A. COURSE SYLLABUS

1. General Information:
   Course Number: INCI 4055
   Course Title: Construction Engineering and Management I
   Credit-Hours: 3

2. Course Description:
   Fundamental concepts in construction management: pre-construction process, estimates, bids, contracts, permits, government regulations, the construction company and project planning and scheduling.

3. Pre-requisites: 4th year

4. Textbook, Supplies and Other Resources:

5. Purpose:
   Prepare students for the technical and managerial issues within the design and the construction processes of the project.

6. Course Goals:
   After completing the course, the student should know:
   - how to develop the preconstruction process of a project
   - how to analyze and review the contracts of a project
   - how to do basic cost estimates of a project
   - how to obtain and which Permits and regulatory requirements are pertaining to a specific project
   - how to recognize how projects and companies are organized
   - how to do basic planning and scheduling of a project.

7. Requirements:
   N/A
8. Laboratory/Field Work:
No laboratory or fieldwork is required for this course.

9. Department/Campus Policies:

9a. Class attendance: Class attendance is compulsory. The University of Puerto Rico, Mayagüez Campus, reserves the right to deal at any time with individual cases of non-attendance. Professors are expected to record the absences of their students. Frequent absences affect the final grade, and may even result in total loss of credits. Arranging to make up work missed because of legitimate class absence is the responsibility of the student. (Bulletin of Information Undergraduate Studies, latest edition)

9b. Absence from examinations: Students are required to attend all examinations. If a student is absent from an examination for a justifiable reason acceptable to the professor, he or she will be given a special examination. Otherwise, he or she will receive a grade of zero of "F" in the examination missed. (Bulletin of Information Undergraduate Studies, latest edition)

9c. Final examinations: Final written examinations must be given in all courses unless, in the judgment of the Dean, the nature of the subject makes it impracticable. Final examinations scheduled by arrangements must be given during the examination period prescribed in the Academic Calendar, including Saturdays. (see Bulletin of Information Undergraduate Studies, latest edition).

9d. Partial withdrawals: A student may withdraw from individual courses at any time during the term, but before the deadline established in the University Academic Calendar. (see Bulletin of Information Undergraduate Studies, latest edition).

9e. Complete withdrawals: A student may completely withdraw from the University of Puerto Rico, Mayagüez Campus, at any time up to the last day of classes. (see Bulletin of Information Undergraduate Studies, latest edition).

9f. Disabilities: According to Law 51, Students will identify themselves with the institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students Office at (787)265-3862 or (787)832-4040 x3250 or 3258.

9g. Ethics: Any academic fraud is subject to the disciplinary sanctions described in article 14 and 16 of the revised General Student Bylaws of the University of Puerto Rico contained in Certification 018-1997-98 of the Board of Trustees. The professor will follow the norms established in articles 1-5 of the Bylaws.

10. General Topics:

<table>
<thead>
<tr>
<th>Topic</th>
<th>Time (hrs)</th>
</tr>
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<tbody>
<tr>
<td>Construction industry and its importance in our economy</td>
<td>1</td>
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<tr>
<td>Total development of a construction project</td>
<td>1</td>
</tr>
<tr>
<td>Pre-construction</td>
<td>2</td>
</tr>
<tr>
<td>Identifying a need</td>
<td>1</td>
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</tbody>
</table>
### Conceptual design
- Financing the project
- Selecting the site
- Design
- Bidding the project

**Exam 1**
- Cost estimates
  - Quick cost estimates
  - Detailed cost estimates
  - Computer programs for cost estimates
- Construction contracts
  - The contractor and the design team (Engineer/Architect)
  - Starting a new project
  - Changes
  - Actual site conditions
  - Basic aspects in time extensions
  - Warranties
  - Payments to contractor
  - Finishing the project, final payment and ending the contract
  - Value engineering

**Exam 2**
- Permits
  - Basic concepts
  - Land development
- Construction permits and certifications
- Mechanisms to obtain construction permits
- Building permits
- Construction appellate boards
- Government regulations
  - Regulatory issues including permits, zoning and building codes
  - Requirements from ARPE and other government agencies
- Negotiated projects and other alternative methods
- Company organization
  - Basic concepts
  - Types of organizational structures
  - Legal structures

**Exam 3**
- Planning and scheduling of projects
  - Personal planning
  - Bar charts
  - Critical path method
  - Computer applications for scheduling projects

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**B. Instructor Information Sheet**

**1. General Information:**
   - Instructor: José F. Lluch
   - Office: CI-207
   - Phone: (787) 265-5423
   - Office Hours: As indicated in the classroom
   - E-mail: josef.lluch@upr.edu
2. Course Description:
Course Number: INCI 4055
Course Title: Construction Engineering and Management I
See element number 2 (Course Description) on Course Syllabus section.

3. Purpose:
See element number 5 (Purpose) on Course Syllabus section.

4. Course Goals:
See element number 6 (Course Goals) on Course Syllabus section.

5. Instructional Strategy:
The course will consist of lectures presented by the instructor with strong emphasis on student participation. To motivate the student participation several real life problems will be analyzed in class with the students participating find practical solutions. Student should read the textbook prior to the scheduled lecture to be able to answer direct and specific questions in class. In addition, the reading of the topics prior to the lecture will provide the opportunity to address during the class reunion specific doubts the students might have.

6. Evaluation/Grade Reporting:

<table>
<thead>
<tr>
<th>Grade Curve</th>
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<tbody>
<tr>
<td>90 &lt;= final average &lt;=100 = A</td>
</tr>
<tr>
<td>80 &lt;= final average &lt; 90 = B</td>
</tr>
<tr>
<td>70 &lt;= final average &lt; 80 = C</td>
</tr>
<tr>
<td>65 &lt;= final average &lt; 70 = D</td>
</tr>
<tr>
<td>Less than 65 = F</td>
</tr>
</tbody>
</table>

The suggested grading criteria for the course is as follows:
Quizes-Tests 60%
Final 20%
Project 20%
Total 100%

7. Deadlines for Assignments:
All assignments must be turn in on the date indicated by the professor in the classroom. The homework must be submitted at the beginning of the class period. The homework grade will be reduced by 10% for each working day delay in turning in.

8. Student Assistance:
See Department/Campus Policy (element 2) of Course Syllabus Section

9. Attendance and Behavior:
See Department/Campus Policy (element 2) of Course Syllabus Section

10. Instructor Responsibilities:
The professor is responsible for lecturing, grading and returning homework and exams on time, and assisting his students outside the classroom.

11. Course Outline and Schedule:
See General Topics (element 10) of Course Syllabus Section

12. Additional References:
The listed references represent the most current publications on the topic available at the university’s general library. No equivalent text books published on this topic within the last five years are available at the library. Requests for latest versions will be submitted.


The following books are available at the Department of Civil Engineering and Surveying