# Teaching-Learning Action Plan of Reinforced Concrete Structures I

**FACULTY OF ENGINEERING**  
**YOGYAKARTA STATE UNIVERSITY**

**Teaching-Learning Action Plan of Reinforced Concrete Structures I**

No. RPP/SPR/230  
Revision: 00  
July 2, 2009  
Fifth semester  
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16 x 100 minutes

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Prepared by: Slamet Widodo, S.T., M.T.

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Checked by:
COURSE : REINFORCED CONCRETE STRUCTURES I
COURSE CODE : SPR 230 (2 CREDITS, THEORY)
STUDY PROGRAM : CIVIL ENGINEERING AND PLANNING EDUCATION
SEMESTER : V (Fifth)
WEEK : 1-2
TIME ALLOCATION : 2 x 100 minutes

STANDARD OF COMPETENCY
Investigating (analyzing) capacity of reinforced concrete structural components and selecting (designing) reinforced concrete members to support a specified load, mainly on flexural reinforcement of plate/slab and beam, and shear/stirrup reinforcement of RC beam.

BASIC COMPETENCE
1. Explain the working principles of reinforced concrete structures based on the characteristics of its materials.

INDICATORS OF ACHIEVED COMPETENCE
1. Explain basic physical and mechanical properties of concrete materials.
2. Explain basic mechanical properties and classify steel Reinforcement bar.
4. Explain basic principle of RC design based on strength and Serviceability concept.

I. COURSE OBJECTIVES
1. To be able explaining physical and mechanical properties of concrete materials.
2. To be able explaining mechanical properties and classify steel Reinforcement bar.
3. To be able classifying reinforced concrete structures systems/types.
4. To be able explaining principle of RC design based on strength and Serviceability concept.

II. COURSE MATERIALS
1. Concrete
2. Steel Reinforcement bar
3. Reinforced concrete structures systems/types
4. Strength and Serviceability concept

III. TEACHING-LEARNING METHOD
1. Presentation

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Checked by:
2. Discussion

IV. TEACHING-LEARNING STEPS

A. Opening:
   1. Explaining course objectives.
   2. Sampling oral pre-test.
   3. Motivating.

B. Main Activities:
   1. Explaining physical and mechanical properties of concrete materials.
   2. Explaining mechanical properties and classify steel Reinforcement bar.
   3. Explaining Classification of reinforced concrete structures systems/ types.
   4. Explaining principle of RC design based on strength and Serviceability concept.

C. Closing:
   2. Summarizing.

V. Teaching Aids
   1. Whiteboard and boardmarker.
   2. Laptop (computer) and LCD Projector.

VI. RECOMMENDED TEXTBOOKS:

1. ACI Committee 318, (2008), Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary, American Concrete Institute.


VII. GRADING

1. Techniques: Written and oral test.
2. Score range: 0-100
STANDARD OF COMPETENCY
Investigating (analyzing) capacity of reinforced concrete structural components and selecting (designing) reinforced concrete members to support a specified load, mainly on flexural reinforcement of plate/slab and beam, and shear/stirrup reinforcement of RC beam.

BASIC COMPETENCE
1. Calculate the load combination which should be applied on reinforced concrete building structures.

INDICATORS OF ACHIEVED COMPETENCE
1. Classify design load types
2. Calculate design loads value
3. Calculate load combinations
4. Analyze structural internal forces using acceptable practical approaches

I. COURSE OBJECTIVES
1. To be able classifying design load types
2. To be able calculating design loads value
3. To be able calculating load combinations
4. To be able analyzing structural internal forces using acceptable practical approaches

II. COURSE MATERIALS
1. Types and design loads value
2. Load Combinations
3. Acceptable practical approaches for indeterminate structural analysis

III. TEACHING-LEARNING METHOD
1. Presentation
2. Discussion

IV. TEACHING-LEARNING STEPS
D. Opening:
1. Explaining course objectives.
2. Sampling oral pre-test.
3. Motivating.

E. Main Activities:
1. Explaining load classification
2. Explaining design loads calculation
3. Explaining load combinations calculation
4. Explaining structural analysis using acceptable practical approaches

F. Closing:
2. Summarizing.

V. Teaching Aids
1. Whiteboard and boardmarker.
2. Laptop (computer) and LCD Projector.

VI. RECOMMENDED TEXTBOOKS:
1. ACI Committee 318, (2008), Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary, American Concrete Institute.

VII. GRADING
1. Techniques: Written and oral test.
2. Score range: 0-100
COURSE: REINFORCED CONCRETE STRUCTURES I

STANDARD OF COMPETENCY
Investigating (analyzing) capacity of reinforced concrete structural components and selecting (designing) reinforced concrete members to support a specified load, mainly on flexural reinforcement of plate/slab and beam, and shear/stirrup reinforcement of RC beam.

BASIC COMPETENCE
1. Design flexural/longitudinal steel reinforcement of slab structures.

INDICATORS OF ACHIEVED COMPETENCE
1. Design one-way slabs reinforcement
2. Design two-way slabs reinforcement
3. Draw detailed reinforcement of slab structures

I. COURSE OBJECTIVES
1. To be able designing one-way slabs reinforcement
2. To be able designing two-way slabs reinforcement
3. To be able drawing detailed reinforcement of slab structures

II. COURSE MATERIALS
1. One-way slabs
2. Two-way slabs
3. Detailed engineering drawing.

III. TEACHING-LEARNING METHOD
1. Presentation
2. Discussion

IV. TEACHING-LEARNING STEPS
A. Opening:
   1. Explaining course objectives.
   2. Sampling oral pre-test.
3. Motivating.

B. Main Activities:
   1. Explaining design procedures of one-way slabs reinforcement
   2. Explaining design procedures of two-way slabs reinforcement
   3. Explaining standards/codes of detailed engineering drawing of slab reinforcement.

C. Closing:
   2. Summarizing.

V. Teaching Aids
   1. Whiteboard and boardmarker.
   2. Laptop (computer) and LCD Projector.

VI. RECOMMENDED TEXTBOOKS:
   1. ACI Committee 318, (2008), Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary, American Concrete Institute.

VII. GRADING
   1. Techniques: Written and oral test.
   2. Score range: 0-100
STANDARD OF COMPETENCY
Investigating (analyzing) capacity of reinforced concrete structural components and selecting (designing) reinforced concrete members to support a specified load, mainly on flexural reinforcement of plate/slab and beam, and shear/stirrup reinforcement of RC beam.

BASIC COMPETENCE
1. Analyze the flexural capacity of RC beam.

INDICATORS OF ACHIEVED COMPETENCE
1. Analyze Singly reinforced RC beams
2. Analyze Doubly reinforced RC beams
3. Analyze T and Inverted-L RC beams.

I. COURSE OBJECTIVES
1. To be able analyzing Singly reinforced RC beams
2. To be able analyzing Doubly reinforced RC beams
3. To be able analyzing T and Inverted-L RC beams.

II. COURSE MATERIALS
1. Singly reinforced RC beams
2. Doubly reinforced RC beams
3. T and Inverted-L RC beams.

III. TEACHING-LEARNING METHOD
1. Presentation
2. Discussion

IV. TEACHING-LEARNING STEPS
A. Opening:
1. Explaining course objectives.
2. Sampling oral pre-test.
3. Motivating.
B. Main Activities:
   1. Explaining analysis of Singly reinforced RC beams
   2. Explaining analysis of Doubly reinforced RC beams
   3. Explaining analysis of T and Inverted-L RC beams.

C. Closing:
   2. Summarizing.

V. Teaching Aids
   1. Whiteboard and boardmarker.
   2. Laptop (computer) and LCD Projector.

VI. RECOMMENDED TEXTBOOKS:
   1. ACI Committee 318, (2008), Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary, American Concrete Institute.

VII. GRADING
   1. Techniques: Written and oral test.
   2. Score range: 0-100
STANDARD OF COMPETENCY
Investigating (analyzing) capacity of reinforced concrete structural components and selecting (designing) reinforced concrete members to support a specified load, mainly on flexural reinforcement of plate/slab and beam, and shear/stirrup reinforcement of RC beam.

BASIC COMPETENCE
1. Design flexural/longitudinal reinforcement of RC beam.

INDICATORS OF ACHIEVED COMPETENCE
1. Design flexural/longitudinal reinforcement of simple beams.
2. Design flexural/longitudinal reinforcement of continuous beams.
3. Draw detailed reinforcement of RC beams.

I. COURSE OBJECTIVES
1. To be able designing flexural/longitudinal reinforcement of simple beams.
2. To be able designing flexural/longitudinal reinforcement of continuous beams.
3. To be able drawing detailed reinforcement of RC beams.

II. COURSE MATERIALS
1. Flexural/longitudinal reinforcement of simple beams.
2. Flexural/longitudinal reinforcement of continuous beams.
3. Detailed engineering drawing.

III. TEACHING-LEARNING METHOD
1. Presentation
2. Discussion

IV. TEACHING-LEARNING STEPS
A. Opening:
   1. Explaining course objectives.
   2. Sampling oral pre-test.
3. Motivating.

B. Main Activities:
   1. Explaining flexural design of simple RC beams
   2. Explaining flexural design of continuous RC beams
   3. Explaining detailed engineering drawing.

C. Closing:
   2. Summarizing.

V. Teaching Aids
   1. Whiteboard and boardmarker.
   2. Laptop (computer) and LCD Projector.

VI. RECOMMENDED TEXTBOOKS:
   1. ACI Committee 318, (2008), Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary, American Concrete Institute.

VII. GRADING
   1. Techniques: Written and oral test.
   2. Score range: 0-100
COURSE: REINFORCED CONCRETE STRUCTURES I
COURSE CODE: SPR 230 (2 CREDITS, THEORY)
STUDY PROGRAM: CIVIL ENGINEERING AND PLANNING EDUCATION
SEMESTER: V (Fifth)
WEEK: 14-15
TIME ALLOCATION: 2 x 100 minutes

STANDARD OF COMPETENCY
Investigating (analyzing) capacity of reinforced concrete structural components and selecting (designing) reinforced concrete members to support a specified load, mainly on flexural reinforcement of plate/slab and beam, and shear/stirrup reinforcement of RC beam.

BASIC COMPETENCE
1. Design stirrup/shear reinforcement of RC beam.

INDICATORS OF ACHIEVED COMPETENCE
1. Design stirrup/shear reinforcement of simple beams.
2. Design stirrup/shear reinforcement of continuous beams.
3. Draw detailed reinforcement of RC beams.

I. COURSE OBJECTIVES
1. To be able designing stirrup/shear reinforcement of simple beams.
2. To be able designing stirrup/shear reinforcement of continuous beams.
3. To be able drawing detailed reinforcement of RC beams.

II. COURSE MATERIALS
1. Stirrup/shear reinforcement of simple beams.
2. Stirrup/shear reinforcement of continuous beams.
3. Detailed engineering drawing.

III. TEACHING-LEARNING METHOD
1. Presentation
2. Discussion

IV. TEACHING-LEARNING STEPS
A. Opening:
1. Explaining course objectives.
2. Sampling oral pre-test.

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2. Motivating.

B. Main Activities:
   1. Explaining shear design of simple RC beams
   2. Explaining shear design of continuous RC beams
   3. Explaining detailed engineering drawing.

C. Closing:
   2. Summarizing.

V. Teaching Aids
   1. Whiteboard and boardmarker.
   2. Laptop (computer) and LCD Projector.

VI. RECOMMENDED TEXTBOOKS:
   1. ACI Committee 318, (2008), Building Code Requirements for Structural Concrete (ACI 318-08) and Commentary, American Concrete Institute.

VII. GRADING
   1. Techniques: Written and oral test.
   2. Score range: 0-100