

## COURSE OUTLINE

BASIC MASONRY / CONCRETE WORK  
**COURSE TITLE**

MS 101  
**DEPT. & COURSE NO.**

**I. COURSE DESCRIPTION:**

This course covers measuring, basic plan reading, estimating, masonry tools, mortars, anchors and reinforcement, wall layout, spreading mortar, and laying units and related masonry construction.

**II. SEMESTER CREDITS:**           3   

<b>III. CONTACT HOURS PER WEEK:</b> <u>   2   </u>	<u>   3   </u>	<u>   5   </u>
LEC	LAB	TOTAL

**IV. PREREQUISITE;**    NONE

**V. STUDENT LEARNING OUTCOME:**

Upon completion of the course, the Student will be able, with 65% accuracy to:

**VI. COURSE CONTENT:**

1,    Measure by feet, inches, and fraction of an inch.

A.    Measuring tools  
      1. Folding ruler  
      2. Steel tape

2.    Read basic plan.

B.    Plan  
      1. Floor plan  
      2. Plot plan  
      3. Foundation plan

3.    Calculate concrete materials.

C.    Material calculation  
      1. Cement  
      2. Sand  
      3. Gravel  
      4. Blocks

4.    Select different types of blocks and their sizes.

D.    Blocks  
      1. Shape  
      2. Sizes

5.    Mix different types of mortar.

E.    Mortar  
      1. Types  
      2. Mix  
      3. Spread mortar

6.    Select anchors and reinforcement, list their use and set bearing plate.

F.    Anchors & Rebar  
      1. Horizontal  
      2. Vertical  
      3. Angular

- |     |  |    |  |
|-----|--|----|--|
| 7.  | Design wall layout and construct wall sections.          | G. | Wall layout<br>1. Set course pole<br>2. Mark course height<br>3. Lay block   |
| 8.  | Mixing of concrete materials and their functions.        | H. | Concrete materials<br>1. Cement<br>2. Aggregate<br>3. Water<br>4. Add mixture  |
| 9.  | Recognize safe use of concrete tools and equipment.      | I. | Tools & equipment<br>1. Finishing tools<br>2. Laying block tools<br>3. Concrete mixer                                      |
| 10. | Perform concrete slump test.                             | J. | Slump test   |
| 11. | Pouring and finishing concrete surface                   | K. | Finishing Surfaces<br>1. Spreading Concrete<br>2. Screeding<br>3. Floating<br>4. edging and jointing<br>5. Final finishing |
| 12. | Cure newly placed concrete.                              | L. | Cure concrete<br>1. Pouring<br>2. Sprinkling water<br>3. Membrane<br>4. Use of plastic                                     |
| 13. | Install different type of concrete reinforcing.          | M. | Reinforcing materials<br>1. Reinforcing bar<br>2. Welded wire fabric<br>3. Fiber mesh                                      |
| 14. | Select tools and equipment used in concrete reinforcing. | N. | Tools & equipment<br>1. Cutting tools<br>2. Splicing tools<br>3. Bending tools<br>4. Installing tools                      |

**VII. MATERIALS AND EQUIPMENT:**

1. Masonry hand tools
2. Overhead projector
3. Transparencies
4. Masonry power tools & equipments
5. Hand outs
6. TV & VCR

7. Transportation
8. Required Materials & supplies

**VIII. TEXT AND REFERENCES:**

1. TEXT: Instructor's made hand outs
2. REFERENCES:
  - a. Kicklighter, Clois E. Modern Masonry. South Holland, Ill: The Goodheart- Wilcox, 1991.
  - b. Curriculum and Instructional Materials Center. Brick and Block Masonry. Stillwater, OK: Oklahoma Department of Vocational and Technical Education, 1999.

**IX. METHOD OF INSTRUCTION:**

1. Lecture
2. Discussion
3. Demonstration
4. Laboratory work
5. Field trip ( Site observation)

**X. METHOD OF EVALUATION:**

Lecture presentation is tested on written test. Lab evaluation is based on skill development and knowledge acquisition.

Four criteria is used in evaluating projects and operation performance are:

1. Accuracy
2. Techniques
3. Appearance
4. Completion

The components used in the computation of the final grade are:

1. Participation.....	25%
2. Quizzes/Homework.....	10%
3. Mid – Term and Final Test.....	25%
4. Projects.....	40%
<b>Total.....</b>	<b>100%</b>

The transmutation of percent to letter grade are:

90 – 100.....	A
80 – 89.....	B
70 – 79.....	C
65 – 69.....	D
0 – 64.....	F

## TASK LISTING SHEET

### MS 101 BASIC MASONRY / CONCRETE WORK

Credits :      1    2      96  
                 Lec    Lab    Total    Lab Hrs.

#### TASK

#### TIME

#### SLO #1

2 hrs.

1. Layout measurement
2. Calculate feet, inch, and fractions of an inch

#### SLO #2

3 hrs.

1. Make a list of work in a plan

#### SLO #3

4 hrs.

1. Calculate concrete materials
2. Compute cubic yard
3. Compute cubic feet

#### SLO #4

15 hrs.

1. Mix concrete using shovel
2. Tooling joint
3. Spreading trowel with pointing trowel
4. Apply mortar to joint
5. Split block
6. Square corner
7. Measure course height
8. Level layer of block
9. Plumb wall corner
10. Lay block around opening
11. Clean wall surface
12. Clean tools

#### SLO #5

6 hrs.

1. Screen sand
2. Mix mortar with shovel
3. Adjust mix wetness and dryness
4. Pick and apply mortar to top of a block
5. Trim and tool the mortar joint

#### SLO #6

4 hrs.

1. Set anchor bolt
2. Cut and bend reinforcement
3. Tie reinforcement
4. Install wall ties

**SLO #7**

**20 hrs.**

1. Layout wall line
2. Set course pole
3. Mark course height
4. estimate block wall materials
5. Mix mortar
6. Spread mortar
7. Lay block to line
8. Set dowel and reinforcement
9. cut hollow blocks

**SLO #8**

**5 hrs.**

1. Mix concrete
2. Test concrete wetness and dryness
3. Adjust concrete mix

**SLO #9**

**5 hrs.**

1. Apply concrete tools
2. Operate concrete mixer
3. Clean tools and mixer

**SLO #10**

**4 hrs.**

1. Mix concrete
2. Collect concrete samples
3. Prepare slump test
4. Measure slump

**SLO #11**

**11 hrs.**

1. Mix concrete
2. Discharge concrete from mixer
3. Spread concrete
4. Level concrete surface
5. Float concrete surface
6. Cut joint in concrete surface
7. Trowel concrete surface

**SLO #12**

**5 hrs.**

1. Sprinkle water on concrete surface
2. Cover concrete surface with plastic

**SLO #13**

**8 hrs.**

1. Cut and bend rebar
2. Tie rebar
3. Install rebar
4. Install welded wire fabric

**SLO #14**

**4 hrs.**

1. Operate rebar cutting tool
2. Operate rebar bender

**TOTAL**

**96 hrs.**

**Course Level Achievement  
Form A  
(Used for shop courses as well as other program courses)  
MS 101 BASIC MASONRY/ CONCRETE WORK**

Student's Name (print): \_\_\_\_\_

Semester/Year : \_\_\_\_\_

Instructor's Name (Print): \_\_\_\_\_

**Directions:** Evaluate the student using the rating scale below and encircle the appropriate number to indicate the degree of competency. The numerical ratings of 5, 4, 3, 2, and 1 are not intended to represent the traditional school grading system of A, B, C, D, and F. The descriptions opposite the numbers will determine the level of student performance for each of the competencies listed below.

- Rating Scale:**
- 5 Excellent
  - 4 Above average
  - 3 Average
  - 2 Below average
  - 1 Unacceptable

COMPETENCY	RATING
1. Select commonly used masonry products.	5 4 3 2 1
2. Mix concrete and mortar manually and mechanically.	5 4 3 2 1
3. Layout and construct a block wall with plaster finish.	5 4 3 2 1
4. Select, layout, and install ceramic tiles	5 4 3 2 1
5. Pour and finish concrete surface.	5 4 3 2 1

**I certify that the student has completed all the competencies in this program and has achieved ratings as shown under each respective competency.**

\_\_\_\_\_  
Instructor's signature

\_\_\_\_\_  
Date

### **COMPETENCY #1 Select commonly used masonry products.**

5. Identify and select all of the commonly used masonry products – blocks, bricks, tiles, concrete, and quarry products – based on quality, grade, and specifications, and describe their appropriate use with 90 – 100% accuracy.
4. Identify and select all of the commonly used masonry products – blocks, bricks, tiles, concrete, and quarry products – based on quality, grade, and specifications, and describe their appropriate use with 80 – 89% accuracy.
3. Identify and select all of the commonly used masonry products – blocks, bricks, tiles, concrete, and quarry products – based on quality, grade, and specifications, and describe their appropriate use with 70 – 79% accuracy.
2. Identify and select all of the commonly used masonry products – blocks, bricks, tiles, concrete, and quarry products – based on quality, grade, and specifications, and describe their appropriate use with 65 – 69% accuracy.
1. Identify and select all of the commonly used masonry products – blocks, bricks, tiles, concrete, and quarry products – based on quality, grade, and specifications, and describe their appropriate use with below 65% accuracy.

### **COMPETENCY #2 Mix concrete and mortar manually and mechanically.**

5. Demonstrate ability to perform all of the skills – selecting mix ratio, determining amount of ingredients, mix manually and mechanically, and determining readiness – required to properly mix concrete and mortar manually and mechanically according to specifications with 90 – 100% accuracy.
4. Demonstrate ability to perform all of the skills – selecting mix ratio, determining amount of ingredients, mix manually and mechanically, and determining readiness – required to properly mix concrete and mortar manually and mechanically according to specifications with 80 – 89% accuracy.
3. Demonstrate ability to perform all of the skills – selecting mix ratio, determining amount of ingredients, mix manually and mechanically, and determining readiness – required to properly mix concrete and mortar manually and mechanically according to specifications with 70 – 79% accuracy.
2. Demonstrate ability to perform all of the skills – selecting mix ratio, determining amount of ingredients, mix manually and mechanically, and determining readiness – required to properly mix concrete and mortar manually and mechanically according to specifications with 65 – 69% accuracy.
1. Demonstrate ability to perform all of the skills – selecting mix ratio, determining amount of ingredients, mix manually and mechanically, and determining readiness – required to properly mix concrete and mortar manually and mechanically according to specifications with below 65% accuracy.

### **COMPETENCY #3 Layout and construct concrete block wall with plaster finish.**

5. Demonstrate ability to perform all of the skills – line layout, mortar application, block laying, reinforcing, leveling, plumbing, plastering, smoothing, and finishing – required to properly layout and construct concrete block wall with plaster finish according to plan with 90 – 100% accuracy.
4. Demonstrate ability to perform all of the skills – line layout, mortar application, block laying, reinforcing, leveling, plumbing, plastering, smoothing, and finishing – required to properly layout and construct concrete block wall with plaster finish according to plan with 80 – 89% accuracy.
3. Demonstrate ability to perform all of the skills – line layout, mortar application, block laying, reinforcing, leveling, plumbing, plastering, smoothing, and finishing – required to properly layout and construct concrete block wall with plaster finish according to plan with 70 – 79% accuracy.
2. Demonstrate ability to perform all of the skills – line layout, mortar application, block laying, reinforcing, leveling, plumbing, plastering, smoothing, and finishing – required to properly layout and construct concrete block wall with plaster finish according to plan with 65 – 69% accuracy.
1. Demonstrate ability to perform all of the skills – line layout, mortar application, block laying,



reinforcing, leveling, plumbing, plastering, smoothing, and finishing – required to properly layout and construct concrete block wall with plaster finish according to plan with below 65% accuracy.

#### **COMPETENCY # 4 Select, layout, and install ceramic tiles**

5. Demonstrate ability to perform all of the skills – selecting tiles, line layout, mortal application, tiling, leveling, plumbing, grouting, and cleaning and finishing – required to properly select, layout, and install ceramic tiles according to plan with 90 – 100% accuracy.
4. Demonstrate ability to perform all of the skills – selecting tiles, line layout, mortal application, tiling, leveling, plumbing, grouting, and cleaning and finishing – required to properly select, layout, and install ceramic tiles according to plan with 80 – 89% accuracy.
3. Demonstrate ability to perform all of the skills – selecting tiles, line layout, mortal application, tiling, leveling, plumbing, grouting, and cleaning and finishing – required to properly select, layout, and install ceramic tiles according to plan with 70 – 79 % accuracy.
2. Demonstrate ability to perform all of the skills – selecting tiles, line layout, mortal application, tiling, leveling, plumbing, grouting, and cleaning and finishing – required to properly select, layout, and install ceramic tiles according to plan with 65 – 69% accuracy.
1. Demonstrate ability to perform all of the skills – selecting tiles, line layout, mortal application, tiling, leveling, plumbing, grouting, and cleaning and finishing – required to properly select, layout, and install ceramic tiles according to plan with below 65% accuracy.

#### **COMPETENCY #5 Pour and finish concrete surface.**

5. Demonstrate ability to perform all of the skills – transporting, loading and unloading, pouring manually and mechanically, screeding, compacting, leveling, and rough and smooth finishing – required to properly pour and finish concrete surface according to plan with 90 – 100% accuracy.
4. Demonstrate ability to perform all of the skills – transporting, loading and unloading, pouring manually and mechanically, screeding, compacting, leveling, and rough and smooth finishing – required to properly pour and finish concrete surface according to plan with 80 – 89% accuracy.
3. Demonstrate ability to perform all of the skills – transporting, loading and unloading, pouring manually and mechanically, screeding, compacting, leveling, and rough and smooth finishing – required to properly pour and finish concrete surface according to plan with 70 – 79% accuracy.
2. Demonstrate ability to perform all of the skills – transporting, loading and unloading, pouring manually and mechanically, screeding, compacting, leveling, and rough and smooth finishing – required to properly pour and finish concrete surface according to plan with 65 – 69% accuracy.
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