Service Learning, Current Events and Flexible Course Syllabi

Ralph Belton, RA, CSI, Associate Professor
Ahmet Zeytinci, Ph.D., P.E., F-NSPE Professor

University of the District of Columbia
Washington, DC

Abstract

This paper is a continuation of the pedagogical approach on flexible syllabi that was presented in a previous paper titled 'The Role of Current Events and Flexible Course Syllabus (FCS)[1] in the Fall 2011.

In Spring 2012, after the Haiti earthquake, we were invited to assess the post-earthquake rehabilitation and reconstruction work in Meje, Haiti. This trip gave us an opportunity to present the design solutions crafted in the Spring 2012 Design Studio class. Among other items this technical/educational trip involved a student presenting comprehensive design solutions.

As an extension of the flexible syllabi approach, the current event becomes the chance to present the design solutions to the actual stake holder -- a Haitian community in this case. This trip also provides the opportunity to extend the learning experience through offering technical advice to the stake holders. Another aspect is the student benefiting from presenting their solutions and interacting with the stakeholders. The stake holders in question are the local building contractors, developers and community leaders. There were no governmental involvements.

The second aspect of this approach is the interaction among/between the other students and faculty from other disciplines on the technical trip. The conversation promoted the interdisciplinary collaboration required to solve our modern-day problems of rehabilitation for rebuilding lives and communities. Here the disciplines involved were Architecture/Engineering, Nursing, Water Management/Environmental Sciences, and Language and Communication.

The surprising discovery by the health professionals is that their work will never be done if the environment issues were not addressed. We also discovered that the existing construction tradition had not changed even after such a devastating calamity.

Introduction

Located in Northwest DC, the University of the District of Columbia is the only urban land grant institution of higher education. UDC pursues a broad mission in education, research and community service. Even more poignant is the mission of providing an opportunity for the disadvantaged alongside of every other aspiring academically inclined person. This has called on the system as a whole to be flexible and innovative in its educational delivery methods.

The main influences for the architectural program are set by two organizations: the National Architectural Accrediting Board (NAAB) and the Accreditation Board of Engineering Technology (ABET) and Technology Accreditation Commission (TAC)[2]. The architecture

[1] The Role of Current Events and Flexible Course Syllabi: A Case Study

[2] NAAB and TAC/ABET provide specific criteria for measuring and gauging the effectiveness pedagogy in and architectural educational setting.

degree programs have existed at UDC since the 1968 inception of Washington Technical Institute. It has since expanded from a two-year program to include a Bachelor of Science in Architecture (BScA) degree program and a graduate degree program offering a Master of Architecture (M'Arch) program.

The program has many successful graduates including successful lincencures in Architecture. This success rate is in no small part the result of a flexible syllabi and service learning approach that we have been using.

Importance of Flexible Course Syllabi and Service Learning (SL)

The importance of flexible course syllabi is proven by offering the students an opportunity to apply classroom learning to support positive change in the community. The application of classroom learning that will help advance the welfare of a community constitutes service learning.

The flexible syllabi approach provides a basis for students to begin the learning process directed to community assistance. Students' curiosity and interest is immediately peaked when a studio project shows relevance to real world problems.

Historically senior civil engineering students' design projects begin with architectural design drawings, specifications and concepts that form the basis for engineering solutions. Senior architecture students are also expected to synthesize their Architecture Studio VI project to demonstrate facility with principles of sound structure integrity accumulated over four successive structures courses.

As a further illustration of the idea of flexibility, we will also discuss the events of the Meje technical trip.

Added Benefit

The authors have always maintained that "all knowledge is connected." The additional benefit of the insertion of service learning events is that it reinforces the concept. In participating in a service learning exercise the students experience the real world relevance of their studio learning. In addition the students are able to interact with fellow students of other disciplines and thereby formulate in a collaborative fashion solution to real world problems. The confidence of all students is now enhanced through the interactions. In fact the interactions promote the discovery of additional solution to a given problem. This is so because the students gain a fuller comprehension of ideas and concepts as seen by other disciplines. The learning is bidirectional and leads to more practical and pragmatic solutions to everyday environmental problems.

The health professionals and students saw their work in light of built environment problems that was being discussed by the architecture/engineer and water teams.

Interface of Architecture/ Engineer (A/E) and Water Management (WM) Teams

The observations and interpretations of the nature of the problems observed in the field were vigorously discussed by both professionals as they made observations, gathered data on structural integrity and water quality.

The students were informed in the field that their findings would have to be summarized and presented to the community stake holders. The faculty introduced the studio problem statement and that the students will present their solutions and findings.

The students were forced to compare their problem statement with the reality on the ground. They were asked to consider how the seven area of design consideration related to the actual conditions in the field:

1. Identification of the issues and problems
2. Establishment of the parameters
3. Visual Inspection of the field problems
4. General earthquake design principles
5. Feasibility considerations (Cost and technical)
6. Constructability
7. Synthesis

The architecture students and faculty learned about geology of the area and how these phenomena impacted the built environment solutions. For this community the programing of various human activities was essential with respect to the source of potable water.

Since the earthquake had disturbed the aquifer in a natural lime system the black waters from the residential septic systems and pit latrines has contaminated the well water. This poses a serious health hazard. The solution of using rainwater collected on roof did seem to alleviate the problem of coliform (fecal) contamination. So the problem of the source of contamination of the rain water was a challenging exercise to determine how that contamination happened. Of course these discussion and observation are being made in the presence of health professional that know what the result of coliform contamination is but are unfamiliar with how the configuration of the built environment is connected.

Design of Flexible Course Syllabi

In general, ABET and NAAB requirements are selected as crucial criteria to be pursued for a given studio or course. However, the criteria may remain interchangeable (flexible) to the extent that a current event may arise that provides an opportunity not to be missed for satisfying a learning objective.

As a result, when an event of some significance arises it is scanned for relevance and applicability to the course or design studio. The considerations are:

- Reinforcing the NAAB/ABET criteria
- Learning benefits for the students
- Potential for thinking outside of the box

Typically the course syllabi are prepared to include the NAAB criteria, learning objectives and finally the encouragement to think outside the box on any given problem[3].

Learning Objectives

NAAB and ABET require knowledge and skills in several areas. NAAB in particular has a list of 34 criteria from which to choose. Our view is that these requirements can be mixed and matched to respond to the immediacy of a current event. Most importantly, we consider the following categories:

1. Oral and writing technical communication
2. Critical thinking

[3] See attached syllabi and problem statements

3. Research skills

There are several other criteria that can be considered as well in the preparation of FCS for our studio classes.

Learning outcomes include, for example:

1. Ability to manipulate contours
2. Understanding of the impact of earthquake on a building configuration
3. Structure and construction techniques
4. Skills in pursuing research

The insertion of the current event problem[4] into the semester's list of problems provides and enhancement and awareness of the importance of specific knowledge required for solving this real problem.

Applications

The Haiti experience

Coincidentally at the beginning of the spring semester 2010 an earthquake struck Haiti with devastating impacts. Among these impacts is the loss of life. The impact, however, that rises to the top for the architect and engineer is the inadequacy of the built environment. Collateral to that is the resulting social and economic impact accruing because of the impact of the destroyed built environment.

The students' initial impression was of alarm and amazement that a city and build environment can be so thoroughly destroyed. In our usual classroom tradition we spend 5 to 10 minutes of at least one or two classes per week discussing a current event. Usually the discussion centers on an issue that may or may not seem to bear some relationship to architecture. These discussions may be of a technical nature as well as a political or economics. The reasoning is since all knowledge is connected that a discussion about any current event and its implication bears some relationship to architecture and the built environment.

The discussion about Haiti centered on the fact that a 7.0 quake hit the impoverished nation. The Haitian government reported that an estimated 230,000 people had died, 300,000 had been injured. The discussion lasted for more than an hour because the students were beginning to think like an architect should in terms of exploring what happened; how to rebuild the devastated environment and heal the injured people. The fundamental question was what can we do as designers to enable the rebuild and bring life back to normalcy?

The questions for the faculty are what are the learning opportunities inherent in this event? How can the syllabi incorporate the learning opportunities that this event enables? To answer these questions the perception of the syllabi must be that it is expansive enough to flex in response to the opportunity urgently and currently presented.

The first week of studio is a time to review the learning objectives and skill sets to be exercised. This time allows for change in the problem statement(s) to accommodate the current event.

[4] The problem statement appears in the appendices

Conclusion

Overall, this experience produced surprisingly excellent results both enriching the students' knowledge through service learning. The 'Haiti' experience the students to explore a topic of earthquake design that is usually not covered until later in their senior year. The students were able to appreciate the importance of building codes and witness how they can improve and ensured safety.

The authors ascribe to the concept and perception of the syllabi as being flexible enough to accommodate current events at the time they occur. They also provide field experience and service learning opportunities that enhance learning and retention through field experience.

References

2010 Procedures NAAB Releases *2010 Procedures for Accreditation*
http://www.naab.org/accreditation/2010_Procedures.aspx

2009 Criteria for Accrediting Engineering Technology Programs
http://www.abet.org/Linked%20Documents-UPDATE/Criteria%20and%20PP/T001%2009-10%20TAC%20Criteria%208-27-09.pdf

Contemporary Issues – Using Technology for Discussion, Debate, and Problem Solving in the Middle School Curriculum PBS TeacherLine Course Syllabus
http://www.pbs.org/teacherline/courses/syllabi/05_tech190_30_syllabus.pdf

Ralph Belton, RA, CSI, NOMA
Chair of the Division of Urban Architecture and Community Planning at UDC. Currently, Director of the Construction Specification Institute Metro DC chapter. Has over 30 years of teaching and architecture practice at Howard University and UDC. Extensive educational travel in Europe and Japan with students.
Email: rbelton@udc.edu

Ahmet Zeytinci, Ph.D., P.E., Fellow NSPE
Currently a faculty member in the Department of Civil Engineering at UDC. Former President (twice) of the District of Columbia Society of Professional Engineers and Engineer of the year 2013 by the DC Council of Architects and Engineers, a professional organization representing more than thirty organizations like ASME, IEEE, ASCE, etc. Has over 30 years of teaching and engineering practice in Europe, Japan and the US.
Email: azeytinci@udc.edu

APPENDIX

ABET-TAC: Excerpt of 2009 Criteria for Accrediting Engineering Technology Programs
NAAB CRITERIA: 2010 Procedures NAAB *Procedures for Accreditation* -- Excerpt

Design Studio Course Syllabi, Problem Statement and Sample Student Solution

History and Theory of Architecture Course Syllabi, Special Assignment and Student Essay

ABET-TAC:

2009 Criteria for Accrediting Engineering Technology Programs

PROGRAM CRITERIA
FOR
ARCHITECTURAL ENGINEERING TECHNOLOGY
AND SIMILARLY NAMED PROGRAMS
Lead Society: American Society of Civil Engineers

Applicability

These program criteria apply to engineering technology programs that include architectural and similar modifiers in their title.

Objective

An accreditable program in Architectural Engineering Technology will prepare graduates with the technical and managerial skills necessary to enter careers in the planning, design, construction, operation or maintenance of the built environment. Graduates of associate degree programs typically have strengths in their knowledge of the building, testing, operation, and maintenance of building systems with the ability to produce and utilize basic construction documents and perform basic analysis and design of system components, whereas baccalaureate degree graduates are prepared to analyze and design systems, specify project methods and materials, perform cost estimates and analyses, and manage technical activities in support of architectural projects.

Outcomes

Associate degree programs must demonstrate that graduates are capable of:

a. employing concepts of architectural theory and design in a design environment;
b. utilizing modern instruments, methods and techniques to produce A/E documents and presentations;
c. conducting standardized field and laboratory testing on construction materials;
d. utilizing modern instruments and research techniques for site development and building layout;
e. determining forces and stresses in elementary structural systems;
f. estimating material quantities for technical projects;
g. calculating basic loads and demands in mechanical and electrical systems;
h. utilizing codes, contracts and specifications in design, construction and inspection activities; and
i. employing productivity software to solve technical problems;

Baccalaureate degree programs must demonstrate that graduates, in addition to the competencies above, are capable of:

a. creating, utilizing and presenting design, construction, and operations documents;
b. performing economic analyses and cost estimates related to design, construction, and maintenance of building systems in the architectural engineering technical specialties;
c. selecting appropriate materials and practices for building construction;
d. applying principles of construction law and ethics in architectural practice;
e. applying basic technical design concepts to the solution of architectural problems involving architectural history, theory and design; codes, contracts and specifications; electrical and mechanical systems, environmental control systems, plumbing and fire protection; site development; structures, material behavior, foundations; construction administration, planning and scheduling; and

f. performing standard analysis and design in at least one recognized technical specialty within architectural engineering technology that is appropriate to the goals of the program.

NAAB CRITERIA:

2010 Procedures NAAB Releases *2010 Procedures for Accreditation* -- Excerpt

For the purpose of accreditation, graduating students must demonstrate *understanding* or *ability* in the following areas:

1. Speaking and Writing Skills

Ability to read, write, listen, and speak effectively

2. Critical Thinking Skills

Ability to raise clear and precise questions, use abstract ideas to interpret information, consider diverse points of view, reach well-reasoned conclusions, and test them against relevant criteria and standards

3. Graphics Skills

Ability to use appropriate representational media, including freehand drawing and computer technology, to convey essential formal elements at each stage of the programming and design process

4. Research Skills

Ability to gather, assess, record, and apply relevant information in architectural coursework.

5. Formal Ordering Systems

Understanding of the fundamentals of visual perception and the principles and systems of order that inform two- and three-dimensional design, architectural composition, and urban design

6. Fundamental Design Skills

Ability to use basic architectural principles in the design of buildings, interior spaces, and sites

7. Collaborative Skills

Ability to recognize the varied talent found in interdisciplinary design project teams in professional practice and work in collaboration with other students as members of a design team

8. Western Traditions

Understanding of the Western architectural canons and traditions in architecture, landscape and urban design, as well as the climatic, technological, socioeconomic, and other cultural factors that have shaped and sustained them

9. Non-Western Traditions

Understanding of parallel and divergent canons and traditions of architecture and urban design in the non-Western world

10. National and Regional Traditions

Understanding of national traditions and the local regional heritage in architecture, landscape design and urban design, including the vernacular tradition

11. Use of Precedents

Ability to incorporate relevant precedents into architecture and urban design Projects

12. Human Behavior

Understanding of the theories and methods of inquiry that seek to clarify the relationship between human behavior and the physical environment

13. Human Diversity

Understanding of the diverse needs, values, behavioral norms, physical ability, and social and spatial patterns that characterize different cultures and individuals and the implication of this diversity for the societal roles and responsibilities of architects

14. Accessibility

Ability to design both site and building to accommodate individuals with varying physical abilities

15. Sustainable Design

Understanding of the principles of sustainability in making architecture and urban design decisions that conserve natural and built resources, including culturally important buildings and sites, and in the creation of healthful buildings and communities

16. Program Preparation

Ability to prepare a comprehensive program for an architectural project, including assessment of client and user needs, a critical review of appropriate precedents, an inventory of space and equipment requirements, an analysis of site conditions, a review

of the relevant laws and standards and assessment of their implication for the project, and a definition of site selection and design assessment criteria

17. Site Conditions

Ability to respond to natural and built site characteristics in the development of a program and the design of a project

18. Structural Systems

Understanding of principles of structural behavior in withstanding gravity and lateral forces and the evolution, range, and appropriate application of contemporary structural systems

19. Environmental Systems

Understanding of the basic principles and appropriate application and performance of environmental systems, including acoustical, lighting, and climate modification systems, and energy use, integrated with the building envelope

20. Life Safety

Understanding of the basic principles of life-safety systems with an emphasis on egress

21. Building Envelope Systems

Understanding of the basic principles and appropriate application and performance of building envelope materials and assemblies

22. Building Service Systems

Understanding of the basic principles and appropriate application and performance of plumbing, electrical, vertical transportation, communication, security, and fire protection systems

23. Building Systems Integration

Ability to assess, select, and conceptually integrate structural systems, building envelope systems, environmental systems, life-safety systems, and building service systems into building design

24. Building Materials and Assemblies

Understanding of the basic principles and appropriate application and performance of construction materials, products, components, and assemblies, including their environmental impact and reuse

25. Construction Cost Control

Understanding of the fundamentals of building cost, life-cycle cost, and construction estimating

26. Technical Documentation

Ability to make technically precise drawings and write outline specifications for a proposed design

27. Client Role in Architecture

Understanding of the responsibility of the architect to elicit, understand, and resolve the needs of the client, owner, and user

28. Comprehensive Design

Ability to produce a comprehensive architectural project based on a building program and site that includes development of programmed spaces demonstrating an understanding of structural and environmental systems, building envelope systems, life-safety provisions, wall sections and building assemblies and the principles of sustainability

29. Architect's Administrative Roles

Understanding of obtaining commissions and negotiating contracts, managing personnel and selecting consultants, recommending project delivery methods, and forms of service contracts

30. Architectural Practice

Understanding of the basic principles and legal aspects of practice organization, financial management, business planning, time and project management, risk mitigation, and mediation and arbitration as well as an understanding of trends that affect practice, such as globalization, outsourcing, project delivery, expanding practice settings, diversity, and others

31. Professional Development

Understanding of the role of internship in obtaining licensure and registration and the mutual rights and responsibilities of interns and employers

32. Leadership

Understanding of the need for architects to provide leadership in the building design and construction process and on issues of growth, development, and aesthetics in their communities

33. Legal Responsibilities

Understanding of the architect's responsibility as determined by registration law, building codes and regulations, professional service contracts, zoning and subdivision ordinances, environmental regulation, historic preservation laws, and accessibility laws

34. Ethics and Professional Judgment

Understanding of the ethical issues involved in the formation of professional judgment in architectural design and practice.

DESIGN STUDIO COURSE SYLLABI

UNIVERSITY OF THE DISTRICT OF COLUMBIA
COLLEGE OF PROFESSIONAL STUDIES DEPARTMENT OF
ARCHITECTURE, DESIGN AND PLANNING ARCHITECTURE PROGRAM

COURSE SYLLABUS

PROFESSOR:	**Ralph Belton, RA, CSI**
CATALOGUE DESCRIPTION:	**3505-301 <u>PROFESSIONAL STUDIO LAB V</u> (5 CREDIT HOURS)** A series of small scale problems in design will be set to assure that the student reaches a basic level of competence in addressing the problems associated with architecture. Also, the studio investigates the design relationship between the man-made and the natural environment in a study of a large-scale site planning problem. Lecture 3 Hours, Laboratory 6 hours.
PREREQUISITES:	**3505-202 AND ASSOCIATE IN ARCHITECTURAL TECHNOLOGY OR EQUIVALENT**
COURSE DESCRIPTION:	As an introduction to the semester, the first few classes will be used for an overview by the instructor of various approaches to architectural design and of recent developments in architecture. A series of projects on a relatively small scale will then be assigned in order to develop basic architectural design skills.
NAAB CRITERIA:	The following is a list of **NAAB** performance criteria to which ARCH 301 has been assigned some responsibility: **1, 2, 3, 4, 9, 16, 22, and 24.**
GOALS:	The first year of the Professional Studio laboratory sequence (the third year studio in the five year curriculum) is the transitional "bridge" year between the culmination of preparation as an architectural technician and the commencement of preparation as an architect. Students are expected to expand upon the previously acquired base on technical skills to encompass new concerns; the emphasis at this level will be on program analysis, architectural design, and presentation (both graphic and verbal).

INSTRUCTIONAL STRATEGY:

I. The fall semester is approximately 15 weeks long. Each student is responsible for setting up a work area in the studio and is expected to spend the full class period in the studio, as well as additional time outside of class hours as required to complete the assignments. (It is suggested that each student develop a work area at his or her personal residence as well). Time management and mandatory use of studio will be required to receive a passing grade.

II. A typical week entails three meetings for a total of 9 contact hours. this time shall be utilized for lectures by the instructor or guest speakers, student presentations of work to the entire class, and "one-on-one" desktop critiques of student work by the instructors and/or guests.

III. Expect two problems for semester. The first project will be a short two to three intense charette type approach. Depending on the scope of the particular project, there may be an informal Preliminary Jury where progress-to-date is critiqued; a guest juror or jurors will be present, but grades will not be given. Each project will conclude with a Final Jury, where Guest juror or jurors will be presented, formally evaluated and graded. Completeness and clarity of presentations at the final jury is considered extremely important.

OUTLINE OF INSTRUCTION

I. INTRODUCTION AND OVERVIEW
II. SEMINAR - TRADITIONAL VS. MODERN
III. SEMINAR - EARLY MODERN
IV. SEMINAR - LATE MODERN
V. SEMINAR - DIAGRAMMING
VI. DIAGRAMMING -ASSIGNMENT I

A. The ability to both analyze and conceptualize a composition through diagramming is an important skill for students of architecture to develop. In developing or analyzing a design, diagramming serves the important function of clarifying the essence of the design concept.

B. The project will involve an investigation into the organizational ideas present in a variety of architect designed houses. The object of this exercise is two-fold: (1) to familiarize students with residential work by a variety of influential architects, and (2) to develop an appreciation for the importance of strong conceptual thinking in the development of a successful project. Each student will be responsible for reproducing floor plans and developing a d series of diagrams for two houses (each one by two different architects).

V. PROGRAM AND STRUCTURE DIAGRAMS
VI. CIRCULATION AND ENTRANCE DIAGRAMS

VII. ENCLOSURE DIAGRAM
VIII. PRESENTATION REVIEW
IX. WORKING SESSION
X. FINAL JURY (ASSIGNMENT #1)
XI. INTRODUCTION - ASSIGNMENT #2
XII. AN OFFICE BUILDING ASSIGNMENT #2

A. The second project is the design of an office building in an urban setting

B. The diagramming techniques developed in Assignment #1 will be applied to development of the design of this project. Site planning, building massing, elevational expression, scale, material, and color will among the issues addressed. Students will be expected to examine a variety of precedents for guidance while designing the project, but will be encouraged to express their own creativity through development of a personal design approach.

XIII. SITE ANALYSIS/BUBBLE DIAGRAMS
XIV. FLOOR PLANS
XV. ELEVATIONS AND SECTIONS
XVI. PIN-UP - ASSIGNMENT #2
XVII. PRELIMINARY JURY - ASSIGNMENT #2
XVIII. PROGRESS EVALUATION
XVI. FLOOR PLAN REFINEMENT
XVII. SECTION/MASSING REFINEMENT
XVIII. ELEVATION REFINEMENT
XIX. PRESENTATION REVIEW
XX. WORKING SESSION
XXI. FINALS JURY #2
XXII. EVALUATION - ASSIGNMENT #3
XXIII. ASSIGNMENT THREE – PRESENTATION

EVALUATION AND GRADING

ATTENDANCE IN STUDIO	**5%**
ASSIGNMENT I	**15%**
ASSIGNMENT II	**15%**
ASSIGNMENT III	**15%**
ORAL PRESENTATION	**50%**

ATTENDANCE: MANDATORY

ATTENDANCE POLICY:

Attendance is expected at all sessions. The instructor should be notified as soon as an absence is expected or as soon after the absence as possible. Missed exams are made up at the discretion of the instructor. Late student work is accepted only when approved prior to the due date.

Schedule of exams and quizzes are on the schedule for the course (distributed separately)

UDC is an Equal Opportunity Institution, and supports Affirmative Action principles.
Any student with a documented disability (physical or cognitive) who requires academic accommodations should contact the Disability Resource Center at (202) 274-6000 (voice) or (202) 274-6152 (TTY for users who are deaf or hard of hearing) as soon as possible to request an official letter outlining authorized accommodations.

Students with Disabilities are referred to p.19 of the **Student Handbook** for university services available to them.

The Policies on Academic Honesty are located begin on p. 68 of the **Student Handbook.**
All material is subject to change as circumstances warrant.

Problem Statement

UNIVERSITY OF THE DISTRICT OF COLUMBIA
ARHITECTURE PROGRAM

DESIGN STUDIO 6 (3505 302 01) **SPRING 2010**
PROF. R. BELTON, R.A. CSI **202-274-5243; 202-744-4297**
rbelton@udc.edu; kikonaria@aol.com
PROF. A ZEYTINCI, PE Resource Faculty azetinci@udc.edu

PROBLEM STATEMENT

PROBLEM 1: Prototype House Design

On 12 January 2010 Haiti suffered a devastating earthquake (7.3 on the Richter ***scale***). The United Nations and many emergency response organizations arrived in the country to assist with search and rescue and medical operations. The operations after 12 days are now moving from rescue to a cleanup and rebuilding mode. The United Nation task force has called on you the Architect to design temporary housing units that can be quickly assembled for the housing of families. All components shall be pre-fabricate and easily assembled in the field by simple labor. The unit shall also be modular so that the building can be expanded over a longer duration and become a more permanent dwelling.

Design Parameters:
Each unit shall be fabricated to accommodate an average family of six – two adults and four children.

- Each unit shall have sleeping accommodations
- Group assembly space to accommodate living and dining functions
- Bathing and hygiene facilities.
- Each unit shall be configured to reflect its expansion capabilities.

Assumptions:
- There is no central sewer and potable water system available.
- Potable water will be delivered by truck in situations were there is no public water delivery system.
- Toileting facilities will be environmentally friendly systems -- Dry pit, Ecolet units or Clivus Multrum system.

Climate:

- Haiti has a tropical climate.
- Weather pattern: Hurricane belt.
- Geographic zone: adjacent to tectonic plate boundary between the north Atlantic plate and the Caribbean plate.
- Terrain: the ground features include both relatively flat or undulating areas and hilly terrain.

Structural concerns:

Because Haiti is located in the boundary region separating the Caribbean plate and the North American plate the design shall be able to withstand earthquake forces. The calculation used for earthquake design will also make the structure hurricane ready in general.

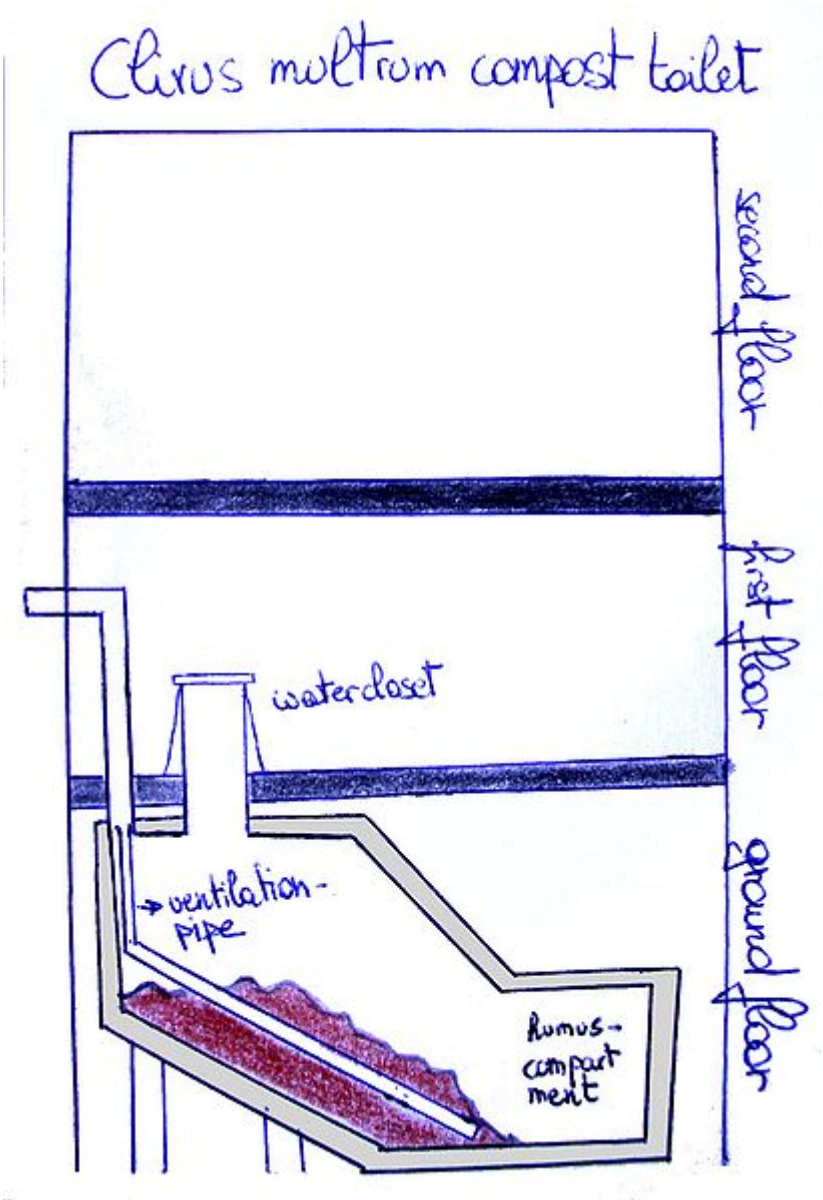
Prof. Zeytinci is the resource consultant on earth quake and Structural concerns.

Illustrations:

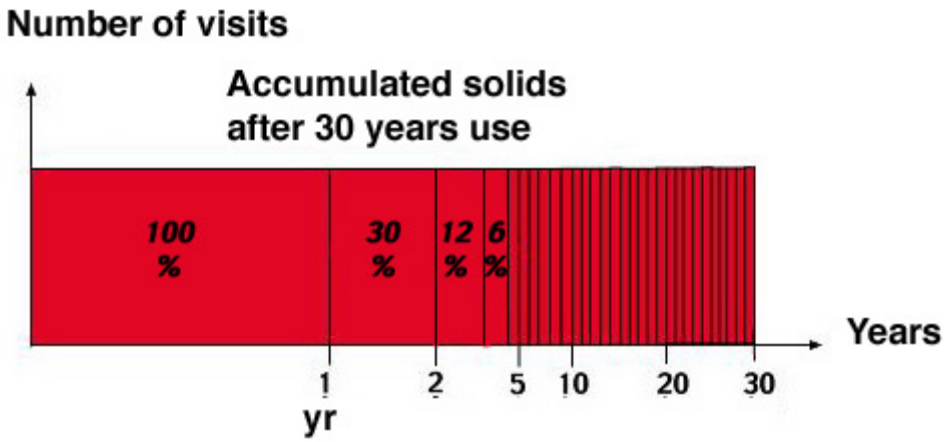
Site Plan 1/8" = 1' – 0"
Floor plans ¼" = 1' – 0"
Sections ¼" = 1' – 0" (Flat land location and location on a slope)
Perspective

Due: 1 February 2010

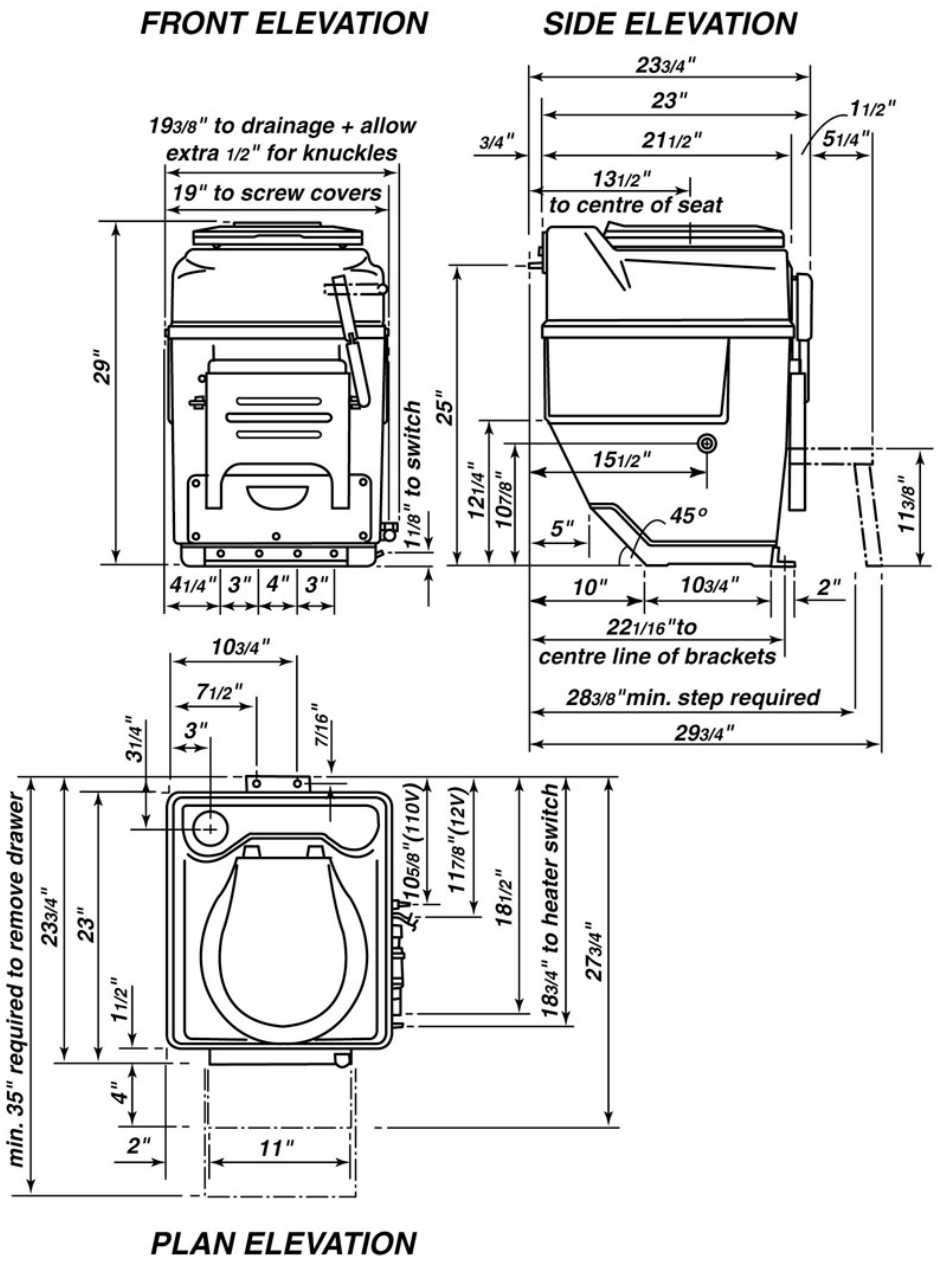
References:
http://en.wikipedia.org/wiki/Clivus_multrum
http://www.clivusmultrum.com.au/cost.html
http://www.infolink.com.au/c/Clivus-Multrum-Australia
http://www.infolink.com.au/c/Clivus-Multrum-Australia/Working-of-Clivus-Multrum-toilet-systems-from-Clivus-Multrum-Australia-n740937
http://en.wikipedia.org/wiki/Richter_magnitude_scale
http://sun-mar.net/ecoletmobile.htm



http://en.wikipedia.org/wiki/File:Composting_toilet_ClivusMultrum.jpg



http://en.wikipedia.org/wiki/File:30yraccumUS.jpg



NOTE: *Footrest on ECOLET 110 is fixed position type not retractible as indicated*

http://sun-mar.net/images/AllEcoletRVmeas.jpg

UNIVERSITY OF THE DISTRICT OF COLUMBIA
ARHITECTURE PROGRAM

DESIGN STUDIO 6 (3505 302 01) **SPRING 2010**
PROF. R. BELTON, R.A. CSI **202-274-5243; 202-744-4297**
rbelton@udc.edu; kikonaria@aol.com

3 February 2010

ASSIGNMENT 1

Develop analytical plan, section, elevation and pictorial diagrams to explain your solution for the design of the prototype the siting and site programming of your design solution.

ASSIGNMENT 2

Develop and one or two page statement that explains how your design solution meets the criteria outlined in the program.

Explain:

- How the modularization of the building is accomplished.
- How future expansion will be accomplished
- How the design meets the structural requirement of earthquake and hurricane construction
- Explain how the connection detail work and are simplified for simple labor construction that can be found in Haiti

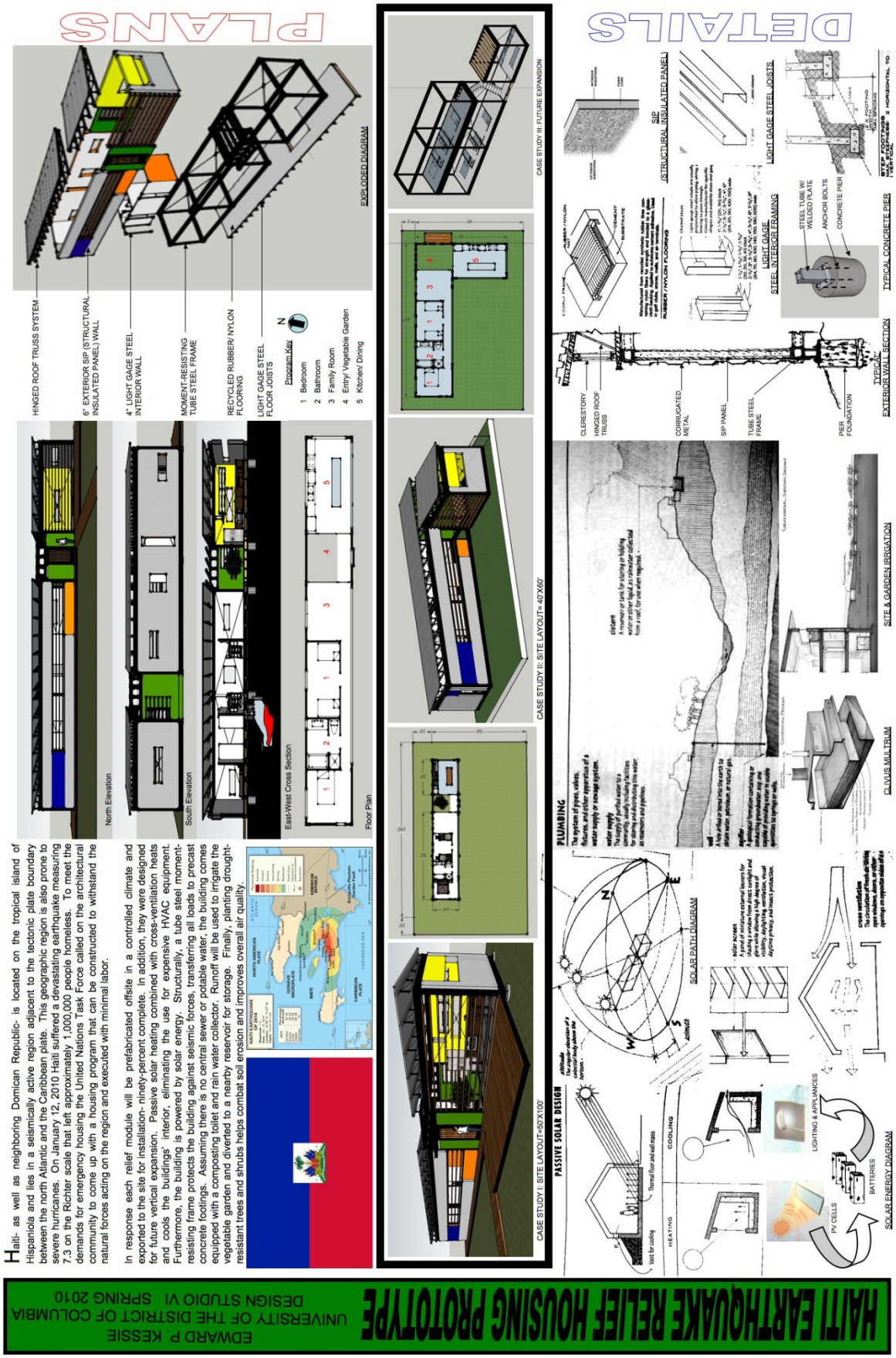
ASSIGNMENT 3

- Develop connection detail drawings and diagrams to explain the typical joint connections.
- Use an exploded diagram to explain the assembly process.
- Do a section explaining foundation systems for:
    - Sloping sites.
    - Flat sites.
    - Explain the relationship of the Clivus Multrum to the bathroom

ASSIGMENT 4

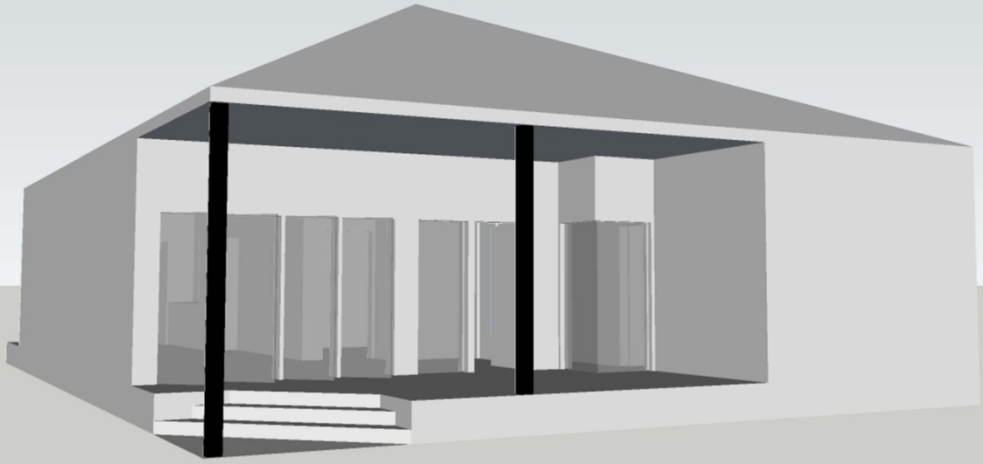
- The prototype site shall be 50ft x 100ft or 40ft x 60ft a closer in more densely populated areas.
- Show how the site will be utilized to place the house to accommodate expansion and programme to growing fresh vegetables and fruits.

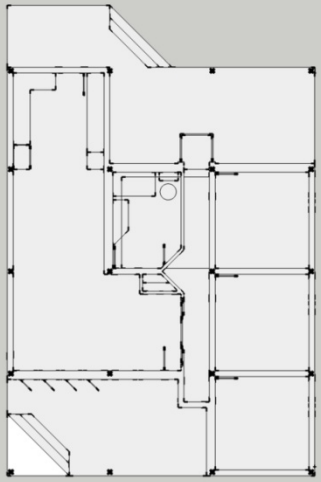
Sample Student Solution

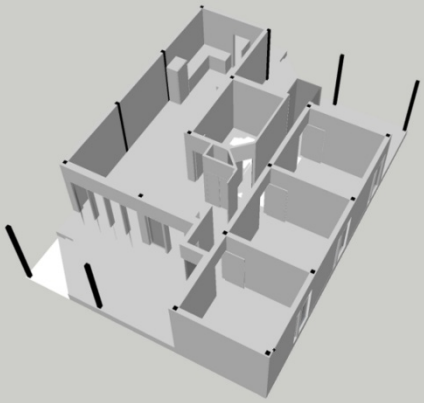


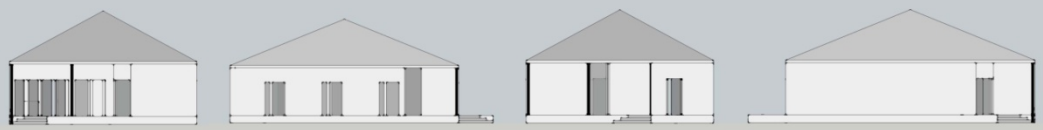
MODULAR HOME DESIGN

FOR HAITI DISASTER RELIEF









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PROFESSIONAL DESIGN STUDIO VI | 3505 302 01 | PROFESSOR R. BELTON, RA, CSI
NATASHA U.Y. | MAY 2010
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