994
SCIE 211 - GENERAL PHYSICS I

1994 Catalog Data: Scie 211 - GENERAL PHYSICS I
Three credit-hours. Two-two and one sixth hour lectures periods per week. Introduction to
mechanics: Newton's Laws; motion and
equilibrium; work and energy; physical
properties of solids, fluids and heat.
Laboratory demonstration are used in class to
provide further explanation of topics.

Pre-requisite: Math. 122

Textbook: Physics - John Cutnell and Kenneth Johnson
Second edition - John Wiley & Sons

Paul G. Hewitt
Harper Collins College Publishers

General Physics (1991) - 2nd edition Sternheim
and Kane
John Wiley & Sons

Frederick J. Bueche & David A. Jerde
McGraw Hill Company

Coordinator: Prof. Elizabeth Colon - Instructor

Goals: Provide a broad introduction to physics at
college level for students whose mathematical
preparation includes algebra and plane
trigonometry.

To help students see that physics is an
integrated body of knowledge built on
fundamental concepts.

To help students develop problem - solving
skills.

To show students how physics principles play a
role in the operation of devices and techniques.

Pre-requisites by topic:
1. Algebraic operations
2. Trigonometry
3. Graphs
4. Scientific notation
5. Exponents
6. Vectors; addition, subtraction, components
7. Problem - solving techniques
8. Significant figures

Topics:
1. Introduction and mathematical concepts, vectors
   (2 classes)
2. Kinematics in one dimension (one class)
3. Free falling bodies (one class)
4. Kinematics in two dimensions (one class)
5. Forces and Newton's Laws (2 classes)
Topic

6. Dynamics of uniform circular motion (one class)
7. Work and Energy (one class)
8. Nonconservative Forces (one class)
9. Impulse and momentum (one class)
10. Rotational Kinematics (one class)
11. Equilibrium (one class)
12. Rotational Dynamics (one class)
13. Elasticity (one class)
14. Simple Harmonic Motion (one class)
15. Fluids: pressure, Pascal's and Arquimedes' Principles; properties of static fluid and Newton's second law, conservation of mass, Bernoulli's equation (one class)
16. Thermal properties of matter (key concepts) (one class)
17. Four partial tests (4 classes)
18. Final Examination (one class)

Computer Usage: None
Projects: Special Assignments given by the instructors
ABET Category Content: Science

Prepared by: Elizabeth Colón Date: August 1994
PRONTUARIO

Español Básico II

SPAN 111


Tres (3) créditos
Un (1) trimestre
Cuatro (4) horas semanales
I. Título : Español Básico II
Codificación : SPAN 111
Créditos : Tres (3) créditos
Horas de Clase : Cuatro (4) horas semanales
Duración : Un (1) trimestre
Pre-requisito : Español Básico I

II. Descripción del curso:

La función principal de este curso de lengua y literatura es procurar que el estudiante alcance el mayor dominio posible en el aspecto de la expresión escrita y en el análisis del texto literario de acuerdo a su género, enfoque temático, estructura y contexto socio-humanístico. Las selecciones literarias que se cubren en este curso se clasifican en dos temas principales: El hombre ante el amor y la naturaleza: El hombre ante el tiempo y la muerte. Este curso incluye el desarrollo del pensamiento lógico.

III. Objetivos

A. Generales

El estudiante deberá mostrar dominio en su comunicación de ideas tanto en la forma escrita como en la oral, formación de juicios acertados además de claridad de pensamiento como resultado del cultivo de la capacidad lógica. También el estudiante deberá mostrar corrección gramatical y sobre todo una conciencia plena de la necesidad de manejar eficazmente la lengua vernácula y valorar la experiencia literaria para su desarrollo como ser humano y profesional.
Una vez finalicen las diferentes actividades de este curso, los estudiantes estarán capacitados para:

1. Cultivar su sensibilidad estética, así como sus valores intelectuales y estéticos mediante el estudio y análisis de la obra literaria.

2. Fortalecer las destrezas de análisis de los distintos géneros literarios: poesía, cuento, ensayo, novela o drama.

3. Valorizar la importancia que tiene el uso correcto de la lengua materna.

4. Redactar con la mayor corrección posible, evitando el error de tipo sintáctico y los vicios de lenguaje.

B. Específicos

1. Redactar, teniendo en cuenta los requisitos de una buena comunicación escrita: corrección, coherencia, precisión, integridad y claridad.

2. Desarrollar diferentes clases de párrafos: descriptivo, narrativo, expositivo y argumentativo. Demostrar dominio de estas destrezas aplicadas a diversos escritos.

3. En los ejercicios de redacción se reforzarán las nociones gramaticales de acentuación, ortografía y otras destrezas que el profesor estime conveniente en cada grupo específico.

4. Ejercitar la argumentación crítica de la obra literaria y el análisis comparativo intertextual en la forma escrita.

5. Emplear el pensamiento lógico para la ordenación de las ideas como de las palabras en un texto.

6. Relacionar la obra literaria estudiada con su contexto histórico, social y económico (nacional y mundial).
D. Análisis de novela o drama (a escogerse)

V. Texto a utilizarse


VI. Evaluación

1. El curso se evaluará con un mínimo de tres notas. (exámenes, pruebas, informes o investigación).

2. Se dará una nota por redacción

3. Participación activa del estudiante en la discusión diaria de las selecciones.

4. Se tomará en consideración la asistencia regular a clases.

VII. Bibliografía recomendada

1. Diccionario de Sinónimos de bolsillo (a escogerse)


7. Profundizar en cuanto a las características de los géneros literarios y sobre las corrientes estéticas o filosóficas que influyen en la obra analizada.

8. Cultivar el hábito de la lectura y la adquisición de vocabulario.

9. Fomentar el desarrollo del estilo en la redacción a través de examen y apreciación del estilo de los autores estudiados, los recursos utilizados y las modalidades estilísticas.

10. Discriminar entre la idea principal de una obra y las secundarias. Derivar el discurso o mensaje del escritor contenido en el texto.

11. Estimular la discusión de los estudiantes en torno a la obra literaria, ya sea crítica personal o debate grupal, mediante la cual pueda desarrollarse la capacidad de pensar, cuestionar, argumentar lógicamente, en un clima de completa libertad de expresión que favorezca su formación intelectual.

IV. Bosquejo general del curso

A. Pensamiento lógico y la redacción

1. Métodos de razonamiento
   
a. deductivo
   b. inductivo

2. Falacias y sofismas

3. Organización del pensamiento

4. La sintaxis
   
a. anfibología
   b. equivoco
   c. cacofonia, redundancia y monotonia
   ch. orden sintáctico de la oración y la construcción lógica de un párrafo
B. La comunicación escrita y su eficacia:

1. Requisitos de una buena comunicación

2. Tipos de párrafos: expositivo, narrativo, argumentativo y descriptivo.

3. Técnicas de redacción y formato
   a) actividades previas a la redacción
   b) elaboración del bosquejo
   c) desarrollo del texto
   d) nociones gramaticales de: acentuación, ortografía u otras que el profesor estime conveniente incluir, de acuerdo a las necesidades del grupo.

C. Análisis de texto de prosa y poesía bajo los temas: El hombre ante el amor y la naturaleza; El hombre ante el tiempo y la muerte.

1. Estudio ideológico-formal de las obras seleccionadas
   a) Ideológico

      1) Preocupación vital del hombre acerca del amor, la naturaleza, el tiempo y la muerte a través de la historia de la humanidad y sus formas particulares de expresión en la sociedad y en la literatura.

      2) Interpretación del mundo de las relaciones humanas y de los problemas que el hombre enfrenta a través del texto.

      3) Desarrollo de la creatividad del lector:

         a) Establecer comparaciones entre los textos estudiados acerca de la evolución del tema desde el pasado hasta la actualidad.

         b) Establecer analogías
c) Sacar deducciones y generalizaciones acerca del tema.
d) Reconocer los valores éticos universales presentes en los textos estudiados.

b) Estructura o forma

1) Estudio del tema en poesía y prosa distinguiendo que la prosa es un género de pensamiento discursivo, de argumentación intelectual y de razonamiento; mientras que la poesía y la prosa poética reflejan la emoción individual.

2) Establecer, a través de argumentos, la relación armónica que existe entre la estructura y contenido ideológico.

3) El lenguaje: sus características y función en el texto con relación al tema.

4) Técnicas narrativas empleadas en el texto.

5) Comparar la estructura externa con la interna.

6) Características estilísticas de la obra.

7) Formas de expresión: expositiva, descriptiva, narrativa, argumentativa o dialogada.

8) Investigación crítica de los textos:

   a) Movimientos literarios
   b) Contexto histórico-social
   c) Aspectos biográficos sobre el autor
   d) Interpretaciones o críticas literarias

Se analizarán un mínimo de tres textos en prosa y tres de poesía para cada tema.
PRONTUARIO

LITERATURA HISPANA

SPAN. 251

REVISADO: OCTUBRE, 1992

Tres (3) créditos
Un (1) trimestre
Cuatro (4) horas semanales
I. Título : Literatura Hispana
Codificación : Español 251
Créditos : Tres (3) créditos
Horas de clase : Cuatro (4) horas semanales
Duración : Un (1) trimestre
Pre-requisito : Español 111

II. Descripción del curso:

La función principal del curso es procurar que el estudiante alcance el mayor dominio posible en el estudio del texto literario de acuerdo a su género, enfoque temático, estructura y contexto socio-humanístico. Los géneros literarios que se cubren en este curso son: la novela y las obras dramáticas. Se ofrece un trasfondo histórico de los orígenes y desarrollo de estos géneros literarios.

III. Objetivos:

A. Generales:

El estudiante deberá valorar la experiencia literaria para su desarrollo como ser humano y profesional.

Una vez finalicen las diferentes actividades de este curso, los estudiantes estarán capacitados para:

1. Cultivar su sensibilidad estética, así como sus valores intelectuales y estéticos mediante el estudio y análisis de la obra literaria.

2. Fortalecer las destrezas de análisis de los géneros literarios: novela y drama.
B. Especificos:

1. Desarrollar los criterios de argumentación crítica de una obra literaria. (y el análisis comparativo).

2. Relacionar la obra literaria estudiada con su contexto histórico, social y económico (nacional y mundial).

3. Profundizar en las características del género (novela o drama) tomando en consideración las corrientes estéticas o filosóficas que influyen en las obras analizadas.

4. Cultivar el hábito de la lectura, la adquisición y ampliación de vocabulario.

5. Discriminar entre la idea principal e ideas secundarias de una obra.

6. Estimular la discusión crítica (individual o grupal) de los estudiantes en torno a la obra literaria.

7. Desarrollar la capacidad de pensar, cuestionar, y argumentar lógicamente, en un clima de completa libertad de expresión que favorezca su formación intelectual.
IV. Bosquejo General del Curso:

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V. Textos a utilizarse:


Novelas u obras dramáticas escogidas por el profesor.

Vea lista adjunta sobre obras sugeridas.

Nota: Se recomienda que se analice una novela y dos dramas.

VI. Evaluación:

1. El curso se evaluará con un mínimo de tres notas (exámenes, pruebas informes e investigación.

2. Participación activa del estudiante en la discusión diaria de las selecciones.

3. Se tomará en consideración la asistencia regular a clases.

VII. Bibliografía recomendada:

1. Diccionario de sinónimos (a escogerse).


<table>
<thead>
<tr>
<th>Nro.</th>
<th>Autor</th>
<th>Título</th>
<th>Año</th>
<th>Editorial</th>
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</thead>
<tbody>
<tr>
<td>6.</td>
<td>Perus, Françoise</td>
<td>Historia y Crítica Literaria.</td>
<td>1982</td>
<td>Casa de las Américas</td>
</tr>
<tr>
<td>7.</td>
<td>Fernández Moreno, César</td>
<td>América Latina en su Literatura</td>
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<tr>
<td>8.</td>
<td>Morales, Ángel Luis</td>
<td>Introducción a la Literatura Hispanoamericana</td>
<td>1972</td>
<td>México, Siglo XXI</td>
</tr>
<tr>
<td>10.</td>
<td>Méndez, José Luis</td>
<td>Para una Sociología de la Literatura Puertorriqueña</td>
<td>1988</td>
<td>Río Piedras, Ed.</td>
</tr>
</tbody>
</table>

Revisado: Noviembre/1992
SYLLABUS
ENGLISH READING AND WRITING
ENGL. 111

Revised: August 1992

Three (3) credits
One (1) Quarter
Four (4) hours weekly
Course Title: English Reading and Writing

Credits: Three (3)

Time: Two - two our lecture periods per week

Duration: One Quarter

Textbook: Mosaic, Second Edition

By Brenda Wegman & Miki Prijic Knezevic

Course Description:

This course is designed to develop reading and thinking skills necessary to comprehend a reading text in a meaningful rather than mechanical way. It aims to develop and strengthen specialized vocabularies used in literature. It will focus on oral and written answers of discussion questions and summaries of selections discussed in class.

Rationale:

At any academic level, students need to be exposed to different language experiences which may encourage a broader and deeper understanding of language use. College level students should be given the opportunity to work with different reading materials as a means to interpretation and understanding of human behavior from a critical point of view.

The skills of reading and writing are closely intertwined (James, 89) and recent studies have shown how beneficial it is for students to be able to work with both simultaneously. This has led to the inclusion of this type of activity in most of the reading textbooks. Students write about what they know, what they have read, and how they visualize that the reader's contribution to meaning and communication is as great as that of the writer.

General Objectives:

Upon completion of this course, the students will be able to read and comprehend different reading materials using various strategies and skills practiced in class.
2. have improved their understanding of the written word in English through frequent readings and vocabulary study

3. have developed a positive attitude toward reading literary genres such as poems, short stories and essays.

**Specific Objectives:**

By the end of the quarter, the students should demonstrate the skills to:

1. differentiate between the stated and implied information in a literary work in order to analyze and interpret it.

2. comprehend and analyze oral questions in order to formulate responses.

3. evaluate reading selections to identify varying purposes for writing.

4. choose and/or combine the various modes of writing (narrative, descriptive, expository, and persuasive)

5. develop reading skills necessary for comprehending different types of reading selections

6. give oral reports based on topics and themes related to material presented in class.

7. recognize the generic characteristics of poetry and the short story

8. use specialized vocabulary in the written analysis of literary works

9. analyze and interpret the patterns and relationships of the elements of fiction orally and in written form
   a. short story: (plot, characterization, setting, theme, point of view)
   b. Poetry (figurative language, imagery, denotation and connotation, sound, symbolism)
**Skills:**

1. Identifying
   a. Main idea
   b. Topic sentence
   c. Events in sequence
   d. Author's purpose
2. Recalling information
3. Drawing conclusions
4. Skimming and scanning
5. Making inferences
6. Problem solving
7. Vocabulary
   a. Definitions
   b. Context clues
   c. Illustrated vocabulary
8. Outlining
9. Figurative language
10. Elements of the short story (characterization, plot, setting, point of view, etc.)

**Evaluation:**

1. Two (2) to three (3) partial tests
2. Final exam
3. Written work (reading log or journal)
4. Oral report(s) (Optional)
5. Quizzes
Bibliography:


McKay, S. Literature in the ESL Classroom. Tesol Quarterly. December, 1982. p. 16


I. Course Description

A comprehensive study of fiction, poetry, and drama to help students achieve a greater understanding and comprehension of literary works. Discussion and analysis of reading selections emphasizing content, mode, and style independently and comparatively. Integration of reading and writing activities guiding the students to express their thoughts and ideas in writing, and at the same time preparing them for future situations in which they are required to write. Presentation of major short story writers and poets to stimulate new insights into cultural differences, and to challenge students to continue searching and increasing their knowledge of the behavior of people across time and space.

II. Objectives of the Course

A. General Objectives

Upon completion of the course the students will have been able to:

1. Analyze various aspects of literature
2. Obtain a better understanding of a literary work
3. Broaden their appreciation of works of literature
4. Make convincing oral and written reports.

B. Specific Objectives

After reading, discussing and analyzing the literary
works presented in class, the following objectives will be reached.

1. To differentiate between the stated and implied information in a literary work in order to analyze and interpret it.

2. To identify and explain the generic characteristics of poetry, short story, and drama.

3. To analyze and interpret the patterns and relationships of the elements of fiction orally and in written form.

4. To identify the choice of words used by the author
   a. Figurative language
   b. Sensory images
   c. Symbolism

5. To identify, discuss, and clarify ethical values as revealed by the actions of the characters.

6. To enrich and reinforce their oral and written communication skills.

7. To identify, discuss, and explain cultural differences among people around the world.

8. To enhance critical thinking and thoughtful analysis of literary works.

III. Contents of the Course

A. Elements of Literature

1. Short Story
   a. Plot
   b. Character
   c. Setting
   d. Structure
   e. Theme
   f. Point of View
   g. Symbolism

B. Poetry
   a. Theme
   b. Form
   c. Imagery
   d. Figurative language
   e. Denotation and Connotation
   f. Rhythm and meter
   g. Symbolism
C. Drama*
   a. Plot
   b. Character
   c. Theme
   d. Point of View
   e. Symbolism
   f. Structure

III. Methodology and Teaching Techniques
   A. In class readings
   B. Independent assigned readings
   C. Socialized discussions
   D. Brainstorming
   E. Pair and group work

IV. Evaluation
   A. Two (2) to Three (3) partial tests
   B. Final exam
   C. Assignments (oral and written)
   D. Quizzes
   E. Group Oral Reports
   F. Attendance

*On the basis of the professors decision depending on time and selection of material to be covered.
Bibliography


Báez de Gelpi, Elsa (1979) *Meet the Short Story* Editorial Universitaria. Universidad de Puerto Rico. Río Piedras, P.R.


I. Título : Estudios Socio-humanísticos I

    Codificación : SOHU 251

    Créditos : Tres (3) créditos

    Horas de Clases : Cuatro (4) horas semanales

    Duración : Un (1) trimestre

II. Descripción del Curso:

    Análisis de conceptos y problemas comunes a las Humanidades y las Ciencias Sociales desde una perspectiva histórica. La finalidad del curso es proveer al estudiante los conocimientos fundamentales de las Humanidades y las Ciencias Sociales y despertar en ellos las ideas que le permitan lograr la comprensión del mundo en que vive, así como el desarrollo de actitudes positivas para contribuir al mejoramiento del mismo.

III. Objetivos Generales

    A. Al completar el curso el alumno deberá:

    1. Conocer los conceptos y problemas fundamentales de las Humanidades y las Ciencias Sociales, disciplinas que estudian el quehacer humano.

    2. Entrelazar dichos conceptos dentro de su perspectiva histórica que le permitirá comprender y evaluar la humanidad y la realidad del mundo en que vive.

    3. Desarrollar la objetividad en el planteamiento de los problemas que afectan la vida humana.

    4. Afinar el espíritu crítico que le permita vislumbrar soluciones a los problemas que le afectan personal o colectivamente.
IV. Temario

A. Las Humanidades y las Ciencias Sociales: marco conceptual

1. El ser humano: consideraciones básicas
   a. lo humano y lo animal - ¿existe una diferencia esencial entre ambos?
   b. características distintivas del ser humano
      (a). capacidad para pensar y conocer (homo sapiens)
         i. conciencia del mundo y de su papel en éste.
         ii. traducción de la realidad en mito, religión, filosofía o ciencia.
      (b). uso del lenguaje articulado
         i. expresión de la realidad en símbolos en lenguaje verbal y escrito
      (c). capacidad para la creación cultural
         i. transformación del mundo natural
         ii. creación artística
      (d). conciencia del tiempo y del espacio
         i. el sentido de la historia: la vivencia del pasado y la proyección hacia el futuro
      (e). expresión como ente social
         i. creación de instituciones para la convivencia en sociedad
      (f). conciencia del yo o de la individualidad
         i. afirmación del individuo frente a la sociedad
      (g). la capacidad valorativa
         i. valores éticos, estéticos, económicos, etc.

2. Las Humanidades y las Ciencias Sociales:
a. Las Humanidades: estudio de la relación del ser humano como ente cultural.

(a). filosofía (d). arte
(b). religión (e). teatro
(c). lenguaje (f). disciplinas

b. Las Ciencias Sociales: estudio del ser humano en su dimensión individual y de las instituciones y disciplinas que explican su vida en sociedad.

(a). antropología (d). economía
(b). sociología (e). ciencia política
(c). psicología (f). otras disciplinas

c. Estudios socio-humanísticos - análisis de los conceptos y problemas fundamentales de las Humanidades y las Ciencias Sociales como disciplinas que estudian conjuntamente el quehacer humano.


B. La organización humana en sociedad

1. Sociedad/Cultura/Civilización

a. Concepto de sociedad

b. Concepto de cultura (IV.A1.b(b)

(a). Diversas acepciones del concepto
(b). Características de la cultura
(c). La técnica como factor particular de la cultura

c. Integración y diversidad cultural
C. El ser humano y su ambiente

1. El ambiente natural

   a. La naturaleza, fuente para la satisfacción de las necesidades materiales del ser humano.
      (a). la economía y la utilización de los recursos
      (b). la ecología y la preservación del ambiente

   b. La naturaleza como objeto de dominio
      (a). mito, magia, religión
      (b). ciencia y tecnología

   c. La naturaleza como objeto de inspiración artística
      (a). la belleza del orden natural

   d. El ambiente natural y la diversidad cultural
      (a). el reto de la Naturaleza es diverso en lugares distintos

2. El ambiente social

   a. las imposiciones del orden social: el concepto de autoridad.

   b. la inequidad y defectos del orden social: marginación, discriminación, desigualdad, etc.

   c. el choque individuo-sociedad

   d. la enajenación social

D. La expresión artística del ser humano
1. Arte: Definición clásica - aquella obra humana que expresa, mediante diferentes materias, un aspecto de la realidad estéticamente.

2. Arte y Naturaleza
   a. el arte como transformación del orden natural
   b. el arte como interpretación de la Naturaleza
   c. el arte como resultado del intento de dominio de la Naturaleza
      (a). el fetichismo
      (b). la deificación de fuerzas naturales

3. Arte y Ciencia

4. Arte y religión
   a. la representación artística de lo desconocido
   b. obra de arte como vinculación con lo sobrenatural

5. Arte y capacidad creadora
   a. arte como producto de la imaginación creadora
   b. obra de arte como expresión de la creatividad individual

6. Arte y estética
   a. el arte como expresión de la belleza

7. Arte y Sociedad
   a. el artista y su ambiente social
   b. el arte como vehículo de crítica social

E. Socialización y Personalidad

1. El proceso de socialización
   a. descripción del proceso
   b. rol de la cultura en el proceso
c. role de las instituciones sociales
   (a). la familia
   (b). la iglesia
   (c). la escuela
   (d). otras instituciones

2. Desarrollo de la Personalidad
   a. Factores que influyen
      (a). herencia biológica
      (b). ambiente socio-cultural
   b. Teorías de la Personalidad
      (a). Teoría psicodinámica
      (b). Teoría del psicoanálisis
      (c). Teoría conductista
      (d). Teorías neofreudianas
      (e). Otras teorías
   c. Enfoque cultural al Proceso del Comportamiento

F. Recapitulación
G: Bibliografía parcial


Farré, Luis. *Antropología filosófica*. Barcelona: Editorial Ariel, [s.f.].


UNIVERSIDAD POLITECNICA DE PUERTO RICO
Facultad de Artes, Ciencias y Tecnología
Departamento Socio-humanístico

PRONTUARIO

ESTUDIOS SOCIO-HUMANISTICOS II

SOHU-252

Un (1) Trimestre
Tres (3) Créditos
Cuatro (4) Horas Semanales
I. Título : Estudios Socio-humanísticos II

Codificación : SoHu 252

Créditos : Tres (3) créditos

Horas de clases : Cuatro (4) horas semanales

Duración : Un (1) trimestre

Pre-requisito : SoHu 251

TEMARIO (CONTINUACION DE SOHU I)

I. EL SER HUMANO FRENTE AL PROBLEMA DEL CONOCIMIENTO

A. La construcción social de la realidad

1. La ciencia natural, la ciencia social, las humanidades (repaso)

2. Mitología, Filosofía y Ciencia
   a. Breves apuntes sobre filosofía (Dr. Riestra)

B. La revolución científica

1. Ciencia y tecnología. La física clásica: (Newton y la teoría de la causalidad).
2. La teoría del átomo y el fin de la física clásica (Dalton, Rutherford, Bohr.).
3. Nuevos conceptos de espacio y tiempo: (Einstein y la Teoría de la Relatividad).
4. La física cuántica. Ley de Probabilidades: (Pascal)
   El principio de incertidumbre: (Heisenberg).

C. El mundo post-moderno

1. La revolución tecnológica y el capitalismo.
2. Las nuevas relaciones hombre-máquina. La cibernética: robots y computadoras. La ingeniería genética.
3. El poder y las comunicaciones
4. La esperanza humanista: (Fromm y Campbell)
II. Comportamiento y Organización Política del ser humano

A. Política

1. ¿Qué es política?
2. La política como ciencia
3. Finalidad de la ciencia política

B. Evolución de la Ciencia Política

1. Estado y política en Grecia y Roma
   a. Concepto de la ciudad - estado o "polis"
   b. Platón, y la concepción del estado ideal- "La República"
   c. Aristóteles - "La Política" "el hombre es un animal político".

2. Pensamiento político medieval
   a. Filosofía cristiana
      a) San Agustín "La Ciudad de Dios".
      b) Tomás de Aquino - "Summa Teológica"
   b. El feudalismo

3. Filosofía Política moderna

   a. Absolutismo político
      a) Nicolás Maquiavelo - "El Príncipe"
      b) Thomas Hobbes - "Leviathan"
      c) Juan Bodino - "Los seis libros de la República"- Concepto de soberanía
   b. Liberalismo político
      a) Juan Jacobo Rousseau "El Contrato Social"
      b) John Locke - "Tratado sobre el entendimiento humano"
   c. Socialismo
      a) Carlos Marx y
      b) Federico Engels "El Manifiesto Comunista"

4. Mapa Político actual

   a. Europa           c. África
   b. América          d. Asia
5. Visión General del Proceso Político de Puerto Rico
   a. La Dominación Española
   b. La Relación Política de Puerto Rico y E.U.
   c. Los Partidos Políticos Puertorriqueños y el Problema del "status" político.
   d. Hacia una definición política

III. Desarrollo y organización económica del ser humano

   A. Definición y Enfoque del Concepto Economía

   B. Evolución histórica de diversos sistemas económicos
      1. El Sistema Económico Capitalista
         a. Antecedentes Históricos
         b. Principios Generales del Capitalismo
            1. Libre empresa y libre competencia
            2. El Mercado: oferta y demanda
            3. Acumulación del capital y propiedad privada
      2. El desarrollo de la economía de mercado en E.U.
      3. La Experiencia Capitalista en Latinoamérica
         a. ¿Fracaso o Esperanza?
      4. El Sistema Económico Socialista
         a. Antecedentes Históricos y Principios Generales
         b. La experiencia socialista en el siglo XX
            1. Desde la Revolución rusa a la Perestroika
            2. El caso de Cuba/Europa Oriental
            3. Perspectiva del socialismo a fines del siglo XX
            4. El caso de la Unión Soviética
C. Otros sistemas económicos
   a. Socialismo Democrático
   b. El Sistema Cooperativista

D. La Globalización de la Economía
   1. La comunidad económica europea
   2. Los tratados de libre comercio en América

E. Visión general del desarrollo económico de Puerto Rico
   1. Del cañaveral a la operación "manos a la obra"
   2. La industrialización por invitación
   3. La dependencia económica de Puerto Rico
      a. La relación política/económica con E.U.
      b. Perspectiva hacia un desarrollo de la economía puertorriqueña
      c. Futuro de la Sección 936 del Código Federal de Rentas Internas
   4. Hacia un nuevo modelo económico para Puerto Rico

IV. Panorama Mundial del Siglo XX

1. Revolución política
   a. Crecimiento del poder ejecutivo
   b. Estado benefactor y paternalismo político
   c. La carrera armamentista
   d. El sistema de seguridad

2. La nueva revolución industrial
   a. Concepto de prosperidad
   b. Sustitución de productos naturales por sintéticos
   c. La industria electrónica
   d. Automatismo
   e. Problemas relacionados con el trabajo

3. La crisis ecológica y la explosión demográfica

4. Crecimiento urbano
5. La rebelión de la juventud

6. La revolución educativa
   a. la nueva escuela
   b. la universidad abierta
   c. el derecho a la educación

7. Declinación de la filosofía

8. Cambio en la religión

9. Tendencias literarias del periodo post-segunda guerra mundial

10. Ciencia y tecnología ¿la esperanza del mundo?

V. Conclusiones generales y recapitulación

VII. Recapitulación

1. Las Humanidades y las Ciencias Sociales, disciplinas que estudian conjuntamente el quehacer humano.

2. Importancia de estas disciplinas en la preparación académica del futuro ingeniero.

3. Responsabilidad social del ingeniero
VIII. Bibliografía


Farré, Luis. Antropología filosófica. Barcelona : Editorial Ariel, [s.f.].


Harrison, John Baughman, Richard E. Sullivan, Dennis Sherman. Estudio


PRONTUARIO

HISTORIA DE PUERTO RICO
HIST 351

Tres (3) créditos
Un (1) trimestre

1994
I. Descripción del curso:

Visión de la trayectoria histórica de Puerto Rico desde el encuentro taíno-español a finales de siglo XV hasta el momento actual en su relación con los Estados Unidos.

II. Objetivos:

1. Analizar los factores geográficos, humanos, políticos, económicos, sociales y culturales que permitan, desde la perspectiva histórica, la comprensión de la realidad puertorriqueña.

2. Despertar y estimular en el estudiante la conciencia de los problemas políticos, económicos, sociales y culturales del Puerto Rico de hoy.

3. Recalcular la responsabilidad del estudiante y futuro profesional de aportar al mejoramiento de las condiciones de vida del país.

III. Contenido general:

1. Acontecimientos sobresalientes y relevantes del desarrollo histórico de Puerto Rico desde el Boriquén taíno hasta el presente.

2. Problemas relativos al surgimiento de la realidad histórica puertorriqueña, enfocados desde sus diversos aspectos políticos, económicos, sociales y culturales.
IV. Temas:

1. La tierra y su gente: las realidades geográficas y su influencia en el desarrollo histórico; los elementos constitutivos de la personalidad y nacionalidad del puertorriqueño; el problema de la identidad.

2. La implementación del sistema colonial español en Puerto Rico durante los siglos XVI y XVIII; los cambios políticos y económicos, la transformación social y el desarrollo cultural durante el siglo XIX.

3. El despertar político y cultural de Puerto Rico: semillas de cambio en el siglo XVIII; los cambios políticos y económicos, la transformación social y el desarrollo cultural durante el siglo XIX.

4. El cambio de soberanía y su impacto en la vida política, económica, social y cultural de Puerto Rico durante las primeras cuatro décadas del siglo XX.

5. Puerto Rico a partir de los años 40: la era de Luis Muñoz Marín; el impacto de la Segunda Guerra Mundial; el establecimiento del Estado Libre Asociado y la realidad político-económica actual.
BIBLIOGRAFÍA

Historia 351


INTRODUCCION
1. Objetivo del Curso
2. Orientación General
3. Discusión del Prontuario
4. Definición de Conceptos
   a. Etica
   b. Profesión
   c. Responsabilidad Social
   d. Sistema de Gobierno

EVALUACION
1. Dos Exámenes Parciales 50%
2. Un Examen Final 40%
3. Presentación de Casos 10%
  100%

METODOLOGIA
1. Conferencias
2. Asignaciones de Lecturas
3. Discusión de Casos
ETICA Y RESPONSABILIDAD PROFESIONAL DE LA INGENIERIA

PARTE I

ETICA PROFESIONAL DE LA INGENIERIA

I. DESARROLLO HISTORICO DE LA PROFESION DE INGENIERIA
   1. En General
   2. Aspectos Históricos
   3. La Ingeniería como Profesión

II. FUNDAMENTOS DE ETICA
   1. Naturaleza y Objeto de la Etica
   2. Razonamientos de la Moral
   3. Los Dilemas de la Etica
   4. Etica Social

III. RESPONSABILIDAD PROFESIONAL DEL INGENIERO
   1. Conceptos Definicionales de la Profesión
   2. Requisitos Legales para la Práctica Profesional
   3. Aspectos de Seguridad ante la Sociedad
   4. Organizaciones Profesionales

IV. DEBERES Y OBLIGACIONES DEL INGENIERO
   1. El Código de Etica
   2. Responsabilidad en General: Sociedad, Clientes, Patronos y Profesión
   3. Derechos del Ingeniero
   4. Práctica Internacional
PARTE II

PRACTICA PROFESIONAL DE LA INGENIERIA EN PUERTO RICO

I. DESARROLLO LEGISLATIVO

1. En General
2. Creación de la Junta Examinadora
3. Consideraciones Generales de la Ley Vigente
4. Limitaciones de la Práctica Profesional
   -La Formación Académica
   -La Revalida: Fundamental y Profesional
   -La Certificación y Licencia Profesional
   -La Colegiación

II. SOBRE EL COLEGIO

1. Legislación Aplicable
2. Estructura Organizacional del Colegio
   -El Reglamento
   -La Asamblea Ordinaria
   -La Junta de Gobierno
   -El Comité Ejecutivo
   -Los Institutos y Capítulos
   -Los Comités y Comisiones

III. EL CODIGO DE ETICA PROFESIONAL

1. Fundamentos Filosóficos
2. Normas Generales en Relación con la Profesión
3. Normas Aplicables ante la Sociedad
4. Normas Aplicables ante Clientes y Patronos
5. Normas Aplicables ante sus Compañeros
IV. PROCEDIMIENTOS SANCIONATORIOS
   1. El Comité de Ética Profesional
   2. Sanciones Administrativas
   3. Sanciones Penales

PARTE III
PROBLEMAS Y CASOS

I. SOBRE CUALIFICACIONES ACADEMICAS

II. PRACTICA ASOCIADA CON OTROS INGENIEROS

III. PERITAJE PROFESIONAL

IV. PARTICIPACION EN LA PRODUCCION DE EQUIPO DEFECTUOSO

V. PARTICIPACION EN SOCIEDADES PROFESIONALES Y TECNICAS

VI. ENGINEERING TIMES - NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
    YOU BE THE JUDGE - ENGINEERING ETHICS (VARIOS CASOS)

VII. CASOS RESUELTOS POR EL COMITE DE ETICA DEL COLEGIO DE
     INGENIEROS Y AGRIMENSORES DE PUERTO RICO

VIII. DECISIONES DEL TRIBUNAL SUPREMO DE PUERTO RICO

IX. OPINIONES DEL SECRETARIO DE JUSTICIA DE PUERTO RICO
ETICA Y RESPONSABILIDAD PROFESIONAL DE LA INGENIERIA

PROF. WILFREDO MUÑOZ
PHIL 441

BIBLIOGRAFIA

1. LIBROS

1. Ethics in Engineering
   Autor: Mike W. Martin y Roland Schinzinger
   a. The Scope of Engineering Ethics (pgs. 1-52)
   b. The Experimental Nature of Engineering (pgs. 55-93)
   c. Engineers, Management, and Organizations (pgs. 151-231)

2. The Civilized Engineer
   Autor: Samuel C. Florman
   a. Ethics: (1) Rhetoric and Good Intentions (pgs. 78-85)
   b. Ethics: (2) Illusion and Change (pgs. 86-100)
   c. Ethics: (3) Credo for a New Age (pgs. 101-109)

3. Etica Profesional para la Ingeniería
   Autor: Eleana Lugo
   a. Definición de la Ingeniería según su Responsabilidad Social (pgs. 39-46)
   b. Código Éticos en el Ejercicio de la Ingeniería (pgs. 67-125)
   c. El Ingeniero como Agente Moral ante la Tecnología (pgs. 127-145)

4. Etica
   Autor: Angel Rodríguez Luño
   a. Naturaleza y Objeto de la Etica (pgs. 17-24)
   b. La Sociedad y el Bien Común (pgs. 147-175)

5. Orientation to Professional Practice
   Autor: W. Daniel Nilson y Philip E. Hicks
   a. Responsibilities of Professional Practice (pgs. 229-321)
   b. Professional Development (pgs. 325-368)

6. Legal Problems in Engineering
   Autor: Melvin Word
   a. Ethical Responsibilities of Engineers (pgs. 252-261)
   b. Professional Registration of Engineers (pgs. 262-271)
7. Legal Aspects of Engineering  
Autor: Richard C. Vanghn  
a. The Engineer in Management (pgs. 1-5)  
b. Ethics (pgs. 7-15)  

8. Engineering Law, Design Liability, and Professional Ethics  
Autor: Rebecca J. Morton  
a. Professional Ethics (pgs. 69-75)  
b. Typical Code of Ethics (pgs. 76-83)  

9. Introducción a la Ingeniería y al Diseño en la Ingeniería  
Autor: Edward V. Krick  
a. La Ingeniería y la Sociedad (pgs. 185-193)  

10. Introduction to Engineering  
Autor: Roger Mayne y Stephen Margolis  
a. Paths to an Engineering Career (pgs. 3-47)  

11. Engineering as a Career  
Autor: Smith, Butler y LeBold  
a. Description of the Engineering Profession (pgs. 1-54)  

Autor: Stanley Cohen  
a. Major Engineering Disciplines (pgs. 15-41)  
b. The Consulting Engineers Clients (pgs. 43-61)  
c. Professional Relationships (pgs. 141-151)  

13. Introduction to Engineering  
Autor: M. David Burghardt  
a. Historical Perspective (pgs. 20-46)  
b. Ethics and Professional Responsibility (pgs. 84-108)  

14. How to Become a Professional Engineer the Road to Registration  
Autor: John D. Constance  
a. Developing a Professional Career (pgs. 1-26)  
b. Why Engineer's Registration (pgs. 27-41)  

15. Module for Engineering Ethics (pgs. 1-70)  
National Society of Professional Engineers  
Professional Engineers in Education
16. Introduction to Engineering  
   Author: Paul H. Wright
   
a. History of Engineering (pgs. 1-20)  
b. The Engineer as a Professional (pgs. 47-68)  
c. A Case Study - The Space Shuttle Challenger Accident

17. Engineering and Social Responsibility  
    Distinguished Lecture Series II - Chair for Free Enterprise  
    College of Engineering, The University of Texas at Austin

18. How to Become a Professional Engineer  
    Author: D.G. Sunair, Ph.D.

19. Getting Started as a Consulting Engineer  
    Author: D.G. Sonar, Ph.D.

    Author: D.C. Sonar, Ph.D.

21. Intellectual Property Protection  
    A Guide for Engineers  
    Author: David S. Goldstein
II. ARTICULOS Y REVISTAS

1. Analysis Techniques Help Industrial Engineers Evaluate Ethical Dimensions of One-The-Job Decision
Autor: W.T. Stewart y D.J. Pausten Bach

2. Five Ethical Dilemas
Autor: Tekla S. Persy

3. Implicaciones Sociológica- Legal de la Ingeniería como Educación Especializada.
Autor: Muñoz Román, Wilfredo

4. Breve Historia de las Obras de Ingeniería de Puerto Rico
Autor: Pumarada O’Neil, Luis F.

5. Un Organismo que es necesario conocer.

6. Etica Profesional: Imperativo Institucional del Colegio de Ingenieros y Agrimensores
Autor: Carl-Axel P. Soderber

7. La Etica en la Práctica de la Ingeniería y Agrimensura
Autor: Toledo Delgado, Gilberto

8. Estados que tienen reciprocidad con Puerto Rico según archivo Oficial del Departamento de Estado.
   a. Alabama                            i. Minnesota                            q. South Dakota
   b. Colorado                           j. Missouri                             r. Texas
   c. Delaware                            k. Montana                             s. Utah
   d. Florida                            l. Nebraska                             t. New Jersey
   e. Kansas                             m. New Hampshire                       u. Tennessee
   f. Kentucky                            n. Ohio                                v. Massachusetts
   g. Louissianna                         o. Oklahoma                            w. Virginia
   h. Maine

9. Dimensión: Revista del Colegio de Ingenieros y Agrimensores de P.R.

10. Revista de la Asociación de Ingenieros Profesionales

11. Los Dividendos de la Etica- Karen Berney

12. Revista Trimestral: Organo Oficial de Colegio de Ingenieros, Arquitectos y Agrimensores de P.R.
   b. Códigos de Etica Profesional; Vol. XIV, No. 4, p. 57, 1964
   c. La Educación de un Ingeniero; Vol. XVII, No. 1 p. 51, 1968

e. The Professional Engineer and his Obligation to Society; Vol. XVIII, No. 4 p. 20, 1968.


h. La Orientación Profesional y el Desarrollo Industrial; Vol. XIX, No. 3, p. 48, 1969.

i. La Responsabilidad de las Profesiones ante la Problemática Social y Urbana de Puerto Rico; Vol.XIX, No. 3, p. 73, 1971.

j. Architects, Engineers and Contractor's Liability, Vol. XX, No. 4, p. 29, 1971.


m. La Mujer en la Profesión de la Ingeniería; Vol. 25, No. 4, p. 60, 1975.


III. PELICULAS Y VIDEOS

1. 204- Etica en la Ingeniería Carl Sunderberg.
2. 341- Conferencia sobre Etica
3. 341- P.E. the Sign of a Registered Professional
4. 364- Engineering Ethics- Video Ethics Case Study: Gilbane Gold.
IV. REGLAMENTOS; NORMAS Y CANONES DE ETICA PROFESIONAL

1. Reglamento del Colegio de Ingenieros y Agrimensores de Puerto Rico.

2. Reglamento de la Junta Examinadora de Ingenieros, Arquitectos y Agrimensores de Puerto Rico.

3. Reglamentos de los Institutos del Colegio.


5. Cánones de Etica del Ingeniero y del Agrimensor.

V. LEGISLACION

1. Ley número 173, aprobada el 12 de agosto de 1988, Reglamenta las Profesiones de Ingeniería, Arquitectura y Agrimensura en Puerto Rico.

2. Ley número 319, aprobada el 15 de mayo de 1938 según enmendada por ley #12 del 29 de sept. 1980, crea el Colegio de Ingenieros y Agrimensores de Puerto Rico.

3. Ley número 31 aprobada en el 1976, crea el Consejo de Educación Superior.
PRONTUARIO

I. Título : El Pensamiento de Eugenio María de Hostos

Codificación : Phil 451

Créditos : Tres (3)

Horas de clase : Cuatro (4) semanales

II. Justificación:

Este curso ha sido diseñado con el propósito de brindarle al estudiante la oportunidad de conocer los aspectos fundamentales de la obra de Eugenio María de Hostos, una de las principales figuras del pensamiento filosófico, social y moral en Latinoamérica. El curso está dividido en tres temas fundamentales: (1) Aspectos biográficos y ubicación en su momento histórico y literario, (2) Fundamentos filosóficos y morales de su obra y (3) Pensamiento social y pedagógico. En el transcurso del trimestre se discutirán fragmentos de las principales obras de Eugenio María de Hostos con el propósito de que el estudiante pueda tener una visión global de las diferentes vertientes en que se desarrolla el pensamiento hostosiano.

III. Objetivos Generales

1. Fomentar el interés por el estudio de una de las principales figuras del pensamiento latinoamericano de todos los tiempos.

2. Al finalizar el trimestre el estudiante conocerá las aportaciones más significativas del pensamiento de Hostos, no sólo en su momento histórico, sino en sus proyecciones futuras.

3. Desarrollarán la capacidad para distinguir las diferentes vertientes del pensamiento hostosiano, sus raíces, sus influencias filosóficas y literarias así como la profunda originalidad y relevancia histórica del pensamiento de Hostos.
IV. Específicos

1. El estudiante podrá distinguir la diferencia entre conceptos filosóficos fundamentales del pensamiento hostosiano como moral, ética y otros.

2. Comprenderán la importancia para el entorno latinoamericano y caribeño en particular de su pensamiento político social y económico vertido en su visión de la Confederación de las Antillas.

3. Analizarán las principales manifestaciones filosóficas que incidieron en el pensamiento de Hostos como el krausismo y el positivismo.

4. De igual manera conocerán el profundo sincretismo filosófico de Hostos y las influencias notables en su obra de filósofos como Spencer, Kant, Bacon y Rousseau entre otros.

5. Analizarán la relación de Hostos con otras figuras del pensamiento político puertorriqueño como Ramón Emeterio Betances y Segundo Ruiz Belvis. De igual manera estudiarán el momento histórico en que se desarrolla la obra de Hostos y la importancia de su pensamiento político, desde sus inicios autonomistas en España hasta el desarrollo de su ideal separatista en Nueva York.

6. Trazarán el periplo continental de la monumental obra pedagógica de Eugenio María de Hostos y su importancia para el desarrollo de la educación en Santo Domingo, Chile y Perú.
V. Temario

A. Hostos en su contexto histórico, político y literario

1. Aspectos biográficos

   a. experiencia en España y Nueva York
      (a) labor periodística
      (b) autonomismo y separatismo
      (c) relación con Betances y Basora

   b. Europa y Latinoamérica
      (a) circunstancias políticas, sociales y económicas

   c. realismo y romanticismo
      (a) crítica al romanticismo y al arte en general
      (b) ética y estética
      (c) relevancia literaria y política de La peregrinación de Bayoán

1. La Confederación de las Antillas

B. Filosofía y Moral

1. La moral social

   a. el racionalismo optimista
   b. la influencia de Kant y Augusto Compte
   c. la moral: relaciones del hombre con la naturaleza
      (a) moral individual
      (b) moral natural
      (c) moral social
      (d) moral y religión
      (e) moral y arte
      (f) moral y periodismo
      (g) moral, ciencia e industria
C. Hostos: su visión pedagógica

1. Influencias filosóficas y de orden didáctico
   a. Importancia del pensamiento filosófico de su momento en la obra de Hostos.
      (a) Francis Bacon, Juan Jacobo Rousseau y Giner de los Ríos
      (b) el positivismo
      (c) el krausismo
   b. razón e intuición
   c. reacción contra el escolasticismo
      (a) preponderancia del pensamiento científico
   d. estado y educación
      (a) La Ley General de la Enseñanza Pública
      (b) la moral y la escuela
   e. la praxis pedagógica en Santo Domingo, Chile y Perú
   f. la educación científica de la mujer
Bibliografía mínima

Obras de Eugenio María de Hostos

La peregrinación de Bayoán. San Juan: Instituto de Cultura Puertorriqueña, 1970.


Dario Tomo I y II, Obras Completas. San Juan: Instituto de Cultura Puertorriqueña, 1969.


Obras sobre Eugenio María de Hostos


Referencias


PRONTUARIO

MOVIMIENTOS FILOSÓFICOS COMPARADOS

FILO 541

Tres (3) créditos
Un (1) trimestre
Cuatro (4) horas semanales
I. Título : Movimientos filosóficos comparados
Codificación : Filosofía 541
Créditos : Tres
Horas de clase : Cuatro semanales
Prerequisito : SoHu II

II. Justificación:

El curso está diseñado para que el estudiante conozca los temas principales que continuamente han ocupado un primer plano en el quehacer filosófico occidental. Se divide en tres temas principales: 1) conocimiento y verdad, 2) la distinción entre el bien y el mal y 3) antropología filosófica. Durante el trimestre se discutirán las aportaciones de los pensadores y movimientos filosóficos que han tenido una mayor participación o injerencia en el fraguar de la concepción contemporánea de los temas enumerados. La discusión deberá ser complementada con la lectura de textos íntegros o selecciones de obras fundamentales para el estudio de aquéllos.

III. Objetivos

Generales:

Cultivar el interés de estudiantes dedicados principalmente a la tarea técnica e investigativa en las áreas de ingeniería, agrimensura y administración de industrias por los problemas filosóficos.

Capacitar al estudiante para la reflexión personal en torno a los temas discutidos en el curso y otros derivados de los mismos con herramientas propias del discurso filosófico.

Al finalizar el trimestre, es estudiante reconocerá la interrelación de los factores socio-culturales con los movimientos filosóficos que fomentan.
Específicos

Entrenar al estudiante en la búsqueda de bibliografía y en la consulta de obras de referencia.

Examinar minuciosamente las características y contenido de un mínimo de tres textos filosóficos- seleccionados por el profesor(a) tomando en consideración a) la relevancia para los temas discutidos y b) la representación de los movimientos examinados en clase.

Desarrollar la habilidad para enfrentar la lectura de un texto de filosofía con los criterios conceptuales e históricos necesarios para una comprensión cabal del mismo.

Conocer las aportaciones de los pensadores más destacados en la historia de la filosofía y los movimientos asociados con ellos en relación con los temas enumerados en los "Objetivos Generales".

IV. Bosquejo temático

El conocimiento y la verdad

La necesidad de un fundamento para el conocimiento
El pensamiento griego: los pre-socráticos, Platón y Aristóteles
Filósofos medievales: Santo Tomás de Aquino y Guillermo de Ockam
Racionalismo: Descartes, Spinoza y Leibniz
Empirismo: Locke, Berkeley y Hume
Pragmatismo, positivismo y la filosofía del lenguaje: Charles Sanders Peirce, Auguste Comte y Ludwig Wittgenstein
Análisis y discusión de texto(s)

La distinción entre el bien y el mal

Bueno y malo como categorías filosóficas: la ética y la moral
La ética como producto social (Adolfo Sánchez Vázquez)
La filosofía griega: Platón, Aristóteles, estoicismo y epicureísmo
La moral cristiana: San Pablo y San Agustín
La ética del siglo XX: filosofía del lenguaje y la ética profesional
Análisis y discusión de texto(s)
Antropología filosófica

El ser humano como objeto de la reflexión filosófica
Distinción entre physis y psyche
La concepción cristiana del humano: San Agustín y Martín Lutero
El concepto del hombre en la Ilustración: los Enciclopedistas, Hume,
Rousseau y Kant
El idealismo: Hegel, Schelling y Fichte
El papel desempeñado por la antropología, biología, neurología y
sicología en la descripción contemporánea del humano
Fisicalismo: Richard Rorty y Donald C. Dennett
Mentalismo: Sir John Eccles y Thomas Nagel
Análisis y discusión de texto(s)

Bibliografía (pendiente)
A. GENERAL

Polytechnic University, being committed to the integral development of its student body, contributes to its cultural, social and ethical development through the endorsement of programs and activities that complement academic life.

To that effect, UPPR' Deanship of Students is in charge of coordinating social, cultural and recreational events throughout the year. Under the Dean of Students several related offices operate: Admissions' Office, Orientation and Counseling Office, and student organizations. Other service divisions operate under different administrative umbrellas, as is the case of Financial Aid, the Registrar's Office, Library Services and Veterans' Office. Architecture students are expected to benefit from all of the above-mentioned services. All of them operating at an institutional level, it is to be expected that rules and criteria governing them shall apply similarly to architecture candidates. To that effect, we refer the reader to UPPR's official catalogue pp. 27-64 (included as Appendix A) for full details regarding:

Admissions' Policies
Transfer Students
Course Validation
Registration Procedures
Student Classification
Remedial Services
Costs
Financial Aid
Withdrawal Policies
Attendance Policies
Graduation Requirements

For incoming high-school graduate-candidates, overall scores for College Entrance Examination Tests should not be below 1300; the general average a minimum of 2.5. Applicants older than 25 years will be exempt of the College Board Requirement. Transfers will be required a minimum of 2.0 GPA, 9 validated credits and a letter of recommendation from the institution of provenance.

Candidates who fail to meet these standards could request an interview to show work or projects (a portfolio) which attest to special talents and/or capabilities. Should a recommendation made to the effect of admitting said student, the evaluator will refer the case to the Admissions' Committee of UPPR for consideration and final decision.

The interest to consider and evaluate candidates which do not meet standard admissions criteria is a priority. As explained before (See section On Need) said criteria is not reliable as a method for properly ascertaining the potential of applicants. UPPR is committed to experimenting with alternative systems to
ultimately benefit students wishing to become architects. Most of them usually have nothing to show to prove interest and skills on the field. From the beginning, an assessment system of our recruitment and admissions' initiatives will be instituted to document and improve the efforts in that direction.

B. AIAS STUDENT CHAPTER / EXTRACURRICULAR ACTIVITIES

For students admitted, the school shall endorse the organization and backing of the establishment of an AIASC Chapter in UPPR. The American Institute of Architects Students Chapters conform a nationwide network of architecture students. Annual conventions, exhibits and travel are part of their activities. In addition, our architecture program shall sponsor student-led initiatives for projects of community and/or civic interest. A lecture series with architects of reknown shall be instituted by the administration from the first year, to foster student contact with professionals and peers also interested in architecture. Liaison initiatives are being planned to foster joint activities with students from other architecture schools.

As a complement to academic training, UPPR plans an aggressive marketing campaign of its students for field and summer employment in architecture offices, but also in engineering, archaeology and surveying ones. With promotion and backing of the institution, students will establish a solid network of potential employers which can benefit from their services and abilities.
VI. PROPOSED ADMINISTRATIVE STRUCTURE

A. GENERAL

In order to manage all administrative affairs of the newly-created unit, UPPR has created the Department of Architecture, under the aegis of the Deanship of Engineering until it grows to become a full school. (See Organizational Chart)

The department will have a full-time director, an assistant to the director, and two secretaries, besides the faculty. Two computer lab assistants will also integrate the roster. Recruitment of said personnel will be phased as deemed proper. The program director, Architect Jorge Rigau, holds a Bachelor of Architecture from Cornell University and a Masters’ Degree in History from The University of Puerto Rico, Río Piedras Campus. Rigau has extensive academic and practical experience. Faculty members committed to teach at the school embrace a wide spectrum of interests and academic training. (See next chapter, on faculty).

The program director is responsible for curricular projections, course programming, recruitment, personnel and faculty supervision, administration of budget, resources and equipment, and other related tasks. He reports to the Dean of Engineering.

Administration of the architecture program will be greatly facilitated by its projected location in a new building being now under construction for such purposes by UPPR.
"Pero experiencia y método no son forzosamente conceptos ligados; el único patrimonio que los maestros de los antiguos talleres, desconocedores del método, podían legar a sus discípulos, era la experiencia: la comprobación de una verdad verificada en el transcurso de una vida."

Ernesto N. Rogers, *Experiencia de la arquitectura*

"While curricular incoherence has many causes, some of them are but intractable, the primary means for achieving coherence are bold administrative leaders and newly responsible professor."

Association of American Colleges, *Integrity in the College Curriculum*

A. PROFILE: AREAS OF COMMITMENT TO PROGRAM'S PHILOSOPHY

The profile of the proposed faculty for the new program is a varied one, attuned to contemporary concerns. Conscientious teachers must be actively involved in different aspects of the profession; research, practice and publishing, are but a few of the activities which expand the architect's understanding of the world around him (her) and, very importantly, of his (her) academic mission. With diversity and multidisciplinary overlaps characterizing much of everyone's professional experiences, it seems important to acknowledge that:

"An ever increasing proportion of the professoriate is comprised of people whose expertise is deep but narrow. Such people may be the world's leading experts in some aspect of the field, yet they may never have experienced the profession in practice as most of their students will."

Martin Wachs, "The Case for Practitioner Faculty", *Journal of Planning, Education and Research*

It is important for architecture students to benefit from the insights and nuances which come from those who have practiced in the world, in order to nurture
"reflective practitioners", capable of practicing in the world, learning from it, communicating it to others. Attracting faculty members who subscribe such a goal is of our interest.

The program will have faculty well-trained for the level at which it teaches. Professionals engaged in debates on Caribbean architecture are many in our roster. They should help foster a sense of pertinence of the school. Faculty will be hired with both professional bachelors’ degrees and masters’ degrees in Architecture, urging all alike to attain their professional registration. Teachers, after all, are role models to the students. Diversity of provenance and interests will be pursued in selecting faculty members.

D. ADMINISTRATIVE

In the beginning, the program will include 1 full-time professor, the rest to be recruited on a part-time basis, given our interest at attracting active practitioners to Academia. With augmenting enrollment, the number of full-time teachers will increase to attain an ideal of 1/3 part-time. A full-time teacher would have a load of 10 credits, one 4-credit design course and two 3-credit courses (different ones, or two sections of the same). The maximum class preparations would thus be three per professor.

E. LISTING OF FACULTY PER CLASS

What follows is a list of professionals officially committed to teach at our institution, and the courses they would teach, given their respective areas of expertise. Appendix 7 includes all their vitae and letters of intention.
DESIGN

Design 101
Alberto Ferrer
Jorge Otero Pailos
Jim Dicker

Design 102
Alexander Fernández
Jaime Suárez

Design 103
Marcial Rossi
Ernesto M. Santalla
Osvaldo Rivera Otero

Design 201
María Magdalena Campo
Annelisse Molini Vizcarondo
Juan Penabad
Ivón Marcial

Design 202
Américo Delgado
Hortensia Lanio
Doug Rhyn

Design 203
José Gelabert
Enrique Larrañaga
Mark M. Schimmenti

Design 301
Jaime Cobas
Warren James
Eduardo Rodríguez
Design 302

Bernard Deffet
Iris González
Enrique Norten

Note: There is no Design 303 in the sequence

Design 401

Ann Beha
Luis Flores
John Loomis

Design 402

Segundo Cardona
Miriam Gusewicz
Nicolás Quintana

Design 403

Walter Chatham
Andrés Duany

Design 501

Gary Brown
Jerry A. Wells
Hanno Weber

Design 502

Gustavo Montenegro
Bruno Stagno
Gil Snyder

Design 503

Jim Dicker
Felipe Préstamo
Jaime Cobas
ARCHITECTURAL REPRESENTATION

Architectural Representation 101
Alexander Fernández
Juan Penabad

Architectural Representation 201
Antonio Pontón

Architectural Representation 301
Antonio Pontón

HISTORY

History 101: Introduction
Jorge Rigau
Alexander Fernández

History 201: Caribbean Architecture
Jorge Rigau
José Gelabert
Enrique Larrañaga

History 301: Historiography
Jorge Rigau
Ramonita Vega
Mary Woods

THEORY

Theory 101: Introduction
Juan Penabad
Warren James
María Magdalena María Magdalena Campo
Jorge Otero Pailos
Mid-Career Research 201

Jorge Rigau
Ramonita Vega
Beatriz Del Cueto

STRUCTURES

Structures 101: Concepts
Pedro D. Del Nero

Structures 201: Steel
Norberto Davila Beltran

Structures 301: Concrete
Cesar A. Corretjer

Structures 401: Wood

TECHNOLOGY

Technology 101: Introduction
Gil Snyder

Technology 201: Materials
Felipe Prestamo

Tech 301: Site
Juan Penabad

Technology 401: Environment Systems
Marcos Garrido
PROFESSIONAL PRACTICE

Ethics

Profesores de Artes y Ciencias

Professional Practice 501, 502

Edward Underwood
Roberto Nin
Lina Dueño

Electives

1. Gabriel Ferrer Amador
2. Ivón Marcial
3. Jochi Melero
4. Agamemnon Gus Pantel
5. Gerardo Navas
6. Mari Villarini
7. Armando Pérez
8. Rafael Emilio Yunén Z.
Alphabetical Listing Of Projected Candidates for Faculty listing
including fields of interest and classes to be taught, also letters of intent

ANN BEHA, architect
Harvard University; Massachusetts Institute of Technology
Practitioner; Restoration and preservation planning

(Design 401, Historic Preservation)

GARY BROWN, architect
Harvard University; Rensselaer Polytechnic Institute
Practitioner and educator; Former Chair, Department of
Architecture, University of California at Berkeley

(Design 501, 502, 503)

MARIA MAGDALENA CAMPO URRUTIA, architect
University of Puerto Rico
Practitioner, educator; Theory & beginning design studio

(Design 201, 203, Theory 1: Introd.)

SEGUNDO CARDONA, architect
University of Puerto Rico
Practitioner, educator, Past President of the Puerto Rico
Architects' Association

(Design 402, 403)

WALTER CHATHAM, architect
Institute for Architecture and Urban Studies, New York;
University of Maryland
Practitioner; President, New York Architectural League

(Design 401, 403)

JAIME COBAS, architect
Cornell University; Yale University
Practitioner, critic; Architectural and interior design

(Design 301, 503, Interior Design Elective)

CÉSAR A. CORRETTIER, structural engineer
University of Puerto Rico; University of Illinois, Urbana
Practitioner; Structural engineering and soils' mechanics

(Structures 301)
NORBERTO DÁVILA BELTRÁN, structural engineer
University of Puerto Rico; University of Illinois, Urbana
Educator and practitioner; Structural design and evaluation;
Government experience
(Structures 201)

BERNARD DEFFET, architect
Massachusetts Institute of Technology; Washington University,
at St. Louis
Practitioner; Adaptive reuse; Low-income housing
(Design 301, 302)

BEATRIZ DEL CUETO, architect
University of Florida, Gainesville; IC-CROM
Practitioner, researcher; Past President Puerto Rico Chapter
of the AIA; Preservation and Caribbean architecture
(Mid-Career Research, Historic Preservation)

PEDRO D. DEL NERÓ, structural engineer
University of Puerto Rico; University of Illinois, Urbana
Structural design and evaluation; Computer programming
(Structures 101)

AMÉRICO DELGADO, architect
University of Puerto Rico
Practitioner; Architectural and graphic design
(Design 201, 202, 203)

JIM DICKER, architect
Ohio Wesleyan University; Columbia University
Practitioner, educator and researcher; Design
(Design 101, 102, 103, 503)

ANDRÉS DUANY, architect
Princeton University; Yale University; Ecole des Beaux Arts
Practitioner, educator and researcher; New-town planning;
Caribbean architecture
(Design 401, 402, 403)
LINA DUEÑO, architect
University of Puerto Rico
Government advisor; Past Vice-President Puerto Rico Planning Board; Urban legislation and regulations
(Professional Practice 501, 502, and related electives)

ALEX FERNÁNDEZ, architect
Syracuse University; Pratt Institute
Practitioner, educator and researcher; Architectural design

(Architectural Representation 101, Design 101, 102, 103, Hist 1: Intro)

ALBERTO FERRER, architect
Cornell University
Practitioner, educator; architecture and interior design

(Design 101, 102, 103)

GABRIEL FERRER AMADOR, architect
Catholic University, Washington
Environmental advocate; Landscape preservation; ecotourism

(Landscape and Ecology Electives)

LUIS FLORES, architect
Georgetown University; Tulane University
Practitioner and educator; Past President of the Puerto Rico Architect's Association and the Puerto Rico AIA Chapter

(Design 401, 402, 403)

MARCOS GARRIDO, electrical and mechanical engineer
Escuela Técnica Superior de Ingenieros Industriales, Universidad Politécnica de Madrid
Practicioner; Electricity and Mechanical

(Technology 401)

JOSÉ GELABERT, architect
Cornell University; Universidad Central de Venezuela, Caracas
Practitioner, educator, researcher; Caribbean architecture; Drawing

(Design 201, 202, 203, Hist 201)
IRIS GONZÁLEZ, architect  
University of Puerto Rico  
Practitioner; Architecture, theater arts, women's affairs  
(Design 301, 302)

MIRIAM GUSEWICZ, architect  
Cornell University  
Practitioner and educator; American Architecture, criticism  
(Design 401, 402, 403, Theory Electives)

WARREN JAMES, architect  
Columbia University; Cornell University  
Practitioner, educator, author and critic; North American and Spanish architecture  
(Design 301, 302, Mid-Career Research, Theory 101)

HORTENSIA LANIO, architect  
University of Havana  
Practitioner; Architecture, Neo-Traditional Town Planning  
(Design 201, 202, 203)

ENRIQUE LARRANAGA, architect  
Universidad Simón Bolívar, Venezuela; Yale University  
Practitioner and educator; Latin American architecture; Interdisciplinary linkages  
(Design 201, 202, 203; History 201, Mid-Career Research)

JOHN LOOMIS, architect  
Stanford University, Columbia University  
Practitioner and educator; Design, Latin American Architecture  
(Design 401, 402, 403; Technology 201)

IVON MARcial, architect and photographer  
Institut Saint-Luke, Belgique; University of Puerto Rico  
Practitioner and research assistant; Architectural photography  
(Design 101, 102, 103; Photography)

JOCHI MElerO, photographer  
Scuola di Cine-Operatori Italiana, Roma; University of Puerto Rico  
Practitioner; Advertisement, illustration, fashion, architecture  
(Photography)
ANELISSE MOLINI VIZCARRONDO, architect
University of Wisconsin, Milwaukee; University of Puerto Rico
Practitioner; River front developments; Architectural design

(Design 201, 202, 203)

GUSTAVO MONTENEGRO, architect
Université de Toulouse-Le Mirall, France; Universidad Nacional de Córdoba, Argentina
Practitioner and educator; Tourism and Dominican architecture

(Design 501, 502, 503)

GERARDO NAVAS, planner
Berkeley University, University of Puerto Rico
Practitioner and educator; former director of UPR’s Planning School

(Planning Elective)

ROBERTO NIN, architect and attorney-at-law
Virginia Polytechnic Institute, University of Puerto Rico
Practitioner; Computers, Legal Aspects, Construction Management

(Professional Practice 501, 502)

ENRIQUE NORTEN, architect
Cornell University; Universidad Iberoamericana, México
Practitioner and educator; Contemporary Latin American architecture

(Design 301, 302, 303)

JORGE OTERO PAILOS, architect
Cornell University
Researcher; North American, Spanish and Moroccan architecture; Theory & beginning design studio

(Design 101, 102, 103; Theory 101)

AGAMEMNON PANTEL GUS TEKAKIS, archaeologist
University of Tennessee; Miami University, Ohio
Practitioner, researcher and author; Cultural anthropology; Government experience

(Cultural Anthropology Elective)
JUAN PENABAD, architect
University of Puerto Rico; Yale University
Practitioner, educator and researcher; Architectural design and representation; Housing

(Design 201, 202, 203, Theory 101, Technology 101)

ARMANDO PÉREZ, planner
Cornell University; Columbia College
Asset management analyst; Regional planning; Low-income housing; Urban development

(Planning, Real Estate Elective)

ANTONIO PONTÓN, architect
University of Puerto Rico
Practitioner; Computer applications in Architecture

(Architectural Representation 201, 301)

FELIPE PRÉSTAMO, architect and planner
Universidad de La Habana; Massachusetts Institute of Technology
Practitioner, researcher, educator and author; Urbanism and housing in Latin America

(Design 401, 402, 403, Mid Career Research)

NICOLÁS QUINTANA, Architect
University of Havana
Practitioner; Architecture and Urban Design

(Design 402)

DOUG RHYN, architect
Illinois Institute of Technology
Practitioner and educator; Design, Historic Preservation, Furniture Design

(Design 201, 202, 203)

JORGE RIGAU, architect and historian
Cornell University; University of Puerto Rico
Practitioner, educator, author and critic; Theory and history of Caribbean architecture; Architectural education

(History 101, 201, 301, 401; Mid-Career Research)
OSVALDO J. RIVERA OTERO, architect
  University of Puerto Rico
  Practitioner and educator; Former Associate Dean for Academic
  Affairs, School of Architecture, University of Puerto Rico
  (Design 101, 102, 103)

EDUARDO RODRÍGUEZ, architect
  Instituto Superior Politécnico de La Habana
  Practitioner, author and critic; History, theory and urban
  planning in the Hispanic Caribbean
  (Design 301, 302, 303 History 201)

MARIA ROSSI, architect
  Cornell University
  Practitioner; Architecture and Urban Design
  (Design 101, 102, 103)

ERNESTO M. SANTALLA, architect
  Cornell University; University of Puerto Rico
  Practitioner; Architectural and interior design
  (Design 101, 102, 103)

MARK. M. SCHIMMENTI, architect
  University of Florida
  Practitioner and educator; City and town design; Analysis and
  writing as an urban design tool; Computer applications
  (Design 201, 202, 203)

GIL SNYDER, architect
  Columbia University; University of Wisconsin, Madison
  Educator and practitioner; Chair, Department of Architecture,
  University of Wisconsin, Milwaukee; Techtonics
  (Design 501, 502, 503, Technology 101)

BRUNO STAGNO, architect
  Ecole des Beaux Arts UP6, Paris; Universidad Católica de Chile
  Practitioner and educator; Design, Latin American Architecture
  (Design 501, 502, 503)
JAIME SUÁREZ, architect and ceramist
Columbia University; Catholic University, Washington
Educator; Interdisciplinary linkages between the visual and
the performing arts

(Design 101, 102, 103)

EDWARD UNDERWOOD, architect
Clemson University
Practitioner and educator; Past President of the Architect's
Association of Puerto Rico; Ethics and practice

(Professional Practice 501, 502)

RAMONITA VEGA, historian
University of Puerto Rico
Researcher, educator and archivist; Puerto Rican architecture
and historiography

(History 201, 301)

MARI VILLARINI, planner
University of Puerto Rico
Practitioner; Planning, Non-Profit Organizations; entrepreneurial development

(Planning Elective)

HANNO WEBER, architect and urban designer
Princeton University
Practitioner and educator; Housing, planning and adaptive
reuse; Latin American architecture

(Design 501, 502, 503)

MARY WOODS, architectural historian
Columbia University; Dike University
Educator; American, Native and Modern Architecture

(History 101, 301, 401)

JERRY A. WELLS, architect
Swiss Institute of Technology - ETH; University of Texas
Practitioner, researcher and educator; Former Chairman,
Department of Architecture, Cornell University

(Design 501, 502, 503)
LIST OF UNIVERSITIES WHERE CURRENTLY WORK SOME OF THE PROJECTED FACULTY MEMBERS

(i.e. LIASONS)

University of California at Berkeley

Pontificia Universidad Católica Madre y Maestra, Santiago de los Caballeros, República Dominicana

Cornell University

University of Illinois, Chicago

Universidad Interamericana, San Germán, Puerto Rico

University of Miami at Coral Gables

Universidad de Puerto Rico

Universidad Simón Bolívar, Venezuela

University of Virginia, School of Architecture

University of Wisconsin, Milwaukee
LIST OF PROFESSIONAL INTERESTS SHARED BY PROJECTED FACULTY

Adaptive reuse
Analysis and writing as an urban design tool
Architectural representation

Caribbean architecture
City and town design
Computer applications
Cultural anthropology

Design
Drawing

Ecotourism
Environmental advocacy
Ethics and professional practice

Government participation
Graphic design

Historiography
History, theory and urban planning in the Hispanic Caribbean
Housing

Interdisciplinary linkages
Interior design

Landscape preservation
Latin American architecture
Low-income housing

North American, Spanish and Moroccan architecture

Photography
Preservation
Puerto Rican architecture

Regional planning
Restoration and preservation planning
River front developments

Structural design and evaluation
Structural engineering and soils' mechanics

Technology
Theory

Urban development
VIII. EDUCATIONAL RESOURCES

A. GENERAL

Polytechnic University of Puerto Rico has an extensive library with adequate collections and audiovisual and other technical support services to assist in the integral development of the student body. Part I of this document explains the library's role and scope within the purposes of the institution; the services rendered by the library and its organizational structure. APPENDIX 18, the official Subject Index Catalogue for Magazines of the library is representative of said scope, describing the themes embraced. Books, journals, filmstrips, slides and videos are already part of the collection. APPENDIX 19, the User's Manual, details the availability and restrictions of the different collections.

With the new architecture program, of course, these collections are to be significantly expanded. Current square footage occupied by the library (20,590) is to be doubled when the new library building (currently under construction) is finished next year, for a total of over 40,000 square feet. The new library will lie adjacent to the building where architecture will be housed, also of new construction.

B. HOURS

Operating schedule of the library is:

Monday-Thursday    7:30 AM - 10:00PM
Friday               8:00 AM - 1:00PM
Saturday             8:00 AM - 3:00 PM
Sunday & Holidays  Closed

A reading room remains open 24 hours for anyone interested in a quiet area for study.

C. RESOURCES: PROJECTIONS FOR THE NEW PROGRAM

Growth of the library to service the new architecture program shall occur within already established procedures (See APPENDIX 20: Collection Development Policies) and an analysis already carried out by library personnel to that effect (See APPENDIX 21: "Situación de la Biblioteca de la UPR en relación al proyecto de iniciar un bachillerato en Arquitectura"). The reader should place emphasis on this appendix to grasp UPPR's full intentions at enhancing its current architectural entries. The existing Library Committee shall oversee the process. (For members' list, see APPENDIX 22).

The educational resources to be gathered at the library will be of sufficient substance to support the curriculum and the scholarly and research objectives of the program. As stated by NAAB, these will be no less than 5,000 Library of Congress NA volumes, with additional technical and support volumes to provide a balanced architectural collection as described by the Art Librarians Society of North America and the Association of Architecture School Librarians. Periodicals, slides and video collections will be created to expand upon the already existing resources. This growth shall occur in a staggered manner, the peculiarities of which will be determined with the assistance of NAAB.

The library has begun to augment its NA entries, currently having 110 of them (See APPENDIX 23 for books, APPENDIX 24 for journals, and APPENDIX 25 for filmstrips, slides and videos) UPPR and already is suscribed to relevant architectural trade
journals and technical books pertaining engineering and surveying could be of great help for courses of Technology and Structures.

Books to be acquired should greatly enhance the existing collection and the student's education. A list of the most recent publications to be acquired is included. (See APPENDIX 26)

D. ADDITIONAL RESOURCES

In addition, we have the "Centro de Tecnología Educativa" (Ocasio Building, Fifth Floor) where students have access to computer use. Computers are 486DX-33 model, controlled by Novell networking, and complemented by laser printers and plotters, to facilitate the student's learning process.

E. SUMMARY

The library resources shall be both expanded and augmented. Ongoing policies shall facilitate said process to happen in a most effective manner. To happen in a phased way, growth of the collections shall be closely monitored by self-assessment procedures by which the library continually evaluates its development and the fulfillment of its mission. (See APPENDIX 27: Library Self-Study)
PLANTA DE EDIFICIO EN CONSTRUCCIÓN
DONDE SE ALOJARÁN LAS FACILIDADES DE LA ESCUELA DE ARQUITECTURA
DE LA UNIVERSIDAD POLITECNICA DE PUERTO RICO

Underwood; Architects

Se ilustra además la disposición interna de la planta, según propuesta por el
Departamento de Arquitectura, de acuerdo a las necesidades del programa;
el sector noreste del plano será ocupado por la Escuela Graduada de Ingeniería.
IX. OPERATIONAL CONSIDERATIONS

A. PHYSICAL FACILITIES

As previously mentioned in this document, the Architecture Program will be housed on new premises, the third floor of a new multiuse building in the North Side of campus. The program shall occupy over 13,000 square feet, between direct use and common areas, with over 5,000 sq. ft. for studio space, in its beginning phase.

- Studio space: 5,000
- Administrative: 1,829
- Exhibit / Areas: 700
- Classroom space: 1,200
- Computer room: 1,200
- Photography Lab: 650
- Professors' offices: 275
- Bathrooms: 252
- Storage: 65
- Janitor: 50

B. FEASIBILITY STUDY

Elaborated for the financial impact of the proposed program, we include in its entirety the feasibility study carried out to properly ascertain all economic considerations regarding the new program. Text and its appendixes are all reproduced in the following pages, where all details are expounded. The section On need, previously included, elucidates many of the quantitative arguments for a new architecture program to be established.

Purchase orders for school equipment and computers are included in APPENDIX 28.
Polytechnic University is considering the establishment of a new program in Architecture. It would be the first one of its kind in a private university in Puerto Rico; the only other Architecture program at present is at the University of Puerto Rico, Rio Piedras Campus (UPR). The UPR school of Architecture has been in existence since 1968, and has adopted the 4+2 method (Bachelor's plus Master's Degree). They typically consider over 300 applications, but enroll only 60 students per year in the Bachelor's program.

Polytechnic University is contemplating a five-year program of 183 credit hours, with expected annual enrollment of 80 students (60 in Fall, 20 in Spring). For the purposes of this analysis, a 35% graduation rate is assumed over the duration of the program. A tuition cost per credit of $125 per credit hour, and fees of $90 per trimester (four per year) are assumed for the first 3 years of the program. A tuition cost increase of $135 per credit and fees of $100 per trimester are contemplated for year 4 (1998).

Instructional costs for this program will be relatively high. The figure decreases from a high of 62% of tuition revenues in Year One to 44% on an ongoing basis by Year four. This should be compared, however, to the current PUPR average of 35-40%. This phenomenon is due to two main factors: First, the Design Courses' Student to Faculty ratio is relatively low at 15 students per class. Secondly, the average Architectural Faculty salary is much higher than most of the faculty at other campus programs.

The financial results show the new program will result in a loss to the University of ($243,513) in Year One. This first year loss is due to the required initial purchases of the Design Studio, Faculty Offices, Computer Center, and Required Library Resources.

The second year financial results previews essentially a breakeven situation for the program, since some additional first-time expenditures are staggered into Year 2, and enrollment is still not sufficiently high to adequately cover these expenses. By Year 3, however, the program starts to be very profitable, and by Year 5 is generating profits of $356,595 after covering its Direct Overhead. This profit represents 31% of tuition revenue.

To summarize, even though the program incurs a substantial loss during its first year, its long-term economic contribution to the university is excellent. If the program proves to be a success, this initial loss should rather be viewed as an investment, since the reputation gained by the university for having such a prestigious academic program should more than offset the economic impact of its initial development.
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   Appendix C - Total Student Education Costs ............. 11
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I INTRODUCTION

Polytechnic University (PUPR) is considering the establishment of a new five-year program in Architecture, presently the only one of its kind in a private university in the Commonwealth of Puerto Rico. The only other Architecture program at present is at the public system, located at the University of Puerto Rico, Rio Piedras Campus.

PUPR has named a special committee, composed of prominent members from the professional community as well as from within the university, to assess the viability for establishing a School of Architecture. As a part of this process, the committee has requested an Analysis of Economic Impact regarding this new program. This analysis will also eventually become part of the package to be presented to the Puerto Rico Council of Higher Education.

Several different scenarios are possible regarding the program's student enrollment over the next few years. This study analyzes the economic impact on the university of a Base Case (defined below), which is considered to be the most likely scenario regarding enrollment figures, and its related costs. It summarizes the resulting revenues based on certain tuition cost assumptions, as well as the expenditures believed to be required for the adequate support of this new program and the enrollment figures predicted.

As in all financial projections, there can be no certainty regarding the outcomes assumed. The purpose of this study is not to create a precise forecast, but rather to present a rough order of magnitude regarding the economic impact to the university as a result of this new program.

II GENERAL ASSUMPTIONS - BASE CASE

A. REVENUES

1) PROJECTED ENROLLMENT - The base case assumes 80 new students are enrolled every year. It assumes a Fall entering class of 60 students (September term), and a Spring entering class of 20 additional students (February term). Entering classes must be in multiples of 15 since this is the recommended size of the Architectural Design courses. The additional five students of the February term (for a total of 20) are assumed to be transfers which will be incorporated into existing class sections. Refer to Appendix A for enrollment projections.
POLYTECHNIC UNIVERSITY OF PUERTO RICO  
SCHOOL OF ARCHITECTURE

Key figures:
- 5-year program
- 4 trimesters per year
- 80 students entering per year (60 in Fall, 20 in Spring)
- 183 total credits in the program
- 3 Design courses per academic year (15 total)
- 2.75 GPA minimum to be considered for admission
- Peak enrollment of 225-250 students by year 5

2) DROPOUT RATE ASSUMPTIONS - A Graduation/Completion rate of 35% for each new entering class is assumed (65% dropout rate). This Graduation rate is somewhat higher than our current engineering programs. It is believed to be realistic based on the fact that a relatively small, very select group of students will be admitted to the program every year. Also, this average graduation rate of 35% is close to the experience observed at the UPR program.

The 65% dropout rate has been spread over the years as follows:

Year 2 = 26%
Year 3 = 16%
Year 4 = 13%
Year 5 = 10%

Total 65%

3) TUITION AND FEES - The base case assumes a tuition cost per credit of $125 for all students enrolled in the program. Fees total $90 per student, per trimester and are broken down as follows:

Registration Fee  $30
Library Fee  25
Activity Fee  10
CTE (Computer Lab)  25

Total Fees  $90

An increase to $135 per credit hour and fees of $100 per trimester are assumed for year 4 and on.
B. EXPENDITURES

1) PAYROLL RELATED

a) Instructional Costs - Instructional costs are composed of Architectural and non-architectural faculty. All courses in the curriculum are in one of three major categories:

Architectural Design Courses - Range of 12-20 students per class, with an average of 15 students per class. Taught by an Architect. Average faculty salary: $3,000 per class

Architectural Courses - Range of 22-35 students per class, with an average of 30 students per class. Taught by an Architect. Average faculty salary: $1,500 per class.

Non-Architectural Courses - Range of 22-35 students per class, with an average of 30 students per class. Taught by Arts, Sciences, and Technology faculty. Average faculty salary: $1,000 per class.

The Architectural's Faculty load per trimester is assumed as follows:

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Course</td>
<td>4</td>
</tr>
<tr>
<td>Architectural Course</td>
<td>3</td>
</tr>
<tr>
<td>Architectural Course</td>
<td>3</td>
</tr>
</tbody>
</table>

Total 10 Credits per Trimester

A higher workload for the Architectural faculty is not possible because the Design courses requires 12 contact hours per week. Together with the four contact hours per week of a regular three credit course, the faculty's total weekly hours would exceed 20 contact hours for a 10 credit load.

The Arts, Sciences and Technology faculty load will be the same as for the rest of the university.

b) Department Director - The annual salary of a Department Director is assumed to be $50,000 per year.

c) Faculty Support Staff - Two secretarial support personnel, one for the department director and one for the general faculty, are assumed, at an annual salary of $12,000 per year. The faculty secretary is to be hired in the second year. Total cost is therefore $12,000 the first year, and 24,000 per year thereafter.
d) Computer Laboratory Assistants - Two computer laboratory assistants are assumed, at an annual salary of $18,000 per year. The rationale for this expenditure is that the architectural program is heavily intensive in Design, not only in manual drawings but also in computer design such as AutoCad. Continuous computer assistance to the students is necessary. The second assistant will be hired the second year. Total annual cost: $18,000 the first year, $36,000 per year thereafter.

e) Fringe Benefits - Are assumed to be 25% of total annual payroll expenses. These benefits includes vacation, sick leave, medical benefits, etc.

2) OTHER EXPENSES

a) Furniture and Fixtures (F&F) - Expenditures to furnish the space allotted to the Architecture school are divided between the Design Studio and the faculty offices as follows:

Design Studio - A total of 60 drawing tables and stools are assumed to be purchased the first year, and 30 annually for each of the next four years, for a total of 180 drawing tables. There will not be design classrooms per se, but rather a large area with removable partitions, which will enable optimum use of available space and furniture.

Faculty Offices - First year expenditures include the furnishing of the office of the Department Director, one secretary, a conference room and a lunch room refrigerator. Second and third year expenditures assume the furnishing of one and two full-time faculty offices per year, respectively. See Appendix B for detail on costs and specifications.

b) Supplies and Materials - A total of $10,000 per year is assumed for Supplies and materials to cover the faculty offices, classrooms, and the office of the Department Director.

c) Travel - Estimated business related travel expenses for the Architectural faculty.
d) **Hardware** - It is planned that the PUPR Architectural Program will equip a computer laboratory of 25 IBM compatible 486 DX computers for student use, at a cost of $2,500 each. New computers and computer desks, will be purchased every year for the first 3 years, at a rate of 5 computers in year 1, 8 in year 2, and 12 in year 3. 3 new replacement computers will be purchased in years 4-5, and 10 in year 6.

A new color printer will be purchased every year for the first four years ($700 each). A Color Raster Plotter will be bought in year 1 at a cost of $9,000.

e) **Software** - Licenses for the new computers are planned as follows:

- 25 AutoCad Licenses @ $650 each
- 4 Integra Licenses @ $2,000 each
- 10 Lotus 1-2-3 Licenses @ $200 each
- 25 WordPerfect Licenses @ $100 each

f) **Library Resources** - The Architecture program requires a vast amount of highly specialized library resources. These include books, journals, periodicals, subscriptions, and audiovisual resources such as slides and films. Some of these resources, such as structural engineering and technical drawing can be shared with the resources currently available for the Civil Engineering program.

Nevertheless, a substantial amount of Architectural library resources not currently available need to be purchased, and the amounts estimated are $50,000 per Year.

It should be noted, as comparison, that the UPR has spent between $45,000 and $70,000 every year for the years 1991-93 in its Architectural Program (Source: UPR Architectural Program Report to NAAB).

g) **Consulting** - Consulting fees necessary to develop the program are budgeted at $24,000 for the first year.

h) **Faculty Development** - These expenditures consists of seminars, symposiums, conventions and similar activities (except travel expenses) which need to be attended by faculty members to keep in tune with the latest developments in their profession. They are budgeted at $5,000 the first year, growing to $12,000 by year 5 as the size of the faculty increases.
i) Advertising - An investment in advertising is necessary to ensure that the community is informed of this new academic offering at Polytechnic University. For the long-term viability of the program and to ensure an adequate return on the university’s investment, it needs to be a success from the very start. A thorough advertising strategy extolling the virtues of the program as well as of the Polytechnic University as a whole, is essential. It is extremely important that the program’s reputation for excellence be established in the minds of people in the community from the very beginning.

An intensive Radio and Printed Press campaign is planned, budgeting $20,000 for the first year and $10,000 a year thereafter. Of course, free media exposures will also be planned, such as professional conferences, news articles, and other similar activities which generate publicity for the program but are free of charge.

These advertising numbers are considered to be conservative; if the new academic program proves to be a success from the start, sustained levels of specialized advertising may not be necessary, and the program may just be advertised in conjunction with the annual university campaign.

3) DIRECT OVERHEAD - It is expected that the Architecture School will be located in the new Multi-Purpose building, in an area of approximately 13,763 square feet of space. This expense category consists of the overhead incurred directly by the Architectural Program. Namely, it consists of Utilities, Insurance, Maintenance, and Security expenditures generated by the space utilized by the Architectural Program.

The estimate is arrived at by determining the average cost per square feet for each expense category in terms of what the university is currently expending, and multiplying it by 13,763 feet. A further adjustment is made by the fact that the Architecture School is expected to be open to its students 7 days a week, even though classes are only offered during the normal university schedule.

C. INCOME AFTER DIRECT OVERHEAD

This is the resulting income or loss available after covering the program’s Direct Overhead.
It is also the income available to cover the General Overhead of the university, such as general administrative expenses, general maintenance, academic support services, debt repayment, and other mandatory and non-mandatory transfers.

After covering its direct overhead, a program should generate enough income to cover its share of General Overhead. This "share" of general overhead is allocated to each program by any one of several means of allocating costs, such as Percent of Revenues, Percent of square footage of space utilized, or Percent of total student enrollment.

### III FINANCIAL RESULTS - BASECASE

As a direct result of the assumptions discussed above, the financial results for the first four years of operation of the Architectural Program are estimated to be as follows:

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>95-96</th>
<th>96-97</th>
<th>97-98</th>
<th>98-99</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avg Enrollment</td>
<td>65</td>
<td>121</td>
<td>165</td>
<td>200</td>
</tr>
<tr>
<td>Revenues</td>
<td>$297,345</td>
<td>$557,810</td>
<td>$761,342</td>
<td>$997,002</td>
</tr>
<tr>
<td>Disbursements</td>
<td>370,385</td>
<td>412,595</td>
<td>521,245</td>
<td>564,220</td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>($73,040)</td>
<td>$145,215</td>
<td>$240,097</td>
<td>$432,782</td>
</tr>
<tr>
<td>Direct Overhead (DO)</td>
<td>$170,473</td>
<td>$170,473</td>
<td>$170,473</td>
<td>$170,473</td>
</tr>
<tr>
<td>Income After DO</td>
<td>($243,513)</td>
<td>($25,258)</td>
<td>$69,624</td>
<td>$262,309</td>
</tr>
</tbody>
</table>

The program generates a loss of ($243,513) during its first year of operation, mainly because of the first-time expenditures necessary to establish the program. These one-time costs are essentially Furniture and Fixtures for the academic area, Hardware and Software to establish the computer center, resources needed to adequately equip the Library, and Advertising expenditures necessary to market the program. All other associated costs are normal ongoing expenses needed to run the program, the biggest of which are Faculty expenses, Department Chair, Laboratory Assistants, and other Payroll related costs.

After year 2, the program proves to be very profitable on an ongoing basis. Even though total instructional costs are relatively higher than most typical academic programs at 45% of total revenues, it remains very profitable due to its higher tuition and fees that more than adequately covers its other expenses.
<table>
<thead>
<tr>
<th>Income After Direct Overhead</th>
<th>Income After Direct Overhead</th>
<th>Income After Direct Overhead</th>
<th>Income After Direct Overhead</th>
<th>Income After Direct Overhead</th>
<th>Income After Direct Overhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>$170,479</td>
<td>$370,479</td>
<td>$570,479</td>
<td>$770,479</td>
<td>$970,479</td>
<td>$1,170,479</td>
</tr>
<tr>
<td>6%</td>
<td>8%</td>
<td>10%</td>
<td>12%</td>
<td>14%</td>
<td>16%</td>
</tr>
<tr>
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**Contributed Margin**

**Total Disbursements**

**Total Other Expense**

**Other**

**Student Activity**

**Other**

**Total Rev.**

**Revenues**

**Miscellaneous**

**Total Revenues**

**Total Revenue**

**Sponsorship**

**Total Revenues**

**Revenue**

**Architecture School**

**Summary Income Statement**

**Architecture School**
### ENROLLMENT PROJECTIONS

#### Deposit Rate Assumptions

| Class 1 | 20 | 10% | 60% |
| Class 2 | 20 | 10% | 60% |

#### Student Enrollment

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#### Tuition Revenue

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#### Fee Revenue

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APPENDIX C

TOTAL STUDENT EDUCATION COSTS

I. TUITION AND FEES

Total annual cost of Tuition and Fees for the first 3 years are estimated as follows:

\[
\text{Tuition Cost} = 36 \text{ annual credits} \times \$125 \text{ per credit} = \$4,500 \\
\text{Fees} = 4 \text{ annual trimesters} \times \$180 = \$720
\]

Total Annual Tuition and Fees $5,220

II. BOOKS AND SUPPLIES

This program requires a substantial investment by the student in drawing materials, books, and other related supplies. Total annual cost of books, materials, and supplies for the architectural students are estimated to be $700 per year.

III. SUMMARY OF TOTAL EDUCATION COSTS

<p>| | |</p>
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<td>Annual Tuition and Fees</td>
<td>$5,220</td>
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<tr>
<td>Books and Supplies</td>
<td>700</td>
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<td>Total Education Cost</td>
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Since the maximum Pell Grant award is currently $2,300 per year, this means that students will have to finance at least 61% of the total education cost through a combination of additional Financial Aid (SEOG, Beca Legislativa, Stafford Loans), or out-of-pocket expenses. Total education costs does not include room, board, or transportation costs.
APPENDIX D

UNIVERSITY OF PUERTO RICO
ARCHITECTURE SCHOOL
STATISTICAL INFORMATION

SOURCE: UPR SCHOOL OF ARCHITECTURE REPORT TO NAAB - 1993

I  APPLICATIONS/ADMISSIONS/ENROLLMENT/GRADUATION STATISTICS

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<td>350</td>
<td>289</td>
<td>373</td>
<td>444</td>
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<td>Admitted M. Arch</td>
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<td>315</td>
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II  FULL TIME FACULTY SALARIES

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<td>Avg</td>
<td>No.</td>
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<td>Asst. Prof.</td>
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<td>27,380</td>
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<td>18,870</td>
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<td>Part-time Fac.</td>
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III  GENERAL DATA  1991/92

A.  FACILITY/RESOURCE DATA

Studio Area (Sq Ft)    9,300 sq ft
Total Area (Sq Ft)    35,760 sq ft
Operating Budget    $1,635,385

B.  FACULTY DATA - 1991/92 ACADEMIC YEAR

Full-Time Faculty    28
Part-Time Faculty    5
Tenured Faculty    17
Tenure-Track positions    4
Full-Time Administrative    1
U.S. Licensed Architects    16
Practicing Architects    16
AIA Members    3
FT Faculty Avg. Contact Hrs/Wk    15 hours
PT Faculty Avg. Contact Hrs/Wk    varies

C.  FACULTY CREDENTIALS - 1991/92 ACADEMIC YEAR

Ph.D.    6
D.Arch    1
M.A. or S.    4
M.Arch.    5
B.Arch    5
Other    2

IV  LIBRARY COLLECTION EXPENDITURES

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### V OPERATIONAL BUDGET

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