New York City College of Technology – City University of New York
300 Jay Street, Brooklyn, New York 11201

Department of Architectural Technology

ARCH 1121 **HISTORY OF ARCHITECTURAL TECHNOLOGY**
2 Classroom hours, 2 credits
Friday 12:00pm – 1:40pm

Instructor:	W. Valdez	email: **Wavearchitecture@gmail.com**
Office Hours:	Tuesday	9:00 am to 12:00 pm Learning Center 2nd Floor
	Tuesday	1:00 pm to 02:00 pm

Course Description: Architectural Technology from prehistoric times to the present, stressing the development of structural systems and the exploration of materials. This course will also explore the interaction of building design and historic socio-economic determinants. This is a writing intensive course.

Prerequisites: CUNY certification in Reading and Writing.

Required Text: "Great Architecture of the World" by John Julius Norwich – Da Capo Press

Attendance Policy: No more than 10% absences are permitted during the semester. For the purposes of record, two latenesses are considered as one absence. Exceeding this limit will expose the student to failing at the discretion of the instructor.

Grading: There will be a progression of several quizzes throughout the semester and a final project, and or a writing assignment that will be assigned during the mid-term period. Notebooks will be maintained and graded at the conclusion of the semester.

- Regular in class problems or quizzes or projects. 30%
- Writing assignments 20%
- A mid-term examination 15%
- A final exam or project 20%
- Notebooks 5%
- Class participation. 10%
- Vocabulary list +

Academic Integrity: Students and all others who work with information, ideas, texts, images, music, inventions and other intellectual property owe their audience and sources accuracy and honesty in using, crediting and citation of sources. As a community of intellectual and professional workers, the college recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and is punishable by

penalties, including failing grades, suspension and expulsion.

Learning Objectives: Upon the successful completion of this course, the students shall be able to:

1. Explain the progression of key elements of architectural technology from pre-history to contemporary times.
2. Define the major differences between the technology of Egypt and Mesopotamia, Crete, Greece and Rome, early and late European Architecture of the Middle Ages, the Renaissance, 18th and 19th Century design and the modern movement.
3. Define Eclectic Architecture.
4. Compare and explain empirical knowledge and calculated structural design.
5. Will be able to begin to explain and analyze the impact of the past on architecture of the city, and the neighborhood.

Assessment:

Students will be given exams and writing assignments that test their ability to:

1. Explain the progression of key elements of architectural technology from pre-history to contemporary times.
2. Describe the major differences between the technology of Egypt and Mesopotamia, Crete, Greece and Rome, early and late European Architecture of the Middle Ages, the Renaissance, 18th and 19th Century design and the modern movement.
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Course Outline:

Week 1

Define “time line” and describe the beginnings of shelter from the Ice Ages to the beginning of recorded time, e.g. mud and reed huts, adobe and clay brick, tents, igloos, lean-tos and teepees. Define “Ecology” and describe the utilization of building materials in various Eco/systems. Using slides and texts show examples of various building types.

Week 2

Discuss Post and Lintel Construction (trabeation) and illustrate with the example of the Stonehenge and other Megalithic structures. Illustrate the use of masonry coursing, battered walls and corbelled construction using examples from the Western Hemisphere. Discuss the impact of religion on architecture and illustrate with examples from the Mayan and Aztec culture. Return to the Middle East to explain the parallel but earlier development of the Nile, Tigris-Euphrates cultures.

Week 3

Egyptian and Mesopotamian Architecture. Discuss the origin of the pyramid and contrast it to the Ziggurat, explain the mastaba and the stepped pyramid. Discuss the available technology and materials of both regions and relate this data to the socio-economic factors of those periods. Explain “empirical knowledge” as it applies to building construction as a process of trial and error.

Week 4
Stepping Stone Architecture. Discuss Crete and Mycenae with respect to the development of the tapered column and extended capital. Contrast this to Egyptian trabeation systems and explain the impact of commerce and trade in the ancient world of the Second Millennium. Introduce Classical Greece in terms of social, scientific, philosophical, planning and architectural refinements.

Week 5
Greek Architecture. Analysis of style, temple construction, technological innovation and social significance of colonization and town planning. Discuss the Acropolis and Agora as two concepts of space planning and social organization. Explain Hellenization and relate to the significance of Alexander the Great. Discuss Aesthetics and the application of this philosophy to Greek Architectural Design.

Week 6
Roman Architecture. Review stone construction and stress its problems with tensile stress as an introduction to the development of the Roman Arch. Using this basic form, explain the derivation of the "Tunnel" or barrel vault, the groined vault and the dome. Discuss the development of concrete and its impact on Roman building technology.
Define and explain Eclecticism as it applies to Roman architectural developments and relate this to the adoption of Classical Greek Styles and prototypes.

Week 7
Early Christian Architecture. Explain the significance of the Decline and Fall of the Western Roman Empire in terms of diminishing resources and expert labor pool. Discuss ascendancy of Byzantine Architecture and technological innovations - namely the development of the Dome on squinches and the Dome on pendentives.
Week 8
Romanesque Architecture. The Christian Church in a time of political turmoil and illiteracy unifies the Architecture of England, France, Italy, Spain and Germany. Discussion of the cruciform plan of the Christian churches, elements of the church, and ribbed vaulting,. Comparison of variations during the Romanesque period.

Week 9
Gothic Architecture. Influence of the crusades, Monasticism and Feudalism on the development of Pre-Renaissance Europe. Discuss the pointed arch and the impact of liturgical planning (cross shaped floor plans - nave and transept) on the architecture of churches. Define flying buttress, quad and sex partite vaulting. Discuss stained glass and its implementation in the skeleton stone framing of the Gothic church.

Week 10
Islam. Discussion of the faith defining the architecture. Explore the development of the Mosque, throughout time and from India to Spain.

Week 11
The Renaissance and the spread of Neo-Classical architecture from Italy to Europe and the "new world'. Explain and illustrate the ribbed dome, drum on pendentive and lantern as defining innovative elements of the Renaissance. Illustrate the impact of the Italian

Renaissance, using the Capitol at Rome by Michaelanglelo, trace this common thread of design through European and Colonial Architecture, e.g. the Banqueting House, London, the Brickmarket, Newport - Rhode Island.

Week 12
Baroque Architecture. Exploration of the beginning of Baroque period (Bernini and Borromini) and how it migrated throughout Europe. Defining the differences and similarities between Baroque and Rococo Architecture.

Week 13
The Early 19th Century. The advent of the Industrial Revolution and its impact on Architectural Technology. The development of structural iron, and steel accompanied by new forms of energy and power. Review Eclecticism (Neo-romanesque, gothic and classical revival etc.) and introduce the origins of the reform movements of the 19th and 20th centuries. Engineering replaces empirical structural design.

Week 14
The Reform Movements of Architecture: Arts and Crafts, Chicago School, Art Nouveau, Werkbund and Destijl, Bauhaus.
Relate these movements to the advent of structural steel, modern plumbing and heating, vertical transportation, and the building industry. Discuss Morris and Ruskin, Sullivan and Adler, Burnham & Root.

Week 15
Final Exam