Architecture 509
Fall 2019
TuTh 8:30-10:00

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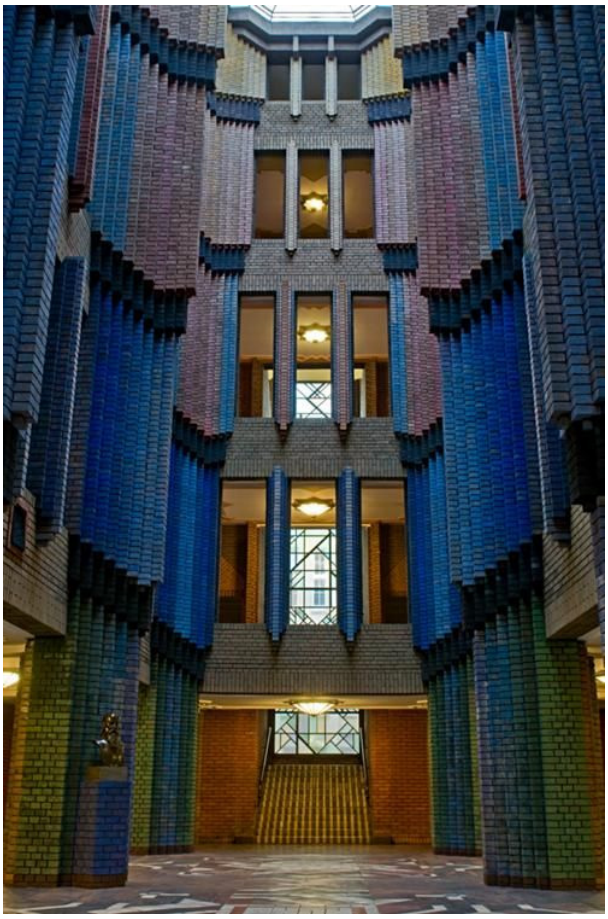
MASONRY STRUCTURES (3)



DESCRIPTION

This course provides an understanding of the behavior and strength of masonry structures. This includes both reinforced and unreinforced walls, columns and beams. Material properties of different masonry units (brick, block and tile) and construction details are examined. Lateral loads and shear walls are included.
Pre-requisite: ARCH 324 or equivalent

OBJECTIVES

Students are introduced to the basic masonry materials of clay brick, concrete block, mortar and grout as well as reinforcing. Basic analysis and design procedures based on applicable codes of practice are explored. This includes both reinforced and unreinforced walls, columns and beams as well as masonry vaulting. Use is made of the appropriate codes including the TMS 402, the NCMA TEK Notes and Manuals and the BIA Technical Notes.

ORGANIZATION

The course is lecture based, and the concepts and procedures are taught in this context with classroom and homework problems solved by the students. The course has a website, which is used for the posting of lecture material and for students to enter homework solutions.

EVALUATION

Evaluation is based upon one exam (midterm); a series of online problems (approximately one per week) spaced throughout the semester and a special project.

TOPICS COVERED

An overview of the topics covered is as follows:

1. Materials – bricks, blocks, mortar and grout
2. Construction Practices
3. Empirical Methods (unreinforced)
4. Analytical Methods (reinforced and unreinforced)
5. Lintels and beams
6. Shear wall diaphragms
7. Alternative units (AAC, glass)
8. Vaulting and Shells

PROBLEMS

Homework problems covering the primary aspects of the course are spaced about one per week throughout the semester. Solutions are entered interactively online. Late solutions to problems will be penalized -5% per day up to a maximum of -35%...

COURSE WEB SITE

Course notes will be maintained through a course web site. This will include homework submissions. Some material may also be posted on the Canvas site.