Number & Title of Course: ARQU 6145: Research Techniques (3 credits)

Course Description: The course provides an introduction to the theory and practice of research processes in the field of architectural design. The course covers the principles, methods and techniques used in architectural research and is meant to provide fundamental skills needed for the student to prepare a Thesis/Capstone Theme Proposal that is delivered at the end of the semester.

Course Goals & Objectives:

The students will:

- **Understand** fundamental research concepts and their application to the field of architecture.
- **Learn** to identify the available bibliographical resources and archives, as well as, other institutional and media depositories that provide for rigorous research documentation.
- **Be Aware** of the ethical and legal principles related to information management processes.
- **Develop** necessary investigative skills to effectively select among different research modes and paradigms.
- ** Cultivate** essential critical thinking skills needed to perform research.
- ** Improve** and apply necessary writing skills prepare clear and concise research proposals.
- **Apply** the capacity to formulate a research inquiry that will serve as a draft of their personal Thesis/Capstone Theme Proposal required for graduation from the professional Master of Architecture degree.

Student Performance Criterion/a addressed:

<table>
<thead>
<tr>
<th>A01: Communication Skills</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>A05: Investigative Skills</td>
<td>Ability</td>
</tr>
<tr>
<td>A07: Use of Precedents</td>
<td>Ability</td>
</tr>
<tr>
<td>A09: Historical Traditions &amp; Global Culture</td>
<td>Understanding</td>
</tr>
<tr>
<td>A10: Cultural Diversity</td>
<td>Understanding</td>
</tr>
<tr>
<td>A11: Applied Research</td>
<td>Understanding</td>
</tr>
<tr>
<td>C02: Human Behavior</td>
<td>Understanding</td>
</tr>
<tr>
<td>C08: Ethics &amp; Professional Responsibilities</td>
<td>Understanding</td>
</tr>
<tr>
<td>C09: Community &amp;Social Responsibility</td>
<td>Understanding</td>
</tr>
</tbody>
</table>

Topical Outline

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>WEEKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Paradigms</td>
<td>01</td>
</tr>
<tr>
<td>Architectural Research Processes</td>
<td>02</td>
</tr>
<tr>
<td>Quantitative Methods</td>
<td>01</td>
</tr>
<tr>
<td>Visual Methods &amp; Information Representation</td>
<td>01</td>
</tr>
<tr>
<td>Research Theme Delimitation</td>
<td>01</td>
</tr>
<tr>
<td>Research Theme Justification &amp; Objectives</td>
<td>02</td>
</tr>
<tr>
<td>Information Sources Management</td>
<td>02</td>
</tr>
<tr>
<td>Research-Related Ethical &amp; Legal Issues</td>
<td>02</td>
</tr>
<tr>
<td>Thesis/Capstone Theme Proposal</td>
<td>02</td>
</tr>
</tbody>
</table>

Prerequisites: Admission to the Master of Architecture.
Textbooks/ Learning Resources:


Offered: Fall only / Annually

Faculty Assigned: Magdalena Campos / Humberto Cavallin / Jorge Lizardi / Florian Urban (visiting professor)
Number & Title of Course: ARQU 6991: Structural Systems: Reinforced Concrete Structures & an Introduction to Steel Structures (3 credits)

Course Descriptions: The course covers the study of reinforced concrete systems, including its mechanical properties, considerations regarding the advantages and disadvantages of its employment, and specificities about its design methods and their application in the construction industry. Emphasis is also made on technical standards, nomenclature and its use in the field, construction codes compliance requirements, and product specifications in construction documentation. The course includes an introduction to the general aspects and mechanical properties of steel structures.

Course Goals & Objectives:

The students will:

- Understand the variables to be considered in order to assess the advantages and/or disadvantages of reinforced concrete systems employed in the design of an architectural project.
- Evidence the minimum knowledge necessary to comply with relevant construction code requirements regarding the design of structural systems.
- Learn to evaluate the structural capacity of a component of a structural system.
- Demonstrate the knowledge of design procedures and applicable code compliance.
- Achieve the ability to communicate abstract, as well as, technical ideas in relation to the design and performance of a reinforced concrete system.
- Develop the ability to interpret technical documentation, such as: details, shop drawings, and specifications related to components of a structural system.

Student Performance Criterion/a addressed:

A04: Technical Documentation Ability
B09: Structural Systems Understanding
B12: Building Materials & assemblies Understanding

Topical Outline:

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>WEEKS</th>
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</thead>
<tbody>
<tr>
<td>Reinforced Concrete Systems</td>
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<tr>
<td>o Historical Context, Description, Components</td>
<td>01</td>
</tr>
<tr>
<td>o Mechanical Properties</td>
<td>01</td>
</tr>
<tr>
<td>o Mixture analysis / UBC-1997 / ACI-318</td>
<td>01</td>
</tr>
<tr>
<td>o Design methods / working Stress Method / Ultimate Strength Method Research Theme Delimitation</td>
<td>01</td>
</tr>
<tr>
<td>o Deflection analysis / one-way and two-way slabs</td>
<td>02</td>
</tr>
<tr>
<td>o Column Design</td>
<td>01</td>
</tr>
<tr>
<td>o Foundation Design</td>
<td>01</td>
</tr>
<tr>
<td>Steel Systems</td>
<td></td>
</tr>
<tr>
<td>o General concepts</td>
<td>02</td>
</tr>
<tr>
<td>o Performance analysis</td>
<td>01</td>
</tr>
</tbody>
</table>

Prerequisites: Admission to the Master of Architecture
Textbooks/ Learning Resources:

American Concrete Institute, *Building Code Requirements for Reinforced Concrete ACI-318*, Latest edition, Detroit, MI.


**Offered:** Fall & Spring; Annually

**Faculty Assigned:** Luis Daza
Number & Title of Course: ARQU 6225: Theory & Critical Analysis (3 credits)

Course Description: The course deals with the intersections of various fields of theory with the realm of architecture and urbanism. The student develops an understanding of hermeneutic logics present in philosophy, literature, history, anthropology, psychology, ethnography, and semiology, among others. The accrued knowledge is meant to serve as a tool that enhances the student’s capacity to identify, comprehend, and solve architectural issues. The course content is meant to help establish the theoretical framework needed in order to undertake a critical design or writing exercise.

Course Goals & Objectives:

The students will:

- **Expand** his/her analytical capacity through interdisciplinary perspectives.
- **Be familiarized** with the exercise of reflection and the theoretical formulation through a varied repertory of interdisciplinary critical and theoretical texts.
- **Challenge** traditional research presumptions in the field of architecture.
- **Learn** of research methods of other disciplines.
- **Problematize** and reflect on the research process and content to better understand the research activity itself.
- **Explore** possible applications of interdisciplinary research in the field of design.
- **Strengthen** their research abilities through systematic search and the use of pertinent information.
- **Bolster** their debate and written research abilities.

Student Performance Criterion/a addressed:

| A.01 | Communication Skills | Ability |
| A.05 | Investigative Skills | Ability |
| A.09 | Historical Traditions & Global Culture | Understanding |
| A.10 | Cultural Diversity | Understanding |
| C.02 | Human Behavior | Understanding |
| C.09 | Ethics & Professional Responsibilities | Understanding |

Topical Outline

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>WEEK</th>
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</thead>
<tbody>
<tr>
<td>Grade Zero: Utopia</td>
<td>01</td>
</tr>
<tr>
<td>Signs &amp; Significations</td>
<td>02</td>
</tr>
<tr>
<td>Phenomenology</td>
<td>02</td>
</tr>
<tr>
<td>Economy, Society &amp; Suburbia</td>
<td>02</td>
</tr>
<tr>
<td>Gender &amp; Sexuality</td>
<td>02</td>
</tr>
<tr>
<td>Power, Memory &amp; Architecture</td>
<td>02</td>
</tr>
<tr>
<td>Patrimonial Imagination</td>
<td>02</td>
</tr>
<tr>
<td>Wrap Up: Towards a Critique of Methods</td>
<td>02</td>
</tr>
</tbody>
</table>

Prerequisites: Admission to the Master of Architecture
Textbooks by Topic/Learning Resources:

Grade Zero: Utopia


Signs & Signification


Phenomenology


Economy, Society & Suburbia


Appendix 4.4.01: Course Descriptions. M.Arch
Architectural Program Report 2014. Continuing Accreditation
Master of Architecture. School of Architecture. University of Puerto Rico

Gender & Sexuality


Power, Memory & Architecture


Patrimonial Imagination


Offered: Spring only/ Annually

Faculty Assigned: Magdalena Campos / Humberto Cavallin / Jorge Lizardi / Florian Urban (visiting professor)
Number & Title of Course: ARQU 6310: City Studio (5 credits)

Course Description: The city studio acknowledges architecture as an act of place making in the city. It also recognizes the complexity involved in the collective planning of settlements in the context of contemporary needs. The semester begins with an introduction to basic concepts of urbanism and a general presentation of historical variations of particular city forms. Students will first participate in groups in the preparation of a schematic development plan. Specific agreements with local municipalities and institutions will provide site and context conditions. For the conclusion of the semester, students will then individually address schematic architectural design proposals related to the recommendations stated in the development plan.

Course Goals & Objectives:

The student will:

- **Understand** the reciprocal relationship that exists between the networks that comprise urban systems and individual architectural interventions.
- **Develop** the ability to complete the preliminary design development of an urban project.

Student Performance Criterion/a addressed:

A01: Communication Skills Ability
A02: Design Thinking Skills Ability
A03: Visual Communication Skills Ability
A04: Technical Documentation Ability
A05: Investigative Skills Ability
A06: Fundamental Design Skills Ability
A07: Use of Precedents Ability
A08: Ordering Systems Skills Understanding
A09: Historic Traditions & Global Culture Understanding
A10: Cultural Diversity Understanding
A11: Applied Research Understanding
B01: Pre-Design Ability
B02: Accessibility Ability
B03: Sustainability Ability
B04: Site Design Ability
B06: Comprehensive Design Ability
B09: Structural Systems Understanding
C01: Collaboration Ability
C02: Human Behavior Understanding
C03: Client Role in Architecture Understanding
C06: Leadership Understanding
C07: Legal Responsibilities Understanding
C08: Ethics & Professional Judgment Understanding
C09: Community & Social Responsibility Understanding

Topical Outline

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>WEEKS</th>
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<tbody>
<tr>
<td>Introduction to urbanism</td>
<td>02</td>
</tr>
<tr>
<td>Collective urban development plan</td>
<td>06</td>
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<tr>
<td>o context analysis and research</td>
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<tr>
<td>o integration of urban systems</td>
<td></td>
</tr>
<tr>
<td>Individual architectural proposal</td>
<td>06</td>
</tr>
<tr>
<td>o schematic design</td>
<td></td>
</tr>
<tr>
<td>o integration of building systems</td>
<td></td>
</tr>
<tr>
<td>Final presentation</td>
<td>02</td>
</tr>
</tbody>
</table>
Prerequisites: Admission to the Master of Architecture

Textbooks/ Learning Resources:


Sepúlveda Rivera, Aníbal. *San Juan: Historia ilustrada de su desarrollo urbano, 1508-1898*, San Juan: Centro de Investigaciones CARIMAR, 1989


Offered: Fall & Spring; Annually

Faculty Assigned: Manuel Bermudez
Number & Title of Course: ARQU 6311, 6312 & 6315: Building Studio (5 credits)

Course Descriptions: The course integrates issues of sustainability, technology and structures with a design process that leads to a medium-scale building proposal. Students will first engage an initial research phase that entails assessment, critical inquiry and strategic analysis of: historical data; general, regional, area and special zoning regulations; applicable codes of agencies that have a say in the area of intervention; and international, national and local building codes. During the second phase, the students will develop an individual design project that integrates the results of the previous investigation to their process. Final presentations consist of detailed design development documentation that illustrates the inner workings of responsible contemporary building design.

Course Goals & Objectives:

The Student will:

- **Complete** a group research phase that will guide the design process throughout the semester that includes the development of: research skills, awareness of cultural diversity, definition of pre-design criteria, identification of site-design issues, an understanding of the client's needs and the ability to work in collaboration with others.
- **Develop** an individual building project that reveals efficient use of precedents, informed design thinking and applied research, and addresses essential concerns related to: accessibility, life safety, sustainability, as well as, building environmental, service, and structural systems.

Student Performance Criterion/a addressed:

| A01: Communication Skills   | Ability |
| A02: Design Thinking Skills | Ability |
| A03: Visual Communication Skills | Ability |
| A04: Technical Documentation | Ability |
| A05: Investigative Skills   | Ability |
| A06: Fundamental Design Skills | Ability |
| A07: Use of Precedents      | Ability |
| A08: Ordering Systems Skills | Understanding |
| A09: Historic Traditions & Global Culture | Understanding |
| A11: Applied Research       | Understanding |
| B01: Pre-Design             | Ability |
| B02: Accessibility          | Ability |
| B03: Sustainability         | Ability |
| B04: Site Design            | Ability |
| B05: Life Safety            | Ability |
| B06: Comprehensive Design   | Ability |
| B07: Financial Considerations | Understanding |
| B08: Environmental Systems  | Understanding |
| B09: Structural Systems     | Understanding |
| B10: Building Envelope Systems | Understanding |
| B11: Building Service Systems | Understanding |
| B12: Building Materials & Assemblies | Understanding |
| C01: Collaboration         | Ability |
| C02: Human Behavior         | Understanding |
| C03: Client Role in Architecture | Understanding |
| C06: Leadership             | Understanding |
| C07: Legal Responsibilities | Understanding |
| C08: Ethics & Professional Judgment | Understanding |
| C09: Community & Social Responsibility | Understanding |
### Topical Outline

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>WEEKS</th>
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<tr>
<td>Initial Research</td>
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</tr>
<tr>
<td>Building Design</td>
<td>11</td>
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<td></td>
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<tr>
<td>Final Presentation</td>
<td>02</td>
</tr>
</tbody>
</table>

**Prerequisites:** Admission to the Master of Architecture

**Textbooks/ Learning Resources:**


**Offered:** Fall & Spring; Annually

**Faculty Assigned:** José R. Davis & Victor Nieto / Thomas & Lucilla Marvel / Esteban Sennuy & Oscar Marty / Enrique Vivoni & Jorge Ramírez
Number & Title of Course: ARQU 6313: Independent Design Thesis - Research (5 credits)

Course Descriptions: Each course participant will perform supervised individual work that will demonstrate the student’s capacity to identify an architectural issue/design problem that leads to relevant research. The work will demonstrate the capability to formulate a building program that addresses the concerns raised.

Course Goals & Objectives:

The Student will:

- **Apply** fundamental research concepts and their application to the field of architecture.
- **Develop** a comprehensive understanding of architectural design as a field of research and practice.
- **Understand** the criteria involved in the development of architectural design judgment.
- **Select** among different research modes and paradigms.
- **Identify** the available bibliographical resources and archives, as well as, other institutional and media depositories that provide for rigorous research documentation.
- **Be Aware** of the ethical and legal principles related to information management processes.
- **Cultivate** essential critical thinking skills needed to perform research.
- **Improve** and apply necessary writing skills prepare clear and concise research proposals.
- **Complete** the development of relevant proposal of applying the research to a design proposal.

Student Performance Criterion/a addressed:

<table>
<thead>
<tr>
<th>A01: Communication Skills</th>
<th>Ability</th>
</tr>
</thead>
<tbody>
<tr>
<td>A05: Investigative Skills</td>
<td>Ability</td>
</tr>
<tr>
<td>A07: Use of Precedents</td>
<td>Ability</td>
</tr>
<tr>
<td>A09: Historical Traditions &amp; Global Culture</td>
<td>Understanding</td>
</tr>
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<td>A10: Cultural Diversity</td>
<td>Understanding</td>
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<tr>
<td>A11: Applied Research</td>
<td>Understanding</td>
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<tr>
<td>C02: Human Behavior</td>
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<td>C06: Leadership</td>
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<td>C08: Ethics &amp; Professional Responsibilities</td>
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<tr>
<td>C09: Community &amp; Social Responsibility</td>
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Topical Outline:

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<thead>
<tr>
<th>TOPIC</th>
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<tr>
<td>Research (minimum of two meetings with Thesis Committee)</td>
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<tr>
<td>Application to Design Proposal</td>
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<tr>
<td>Degree Exam</td>
<td>01</td>
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</tbody>
</table>

Prerequisites: ARQU 6145 / ARQU 6225 / ARQU 6312 / ARQU 6321 / ARQU 6361

Textbooks/ Learning Resources:

The bibliography will be project-related. Some generally recommended texts are:


Sepúlveda Rivera, Aníbal. San Juan: Historia ilustrada de su desarrollo urbano, 1508-1898, San Juan: Centro de Investigaciones CARIMAR, 1989

LINKS:

http://www.apastyle.org/elecref.html
The following is excerpted from the 5th edition of the Publication Manual (© 2001). The material provided covers commonly asked questions regarding how to cite electronic media.
http://www.mla.org/
Founded in 1883 by teachers and scholars, the Modern Language Association promotes the study and teaching of language and literature.
http://books.google.com/books?hl=en&lr=&id=72pHgjvNS5gC&oi=fnd&pg=PP7&sig=nLsOX60CgPGSvGJ3bxeqFZN70ql&dq=research+methods&prev=http://scholar.google.com/scholar%3Fq%3Dresearch%2Bmethods%26hl%3Den%26lr%3D
Survey Research Methods by Floyd J Fowler.
http://www.socialresearchmethods.net/kb/
The Research Methods Knowledge Base is a comprehensive web-based textbook that addresses all of the topics in a typical introductory undergraduate or graduate course in social research methods.

Offered: Fall & Spring; Annually

Faculty Assigned: María Campo / Humberto Cavallín / Lilliana Ramos / Mayra Jiménez / Darwin Marrero / Andrés Mignucci / Emilio Martínez / Ernesto Rodríguez / Jorge Lizardi / Esteban Sennyey / Enrique Vivoni / etc.
**Number & Title of Course:** ARQU 6314: Independent Design Thesis - Project (5 credits)

**Course Descriptions:** This is a continuation course in which each participant will perform supervised individual work that will demonstrate the student’s capacity to identify an architectural issue/design problem that leads to relevant form making and construction. The work will demonstrate as well the capability to formulate a building design that addresses the concerns raised in the previous research phase (ARQU-6313).

**Course Goals & Objectives:**

The Student will:

- **Understand** the need to broaden the existing fields of architectural knowledge production.
- **Demonstrate** adequate social awareness in order to responsibly serve the needs of local communities.
- **Study** the complexity involved in the formulation of an architectural intervention within the natural, cultural and social environment.
- **Be Motivated** to embark on an experimental, research-based approach to the architectural design problem.
- **Incorporate** life safety standards, codes and regulations in the design of an architectural project.
- **Research** a topic related to architectural design.
- **Cultivate** critical thinking and creative capacities.
- **Participate** in wider scenarios for the discussion and exchange of ideas.
- **Seek** to question the practice of architecture in order to improve the understanding of the activity itself.
- **Complete** a comprehensive analysis of architectural systems in terms of their symbolic, spatial, structural, technical and urban aspects.
- **Design** a comprehensive design proposal of architectural systems in terms of their symbolic, spatial, structural, technical, urban, material, constructive, and urban aspects.
- **Present** the proposal with efficient verbal, textual, and visual communication of the ideas that comprise the proposed building design.

**Student Performance Criterion/a addressed:**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Ability</th>
<th>Understanding</th>
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<tbody>
<tr>
<td>A01: Communication Skills</td>
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<tr>
<td>A02: Design Thinking Skills</td>
<td>Ability</td>
<td>Ability</td>
</tr>
<tr>
<td>A03: Visual Communication Skills</td>
<td>Ability</td>
<td>Ability</td>
</tr>
<tr>
<td>A04: Technical Documentation</td>
<td>Ability</td>
<td>Ability</td>
</tr>
<tr>
<td>A05: Investigative Skills</td>
<td>Ability</td>
<td>Ability</td>
</tr>
<tr>
<td>A06: Fundamental Design Skills</td>
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<td>Ability</td>
</tr>
<tr>
<td>A07: Use of Precedents</td>
<td>Ability</td>
<td>Ability</td>
</tr>
<tr>
<td>A08: Ordering Systems Skills</td>
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<td>Understanding</td>
</tr>
<tr>
<td>A09: Historic Traditions &amp; Global Culture</td>
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<td>Ability</td>
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<td>A10: Cultural Diversity</td>
<td>Understanding</td>
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<tr>
<td>A11: Applied Research</td>
<td>Understanding</td>
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<td>B01: Pre-Design</td>
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<td>Ability</td>
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<td>B02: Accessibility</td>
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<tr>
<td>B03: Sustainability</td>
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<td>B04: Site Design</td>
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<td>Ability</td>
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<td>B05: Life Safety</td>
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<td>Ability</td>
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<td>B06: Comprehensive Design</td>
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<td>Ability</td>
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<td>B07: Financial Considerations</td>
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<tr>
<td>B08: Environmental Systems</td>
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<tr>
<td>B09: Structural Systems</td>
<td>Understanding</td>
<td>Understanding</td>
</tr>
<tr>
<td>B10: Building Envelope Systems</td>
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<td>Understanding</td>
</tr>
<tr>
<td>B11: Building Service Systems</td>
<td>Understanding</td>
<td>Understanding</td>
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</tbody>
</table>
Appendix 4.4.01: Course Descriptions, M.Arch
Architectural Program Report 2014 - Continuing Accreditation
Master of Architecture - School of Architecture - University of Puerto Rico

B12: Building Materials & Assemblies Understanding
C01: Collaboration Ability
C02: Human Behavior Understanding
C03: Client Role in Architecture Understanding
C06: Leadership Understanding
C07: Legal Responsibilities Understanding
C08: Ethics & Professional Judgment Understanding
C09: Community & Social Responsibility Understanding

Topical Outline:

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<thead>
<tr>
<th>TOPIC</th>
<th>WEEKS</th>
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<tbody>
<tr>
<td>Research and site analysis</td>
<td>02</td>
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<tr>
<td>Schematic Design</td>
<td>03</td>
</tr>
<tr>
<td>Design Development</td>
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<tr>
<td>Preliminary Presentation</td>
<td>02</td>
</tr>
<tr>
<td>Final Presentation</td>
<td>03</td>
</tr>
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</table>

Prerequisites: ARQU 6313

Textbooks/ Learning Resources:

The bibliography will be project-related. Some generally recommended texts are:

Sepúlveda Rivera, Aníbal. *San Juan: Historia ilustrada de su desarrollo urbano, 1508-1898*, San Juan: Centro de Investigaciones CARIMAR, 1989

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http://books.google.com/books?hl=en&lr=&id=72pHgjvNS5gC&oi=fnd&pg=PP7&sig=nLoX60CgPSSvGJ3txeqFZN70gl&dq=research+methods&prev=http://scholar.google.com/scholar%3Fq%3Dresearch%2Bmethods%26hl%3Den%26lr%3D
Survey Research Methods by Floyd J Fowler.
http://www.socialresearchmethods.net/kb/

The Research Methods Knowledge Base is a comprehensive web-based textbook that addresses all of the topics in a typical introductory undergraduate or graduate course in social research methods.

Offered: Fall & Spring; annually

Faculty Assigned: María Campo / Humberto Cavallín / Mayra Jiménez / Darwin Marrero / Andrés Mignucci / Emilio Martínez / Ernesto Rodríguez / Esteban Sennyey / Enrique Vivoni / etc.
Number & Title of Course: ARQU 6316: Capstone Project (5 credits)

Course Descriptions: this independent study course requires each participant to select a research topic related to one of the design themes of the semester’s concurrent Building Studio courses. Students can also select a research topic related to the field of study of any of the school’s research centers. Participants will then develop a proposal that outlines the scope and extent of the work to be performed during the semester according to the expected level of complexity of an end-of-degree Capstone Project. Preliminary and Final Presentation requirements for the course are stipulated by the Graduate Program coordination and follow the thesis guidelines for master degree projects of the UPR Rio Piedras Campus as approved by the Dean of Graduate Studies & Research (D.E.G.I. in Spanish).

Course Goals & Objectives:

The student will:

- **Understand**: the need to broaden the existing fields of architectural knowledge production.
- **Demonstrate** adequate social awareness in order to responsibly serve the needs of local communities.
- **Study** the complexity involved in the formulation of an architectural intervention within the natural, cultural and social environment.
- **Be Motivated** to embark on an experimental, research-based approach to the architectural design problem.
- **Incorporate** life safety standards, codes and regulations in the design of an architectural project.
- **Research** a topic related to architectural design.
- **Cultivate** critical thinking and creative capacities.
- **Participate** in wider scenarios for the discussion and exchange of ideas.
- **Seek** to question the practice of architecture in order to improve the understanding of the activity itself.
- **Design** a comprehensive analysis of architectural systems in terms of their symbolic, spatial, structural, technical and urban aspects.
- **Present** the proposal with efficient verbal, textual, and visual communication of the ideas that comprise the proposed building design.

Student Performance Criterion/a addressed:

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01: Communication Skills</td>
<td>Ability</td>
</tr>
<tr>
<td>A02: Design Thinking Skills</td>
<td>Ability</td>
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<tr>
<td>A03: Visual Communication Skills</td>
<td>Ability</td>
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<tr>
<td>A04: Technical Documentation</td>
<td>Ability</td>
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<tr>
<td>A05: Investigative Skills</td>
<td>Ability</td>
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<tr>
<td>A06: Fundamental Design Skills</td>
<td>Ability</td>
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<tr>
<td>A07: Use of Precedents</td>
<td>Ability</td>
</tr>
<tr>
<td>A08: Ordering Systems Skills</td>
<td>Understanding</td>
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<tr>
<td>A09: Historic Traditions &amp; Global Culture</td>
<td>Understanding</td>
</tr>
<tr>
<td>A10: Cultural Diversity</td>
<td>Understanding</td>
</tr>
<tr>
<td>A11: Applied Research</td>
<td>Understanding</td>
</tr>
<tr>
<td>B01: Pre-Design</td>
<td>Ability</td>
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<tr>
<td>B02: Accessibility</td>
<td>Ability</td>
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<tr>
<td>B03: Sustainability</td>
<td>Ability</td>
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<td>B10: Building Envelope Systems</td>
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<tr>
<td>B11: Building Service Systems</td>
<td>Understanding</td>
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<tr>
<td>B12: Building Materials &amp; Assemblies</td>
<td>Understanding</td>
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<tr>
<td>C01: Collaboration</td>
<td>Ability</td>
</tr>
<tr>
<td>C02: Human Behavior</td>
<td>Understanding</td>
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</tbody>
</table>
C03: Client Role in Architecture       Understanding
C06: Leadership                      Understanding
C07: Legal Responsibilities          Understanding
C08: Ethics & Professional Judgment  Understanding
C09: Community & Social Responsibility  Understanding

Topical Outline:

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>WEEKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research and site analysis</td>
<td>02</td>
</tr>
<tr>
<td>Schematic Design</td>
<td>03</td>
</tr>
<tr>
<td>Design Development</td>
<td>05</td>
</tr>
<tr>
<td>Preliminary Presentation</td>
<td>02</td>
</tr>
<tr>
<td>Final Presentation</td>
<td>03</td>
</tr>
</tbody>
</table>

Prerequisites: ARQU 6311 / ARQU 6312 / ARQU 6315

Textbooks/ Learning Resources:


Offered: Fall & Spring; Annually

Faculty Assigned: José Davis & Victor Nieto / Enrique Vivoni & Jorge Ramírez / Manuel Bermúdez
Number & Title of Course: ARQU 6361: Buildings Systems (3 credits)

Course Descriptions: The topics covered in this specialized technology course include mechanical systems, environmental controls, life safety codes, and means of egress and circulation. The topics are presented in a comprehensive and integrated manner in relation to the spatial and structural design of a building system. Each topic will also be illustrated with traditional and contemporary examples and addressed in terms of local and regional context.

Course Goals & Objectives:

The students will:

- **Explore** the methods, strategies, and mechanical environmental control systems and how to incorporate them in the schematic design phase.
- **Select** the strategies of the diverse alternatives of applied systems with emphasis on the economic and energetic impact.
- **Accrue** the necessary knowledge to discuss with consultants, of each professional practice discipline, to select the appropriate options for each pertinent building issue.
- **Understand** the basic considerations to design basic fire protection systems.
- **Develop** the capacity to apply relevant issues to the process of designing drinking, sewer, and rainwater management systems.
- **Explore** the principles and methods of circulation, vertical and horizontal transport as per the spatial requirements of the presented design program.
- **Be Familiarized** with codes and standard information resources guide the practice of architecture and these technologies.
- **Establish** a rational methodology for decision making as to the different technological components and systems that impact architectural design.

Student Performance Criterion/a addressed:

A02: Design Thinking Skills    Ability
A03: Visual Communication Skills    Ability
A04: Technical Documentation    Ability
B01: Pre-Design    Ability
B02: Accessibility    Understanding
B03: Sustainability    Understanding
B05: Life Safety    Ability
B06: Comprehensive Design    Ability
B08: Environmental Systems    Understanding
B11: Building Service Systems    Understanding
C01: Collaboration    Ability
C07: Legal Responsibilities    Understanding
C08: Ethics & Professional Responsibilities    Understanding

Topical Outline

<table>
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<tr>
<th>TOPIC</th>
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<tbody>
<tr>
<td>Plumbing systems</td>
<td>04</td>
</tr>
<tr>
<td>Fire control and suppression systems</td>
<td>04</td>
</tr>
<tr>
<td>Mechanical ventilation and air conditioning systems</td>
<td>04</td>
</tr>
<tr>
<td>Conveying systems</td>
<td>04</td>
</tr>
</tbody>
</table>
Prerequisites: Admission to the Master of Architecture

Textbooks/ Learning Resources:


ASHRAE. *Handbock-HVAC Systems and Equipment*. American Society of Heating, Refrigerating and Air conditioning Engineers, Inc., Atlanta, GA.


Offered: Fall only; Annually

Faculty Assigned: Juan Penabad
Number & Title of Course: ARQU 6383: Professional Practice: Design Firm (3 credits)

Course Descriptions: The course analyzes the social, economic, ethical, and legal contexts within which the professional practice of architecture must insert itself. Basic organizational and financial management concepts are discussed in relation to the needs, range of services, and responsibilities of an architecture design firm. The course also covers issues pertaining to the different stages in the development of an architectural project, including the establishment of a designer-client relationship, the production of technical documentation, and the implications of building construction supervision.

Course Goals & Objectives:

The Student will:

- **Understand**: the definition of the professional practice of architecture in the local social, economic and legal context.
- **Learn** the basic economic concepts that affect and determine the extent of services during the professional practice of architecture.
- **Be familiarized** with the basic business organizational concepts in relation to the establishment of a professional design firm, including planning, marketing and administration aspects.
- **Review** the economic and legal implications of basic functional and organizational concepts in relation to the establishment of a professional design firm, including the selection of personnel, equipment and physical space.
- **Comprehend** the basic professional concepts in relation to the services offered by an architecture design firm, including the scope of services and responsibilities for each stage of the design and construction process.
- **Develop** the skills needed to prepare basic professional service proposals for architectural design.
- **Practice** the skills needed to evaluate legal documentation related to professional service proposals for architectural design.
- **Know** the economic, financial, legal, and ethical framework of the criteria needed for the professional practice of architecture.

Student Performance Criterion/a addressed:

A01: Communication Skills Ability
A10: Cultural Diversity Understanding
B07: Financial Considerations Understanding
C02: Human Behavior Understanding
C03: Client Role in Architecture Understanding
C04: Project Management Understanding
C05: Practice Management Understanding
C06: Leadership Understanding
C07: Legal Responsibilities Understanding
C08: Ethics & Professional Judgment Understanding
C09: Community & Social Responsibility Understanding

Topical Outline

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>WEEKS</th>
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</thead>
<tbody>
<tr>
<td>The economic context of professional practice</td>
<td>05</td>
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<tr>
<td>o Definition and range of actions</td>
<td></td>
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<tr>
<td>o Interaction with basic economic principles</td>
<td></td>
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<tr>
<td>o Relationships with the construction industry</td>
<td></td>
</tr>
<tr>
<td>The professional architectural design firm</td>
<td>05</td>
</tr>
</tbody>
</table>
Appendix 4.4.01: Course Descriptions. M.Arch
Architectural Program Report 2014. Continuing Accreditation
Master of Architecture. School of Architecture. University of Puerto Rico

- Legal organization
- Functional organization
  - The building construction process
    - Marketing and public relationships
    - Service proposals
    - Legal implications and responsibilities during design and construction phases
    - Compliance with local regulatory institutional stakeholders

Prerequisites: Admission to the Master of Architecture.

Textbooks/ Learning Resources:

Resoluciones Interpretativas de la Junta de Examinadora de Arquitectos de Puerto Rico
Architects Registration Examination [ARE], Internship Development Program [IDP]; National Council of Architectural Registration Boards
Manual de la Práctica Profesional para Servicios de Arquitectura, Colegio de Arquitectos de Puerto Rico
Código de Ética Profesional; Colegio de Arquitectos de Puerto Rico, Junta de Examinadora de Arquitectos
Ley Núm. 135 [1967], Ley de Certificaciones de Proyectos, Gobierno de Puerto Rico

LINKS:

- Leyes de Puerto Rico: http://www.estado.gobierno.pr
- Colegio de Arquitectos de Puerto Rico: www.caappr.org
- Junta Examinadora de Arquitectos: http://www.estado.gobierno.pr/arquitectos_y_arquitectos_paisajistas.htm
- National Council of Architectural Registration Boards: www.ncarb.org
- Junta de Planificación: http://www.jp.gobierno.pr

Offered: Fall only; Annually

Faculty assigned: José Caro / Luis Pico
Appendix 4.4.01: Course Descriptions, M.Arch
Architectural Program Report 2014, Continuing Accreditation
Master of Architecture, School of Architecture, University of Puerto Rico

Number & Title of Course: ARQU 6384: Professional Practice: Design Project (3 credits)

Course Descriptions: This continuation course further analyzes the social, economic, ethical and legal contexts within which the professional practice of architecture must insert itself. Emphasis is placed on administrative, procedural and regulatory processes related to the documentation that the architectural design firm must produce and certify as part of its professional services.

Course Goals & Objectives:

The professor acts as a Special Society’s representative dedicated to develop properties.

The Student will:

- Establish a professional office – Society – made up of 2 to 3 students each.
- Prepare an architecture-related professional services proposal.
- Write and sign an architecture-related professional services contract.
- Complete the documents specified in the contract of corresponding phases of a design project: schematic, preliminary and construction documents.

In addition, the student will:

- Understand the administrative processes and applicable regulations of professional services rendered by an architecture firm.
- Learn the basic legal considerations in relation to the professional services rendered by an architecture firm.
- Develop basic knowledge about local administrative procedures related to the professional services rendered by an architecture firm.
- Know the scope of the certification process of construction documents including consultants, approvals and permits.
- Accrue general knowledge of the basic characteristics of a professional services contract.

Student Performance Criterion/a addressed:

A01: Communication Skills Ability
A02: Design Thinking Skills Ability
A03: Visual Communication Skills Ability
A04: Technical Documentation Ability
A05: Investigative Skills Ability
A06: Fundamental Design Skills Ability
A07: Use of Precedents Ability
A08: Ordering Systems Skills Understanding
A11: Applied Research Understanding
B01: Pre-Design Ability
B02: Accessibility Ability
B03: Sustainability Ability
B04: Site Design Ability
B05: Life Safety Ability
B06: Comprehensive Design Ability
B07: Financial Considerations Understanding
B08: Environmental Systems Understanding
B09: Structural Systems Understanding
B10: Building Envelope Systems Understanding
B11: Building Service Systems Understanding
Appendix 4.4.01: Course Descriptions. M.Arch
Architectural Program Report 2014. Continuing Accreditation
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B12: Building Materials & Assemblies    Understanding
C01: Collaboration      Ability
C02: Human Behavior      Understanding
C03: Client Role in Architecture      Understanding
C04: Project Management      Understanding
C06: Leadership      Understanding
C07: Legal Responsibilities      Understanding
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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Simulated establishment of professional architectural firms</td>
<td>12</td>
</tr>
<tr>
<td>o Request for proposals</td>
<td></td>
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<tr>
<td>o Contract for professional services</td>
<td></td>
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<tr>
<td>o Preparation of documentation for schematic, preliminary and construction phases</td>
<td></td>
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<tr>
<td>Simulated process of certification of construction documents</td>
<td>03</td>
</tr>
<tr>
<td>o Preliminary consultations</td>
<td></td>
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<tr>
<td>o Construction permits</td>
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</tr>
</tbody>
</table>

Prerequisites: ARQU 6383 Professional Practice: Design Firm

Textbooks/ Learning Resources:

Manual de la Práctica Profesional para Servicios de Arquitectura, Colegio de Arquitectos de Puerto Rico
Código de Ética Profesional; Colegio de Arquitectos de Puerto Rico, Junta de Examinadora de Arquitectos
Ley Núm. 135 [1967], Ley de Certificaciones de Proyectos, Gobierno de Puerto Rico
Reglamento para la Certificación de Obras y Permisos (Reglamento de Planificación Núm. 12), Administración de Reglamentos y Permisos [ARPE]
Reglamento de Zonificación, (Reglamento de Planificación Núm. 4) Junta de Planificación
“Uniform Building Code”, Volúmenes I, II y III
“Americans with Disabilities Act” [ADA], U.S. Department of Justice

LINKS:

Leyes de Puerto Rico: http://www.estado.gobierno.pr
Colegio de Arquitectos de Puerto Rico: www.caappr.org
Junta de Planificación: http://www.jp.gobierno.pr
Oficina de Gerencia y Permisos: http://www.sip.pr.gov

Offered: Fall only; Annually

Faculty assigned: José Caro / Luis Pico