

## OUTCOMES BASED LEARNING MATRIX

**Course: METHODS AND MATERIALS OF CONSTRUCTION ARCH-107 Department: ARCHITECTURAL TECHNOLOGY**

**Course Description:** The fundamental aspects of building materials and systems are taught in this course. Student projects are required demonstrating knowledge of basic building construction systems. Field trips, labs and lectures, combined with student use of building product CD's, Sweet's Source and the Internet are used to retrieve data and technical information. 3 credits

<b>*COURSE OUTCOMES</b>	<b>OUTCOMES ACTIVITIES</b>	<b>ASSESSMENT TOOLS</b>
1. The student shall be able to interpret soil conditions and coordinate with subsurface support structures such as grade beams, piles, and special foundations to analyze sub surface conditions	<ul style="list-style-type: none"> <li>- Listen to a lecture on sub-surface exploration</li> <li>- Read assignment for quiz</li> <li>- Draw grade beam diagrams in lab</li> <li>-Sketch configurations of soils for comparison in lab report</li> </ul> <p>R,Q</p>	<ul style="list-style-type: none"> <li>- Professor evaluation of lab report</li> <li>- Quiz on foundations and wood, and soils</li> </ul> <p>R,W,CT,TS,</p>
2. The student shall be able to identify wood grain patterns, defects and methods of milling for desired appearance to evaluate the quality of different pieces of wood	<ul style="list-style-type: none"> <li>- Listen to a lecture with samples of tree cross sections</li> <li>- Read assignment</li> <li>- Provide diagram on lab report on quarter and plain sawn grain patterns</li> </ul> <p>R,TS,OC,W</p>	<ul style="list-style-type: none"> <li>- Professor evaluation of lab report</li> <li>- Quiz on milling and patterns</li> </ul> <p>R,W,CT,TS</p>
3. The student shall recognize the differences between Platform, Balloon, and Mill systems of wood construction to evaluate and determine the most appropriate system	<ul style="list-style-type: none"> <li>- Listen to lecture presented with use of a framing model and reading assignment from text on 3 wall framing systems</li> <li>- Sketch diagrams on Balloon and Platform framing on lab report</li> </ul> <p>R,TS,OC,W</p>	<ul style="list-style-type: none"> <li>- Professor evaluation of lab report</li> <li>- Student drawn diagrams of framing systems</li> <li>- Quiz on foundations and wood framing.</li> </ul> <p>R,W,CT,TS</p>
4. The student shall be able to assemble masonry units with modular dimensioning and include the installation of mortar, lateral reinforcing, wall ties, flashing, and lintels to incorporate a structural and	<ul style="list-style-type: none"> <li>- Listen to lecture presented with examples of masonry products</li> <li>- Read assignment</li> <li>- Provide a sketch of a masonry wall with components including lateral reinforcing,</li> </ul>	<p>Professor evaluation of lab report Student drawn diagrams of masonry assemblies Quiz on masonry for coursing and bonding</p> <p>R, W, CT, TS</p>

weathertight assembly	anchors, and mortar joint style. R, W, CT, TS	
5. The student shall be able to determine locations of tension, shear, compression, and moments in wood, concrete, precast concrete, and steel systems to analyze the behavior of materials	- Listen to lecture presented with examples of materials subjected to compression, tension and shear; and reading assignment - Generate lab diagrams with tension, compression and shear R, W, CT, OC, QS	Professor evaluation of lab report Student diagrams with examples of tension, compression, and shear for grade Quiz on concrete and wood for diagrams on forces R, W, CT, OC, QS, TS
6. The student shall describe the relationship of the ingredients and proportions of concrete mixes and how concrete and steel work together in a system to analyze and compare the various strengths of different mixes	- Listen to lecture with samples of a slump cone and cylinder and reading assignment. - Explain sample concrete cylinders on lab report with diagrams R, W, CT, TS, OC, QS, TS	- Professor evaluation of lab report on concrete mixes and testing reinforcing - Quiz on concrete R, W, CT, OC, QS, TS
7. The student shall be able to coordinate steel dowels, lateral ties, reinforcing, and stirrups in cast in place concrete so as to implement these components in an assembly of construction	- Listen to lecture with samples of masonry accessories and reading assignment - Sketch a masonry wall with different methods of bonding brick to concrete on lab report C, W, CT, TS, OC	- Professor evaluation of lab report on concrete with accessories for grading - Quiz on cast in place concrete. C, W, CT, TS, OC
8. The student shall be able to detail the assembly precast columns, beams, 'tees', plank, and wall components using anchors, pads, and typical industry techniques to create a structurally sound connection	- Listen to lecture on precast concrete with reference to precast concrete structures in this area and reading assignment - Sketch components of fastening of beams, columns, precast double and single 'T's on lab report R, W, CT, TS, OC,	- Professor evaluation of lab report - Detailed drawings of precast concrete - Quiz on precast concrete. R, W, CT, TS, OC,
9. The student shall be able to interpret structural components and systems including plans, designations, structural shapes, and moment and shear	- Listen to lecture with samples of structural components and reading assignment - Sketch shapes, connections, and	- Professor evaluation of lab report on steel - Quiz on steel framing with connections R, W, CT, OC, TS

connections, in addition to trusses, rigid frames, and space frames so as to determine , incorporate and implement a structural system	designations on lab report R, W, CT, OC, TS	
10. The student shall be able to sketch an assembly of a built-up and single ply low slope roof to graphically compare the design of each	- Listen to lecture with samples of membrane roofing and catalog details - Read assignment _Sketch section through roof with components for 3 fastening systems on lab report R, W, CT, OC, TS	- Professor evaluation of lab report on roofing - Quiz pertaining to roof systems and take - Quiz on roof reading assignment R, W, CT, OC, TS
11. The student shall state the importance of ice and water shields, and shingles on steep pitched roofs to evaluate the performance of roofing	- Listen to lecture on ice and water shields with diagrams explained Read assignment - Sketch cornice of roof with components of ice and water shield on lab report R, W, CT, OC, QS, TS	- Professor evaluation of lab report on ice and water shields - Quiz on ice and water shields R, W, CT, OC, QS, TS
12. The student shall describe installation methods of exterior materials such as siding, and veneers to compare, coordinate, and implement the construction	- Listen to lecture with samples of siding materials and reading assignment - Sketch assembly of several types of veneers in a composite wall CT,TS,OC,R,W	-Professor evaluation of student's knowledge of assembly. -Professor evaluation of student's Understanding of techniques and related materials related assembly. CT,TS,OC,R,W
13. The student shall be able to determine applications and use of primers, paints, and stains for wood and metals to analyze the proper primers for each	- Lecture on coatings - Read assignments R, W, CT, OC,	- Professor evaluation of lab report on surface coatings - Quiz on surface coatings and primers R, W, CT
14. The student shall be able to select and assemble different types of insulation into a composite system by comparing different types of insulation and determining an efficient economical system	- Listen to lecture on insulation with samples of different types of insulation - Read assignments on composite systems R, W, CT, OC, QS, TS	- Professor evaluation of lab report on insulation - Quiz on insulation CT, TS, QS, R, W

<p>15. The student shall be able to interpret applicable parts of the building code as it pertains to classification of materials for construction and fire rating conformance by comparing alternate fire rated wall systems and implementing the most efficient</p>	<p>Lecture Read assignments R, OC, QS</p>	<p>Quiz on fire ratings for single and multi use buildings R, W, QS</p>
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\*Try to express an outcome as an infinitive phrase that concludes this sentence: **At the end of the course, the students should be able to . . .** Finding the line between too general and too specific can be difficult. In an English Composition course, for instance, it is probably too general to say, "The student should be able to write effective essays." It is probably too specific to say, "The student should be able to write an introductory paragraph of at least 50 words, containing an attention-getting device, an announcement of the narrowed topic, and an explicit thesis sentence." Just right might read, "The student will write introductions that gather attention and focus the essay."

\*\*Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); technology skills (TS); oral communications (OC); quantitative skills (QS); reading (R); writing (w).