



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



**Department of Chemical Engineering**

---

# CO-PO & CO-PSO Mapping 2019 Course

## SE Term-1



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

### Engineering Mathematics - III (207004)

#### Course Outcome:

On completion of the course, students will be able to	
207004.1	Solve higher order linear differential equations and its applications to engineering problems in their disciplines.
207004.2	Apply Integral transform techniques such as Fourier transform to solve differential equations involved in Liquid level systems and related engineering applications.
207004.3	Apply Integral transform techniques such as Laplace transform to solve differential equations involved in Vibration theory, Heat transfer, and related engineering applications.
207004.4	Apply Statistical methods like correlation & regression and probability theory as applicable to analyzing and interpreting experimental data in testing and quality control.
207004.5	Perform vector differentiation & integration, analyze the vector fields and apply to fluid flow problems.
207004.6	Solve various partial differential equations such as wave equation, one and two dimensional heat flow equations.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C207004.1</b>	3	2	1		1							
<b>C207004.2</b>	3	2	1		1							
<b>C207004.3</b>	3	2	1		1							
<b>C207004.4</b>	3	2	1		1							
<b>C207004.5</b>	3	2	1		1							
<b>C207004.6</b>	3	2	1		1							

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C207004.1</b>	1	1
<b>C207004.2</b>		
<b>C207004.3</b>		
<b>C207004.4</b>	1	1
<b>C207004.5</b>		1
<b>C207004.6</b>	1	1



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Industrial Chemistry I (209341)

#### Course Outcome:

On completion of the course, students will be able to	
209341.1	Analyze the type of forces and synthesize the materials based on their properties
209341.2	Estimate the kinetics of reaction and analyze the factors controlling the rate of reactions.
209341.3	Analyze the given chemical substance by different Instrumentation techniques
209341.4	Estimate the quantity of solute and synthesize the solution based on the properties
209341.5	Evaluate the mechanism of reactions and apply proper factor for increasing the yield of the desired product
209341.6	Apply the basic concepts of dyes and synthesize industrially important dyes.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209341.1</b>	2	1			1					1		
<b>C209341.2</b>	2	2			2					1		
<b>C209341.3</b>	3	3	2	1	3		1			2		1
<b>C209341.4</b>	2	2	2		2					1		
<b>C209341.5</b>	1	1	1							1		
<b>C209341.6</b>	1	1	1							2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209341.1</b>	1	
<b>C209341.2</b>	1	
<b>C209341.3</b>	1	
<b>C209341.4</b>	1	
<b>C209341.5</b>	1	
<b>C209341.6</b>	1	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Fluid Mechanics (209342)

#### Course Outcome:

On completion of the course, students will be able to	
209342.1	Apply basic concepts of fluid mechanics and determine properties of fluids.
209342.2	Derive fluid statics laws and apply it to pressure measuring devices in chemical industry.
209342.3	Analyze basic equations of fluid flow and their applications to determine fluid flow rate by different devices.
209342.4	Formulate mathematical equations for flow of fluid through different systems and determine different losses occurring in pipelines.
209342.5	Develop relationships among process/system variables using dimensional analysis.
209342.6	Identify and apply different valves and pumps for transportation of fluid through pipelines.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209342.1</b>	2	2	1	2					1	2		
<b>C209342.2</b>	2	2	1	2					1	2		
<b>C209342.3</b>	2	2	1	2					1	2		
<b>C209342.4</b>	2	2	1	2					1	2		
<b>C209342.5</b>	2	2	2	2					1	2		
<b>C209342.6</b>	2	2	1	2					1	2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209342.1</b>	2	
<b>C209342.2</b>	2	
<b>C209342.3</b>	2	
<b>C209342.4</b>	2	
<b>C209342.5</b>	2	
<b>C209342.6</b>	2	



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Engineering Materials (209343)

#### Course Outcome:

On completion of the course, students will be able to	
209343.1	Describe scope of Engineering materials, properties of materials and Selection of materials
209343.2	Test different materials and describe organic materials
209343.3	Define corrosion, describe it's types, Control and prevent corrosion.
209343.4	Describe polymers Compare types of polymerization and classify plastics, rubbers.
209343.5	Describe Nanomaterials and its synthesis.
209343.6	Test internal properties of engineering materials.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C209343.1	2								1	2		
C209343.2	2	1	1	1	1				1	2		
C209343.3	2								1	2		
C209343.4	2								1	2		
C209343.5	2								1	2		
C209343.6	2								1	2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning



## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209343.1</b>	1	
<b>C209343.2</b>	1	1
<b>C209343.3</b>	1	
<b>C209343.4</b>	1	
<b>C209343.5</b>	1	
<b>C209343.6</b>	1	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Process Calculations (209344)

#### Course Outcome:

On completion of the course, students will be able to	
209344.1	Carry out dimensional analysis and unit conversions.
209344.2	Apply the concept of material balance on Non-Reactive Systems.
209344.3	Use stoichiometry and apply material balance on Reactive Systems.
209344.4	Apply energy balance on unit operation or process.
209344.5	Apply material balance on different unit operations.
209344.6	Perform material balance calculations for combustion reactions.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209344.1</b>	2	2								1		
<b>C209344.2</b>	3	3	2	2						1		
<b>C209344.3</b>	3	3	2	2						1		
<b>C209344.4</b>	3	3	2	2						1		
<b>C209344.5</b>	3	3	2	2						1		
<b>C209344.6</b>	3	3	2	2						1		

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209344.1</b>	2	
<b>C209344.2</b>	2	
<b>C209344.3</b>	2	
<b>C209344.4</b>	2	
<b>C209344.5</b>	2	
<b>C209344.6</b>	2	



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Soft Skills (209345)

#### Course Outcome:

On completion of the course, students will be able to	
209345.1	Communicate, interact and present ideas to professionals
209345.2	Implement the steps for preparing an effective presentation
209345.3	Evaluate their own performance by Self awareness.
209345.4	Prepare for an interview
209345.5	Prepare resume
209345.6	Implement the techniques to increase concentration and decrease anxiety

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C209345.1								2	3	3		2
C209345.2								2	3	3		2
C209345.3								2	3	3		2
C209345.4								2	3	3		2
C209345.5								2	3	3		2
C209345.6								2	3	3		2

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209345.1</b>	1	
<b>C209345.2</b>	1	
<b>C209345.3</b>	1	
<b>C209345.4</b>	1	
<b>C209345.5</b>	1	
<b>C209345.6</b>	1	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



**Department of Chemical Engineering**

---

# CO-PO & CO-PSO Mapping 2019 Course

## SE Term-2



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Industrial Chemistry-II (209347)

#### Course Outcome:

On completion of the course, students will be able to	
209347.1	Apply the concept of naturally occurring polymer and synthesize the new polymers
209347.2	Apply the theory of synthesis of complex and evaluate their properties
209347.3	Analyze the given chemical substance by different Instrumentation techniques
209347.4	Understand catalyst and its mechanism and apply it in the synthesis of compounds
209347.5	Understand concept of isomerism and analyze different isomers and their properties
209347.6	Understand concept of thermodynamics and apply in chemical industries

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209347.1</b>	2	1	2	1		1	1		1			1
<b>C209347.2</b>	2	1	1	1					1			1
<b>C209347.3</b>	1	2	2	1					1			1
<b>C209347.4</b>	1	2	1	1					1			1
<b>C209347.5</b>	1	2	2	1					1			1
<b>C209347.6</b>	2	2	2	1								1

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209347.1</b>		1
<b>C209347.2</b>		1
<b>C209347.3</b>		1
<b>C209347.4</b>		1
<b>C209347.5</b>		
<b>C209347.6</b>	2	2





# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Heat Transfer (209348)

#### Course Outcome:

On completion of the course, students will be able to	
209348.1	Demonstrate basic concepts of Conduction.
209348.2	Demonstrate basic concepts of Convection.
209348.3	Demonstrate basic concepts of Radiation.
209348.4	Conduct experiments as well as to analyze and interpret data.
209348.5	Design Heat Exchanger.
209348.6	Demonstrate Evaporator operation.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C209348.1	2	3	3	3	2				1	2		
C209348.2	2	3	3	3	2				1	2		
C209348.3	2	3		3					1	2		
C209348.4	2	3		3						2		
C209348.5	2	3		3	3				1	2		
C209348.6	2	3	3	3	2					2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209348.1</b>	2	2
<b>C209348.2</b>	2	2
<b>C209348.3</b>	2	
<b>C209348.4</b>	2	
<b>C209348.5</b>	3	3
<b>C209348.6</b>	2	2



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Principles of Design (209349)

#### Course Outcome:

On completion of the course, students will be able to	
209349.1	Formulate and analyze stresses and strains in machine elements and structures subjected to various loads.
209349.2	Apply multidimensional static failure criteria in the analysis and design of mechanical components.
209349.3	Analyze and design power transmission shafts carrying various elements like keys and couplings with geometrical features.
209349.4	Analyze and design structural joints like riveted and welded joints and select appropriate belt drive arrangement for required service.
209349.5	Design thin-walled pressure vessels for variety of unit operations.
209349.6	Design thick-walled pressure vessels for variety of unit operations.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209349.1</b>	2	2	2							2		
<b>C209349.2</b>	2	2	2						1	2		
<b>C209349.3</b>	2	2	2						1	2		
<b>C209349.4</b>	2	2	2						1	2		
<b>C209349.5</b>	2	2	2		2				1	2		
<b>C209349.6</b>	2	2	2		2				1	2		

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209349.1</b>	1	
<b>C209349.2</b>	1	
<b>C209349.3</b>	1	
<b>C209349.4</b>	2	
<b>C209349.5</b>	2	2
<b>C209349.6</b>	2	2



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Chemical Technology-I (209350)

#### Course Outcome:

On completion of the course, students will be able to	
209350.1	Apply basic principles of chemical process industry
209350.2	Identify various manufacturing processes used in chemical process industries.
209350.3	Analyze major engineering problems encountered in chemical process industries.
209350.4	Understand process aspects like yield, byproducts formed, generation of waste
209350.5	Acquire the knowledge of process flow diagrams for a given process
209350.6	Abstract various equipment/instruments used in process industry

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209350.1</b>	2	2	1		1					1		
<b>C209350.2</b>	2	2	1		1					1		
<b>C209350.3</b>	2	2	1		1					1		
<b>C209350.4</b>	2	2	1		1					1		
<b>C209350.5</b>	2	2	1		1					1		
<b>C209350.6</b>	2	2	1		1					1		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209350.1</b>	2	1
<b>C209350.2</b>	2	1
<b>C209350.3</b>	2	1
<b>C209350.4</b>	2	1
<b>C209350.5</b>	2	1
<b>C209350.6</b>	2	1



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Mechanical Operations (209351)

#### Course Outcome:

On completion of the course, students will be able to	
209351.1	Select suitable type of screen and size reduction equipment for different particle sizes.
209351.2	Study different types of thickeners and clarifiers for separation of suspended solid particles.
209351.3	Apply fluidization and beneficiation techniques in Chemical Industries.
209351.4	Select a suitable type of agitator for mixing and agitation and to estimate power consumption in mixing and agitation.
209351.5	Select a suitable type of filter for filtration of a slurry or a suspension.
209351.6	Select a suitable type of conveyor for transportation of different types of solids.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209351.1</b>	2	2	1	2					1	2		
<b>C209351.2</b>	2	2	2	2					1	2		
<b>C209351.3</b>	2	2	1	2					1	2		
<b>C209351.4</b>	2	2	2	2						2		
<b>C209351.5</b>	2	2	2	2						2		
<b>C209351.6</b>	2	2	2	1					1	2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209351.1</b>	1	
<b>C209351.2</b>	3	
<b>C209351.3</b>	1	
<b>C209351.4</b>	2	
<b>C209351.5</b>	2	
<b>C209351.6</b>	1	





# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Project Based Learning (209352)

#### Course Outcome:

On completion of the course, students will be able to	
209352.1	Identify real life problems through rigorous literature survey from social need point of view
209352.2	Analyze the identified problem through technological perspective
209352.3	Propose suitable solution to contribute society using fundamental knowledge of engineering through modern tools
209352.4	Use technology to demonstrate proposed work in oral form
209352.5	Use technology to demonstrate proposed work in written form

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C209352.1</b>	2	2	1		1	2	1	2	3	3	1	2
<b>C209352.2</b>	2	2	1		1	2	1	2	3	3	1	2
<b>C209352.3</b>	2	2	1		2	2	1	2	3	3	1	2
<b>C209352.4</b>	2	2	1		1	2	1	2	3	3	1	2
<b>C209352.5</b>	2	2	1		1	2	1	2	3	3	1	2

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C209352.1</b>	2	1
<b>C209352.2</b>	2	1
<b>C209352.3</b>	2	2
<b>C209352.4</b>	2	1
<b>C209352.5</b>	2	1



**AISSMS**  
**COLLEGE OF ENGINEERING**  
ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



**Department of Chemical Engineering**

---

# CO-PO & CO-PSO Mapping 2019 Course

## TE Term-1



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

### Mass Transfer-I (309341)

#### Course Outcome:

On completion of the course, students will be able to	
309341.1	Estimate mass transfer rate.
309341.2	Understand the concept of mass transfer coefficient.
309341.3	Calculate no. of trays and height of packing for gas mixture separation using absorption.
309341.4	Use psychrometric chart and calculate height of cooling tower.
309341.5	Understand the construction and working of gas dispersal and liquid dispersal equipments.
309341.6	Select a suitable dryer to dry a given material.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309341.1</b>	2	2	1	2					1	2		
<b>C309341.2</b>	2	2	1	2					1	2		
<b>C309341.3</b>	2	2	2	2					1	2		
<b>C309341.4</b>	2	2	2	2					1	2		
<b>C309341.5</b>	2	1	1	1					1	2		
<b>C309341.6</b>	2	2	2	2					1	2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309341.1</b>	2	
<b>C309341.2</b>	2	
<b>C309341.3</b>	2	
<b>C309341.4</b>	2	
<b>C309341.5</b>	1	
<b>C309341.6</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Chemical Technology-II (309342)

#### Course Outcome:

On completion of the course, students will be able to	
309342.1	Discuss the knowledge of unit operations and processes for Sulfur compounds, electrolytic industries and sea chemicals.
309342.2	Understand the knowledge unit operations and processes for pulp, paper, starch and Sugar industries.
309342.3	Illustrate the knowledge of unit operations and processes to draw flow sheets of coal chemicals, cement and iron-steel industries.
309342.4	Outline the basic flowsheet parameters of surface coating industry and industrial gases.
309342.5	Demonstrate the knowledge of agrochemicals and antibiotics such as penicillin.
309342.6	Apply the knowledge of unit operations and processes to draw flow sheets of petrochemical industries.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309342.1</b>	2	2	1		2		1		2	1		
<b>C309342.2</b>	2	2	1		2		1		2	1		
<b>C309342.3</b>	2	2	1		2		1		2	1		
<b>C309342.4</b>	2	2	1		2		1		2	1		
<b>C309342.5</b>	2	1	1		2		1		2	1		
<b>C309342.6</b>	2	2	1		2		1		2	1		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309342.1</b>	2	2
<b>C309342.2</b>	2	2
<b>C309342.3</b>	2	2
<b>C309342.4</b>	2	2
<b>C309342.5</b>	2	2
<b>C309342.6</b>	2	2



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Chemical Engineering Mathematics (309343)

##### Course Outcome:

On completion of the course, students will be able to	
309343.1	Understand types of error and Solve problems using root finding methods.
309343.2	Solve problems of simultaneous linear algebraic equations.
309343.3	Perform regression analysis and interpolation.
309343.4	Solve ordinary differential equations using Euler's Method, RK2, RK4 etc.
309343.5	Solve partial differential equations.
309343.6	Understand basic concepts of optimization and formulation and Solve problems of process optimization.

##### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C309343.1	2	2	1	1						2		
C309343.2	2	2	1	1						2		
C309343.3	2	2	1	1						2		
C309343.4	2	2	1	1						2		
C309343.5	2	2	1	1						2		
C309343.6	2	2	1	1						2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

##### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning



## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309343.1</b>	2	
<b>C309343.2</b>	2	
<b>C309343.3</b>	2	
<b>C309343.4</b>	2	
<b>C309343.5</b>	2	
<b>C309343.6</b>	2	



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Chemical Engineering Thermodynamics (309344)

##### Course Outcome:

On completion of the course, students will be able to	
309344.1	Understand the fundamental properties of thermodynamics and pure species and solutions
309344.2	Calculate the fugacity and activity
309344.3	Calculate dew point and bubble point
309344.4	Understand the phase equilibria
309344.5	Understand the effect of temperature and pressure on chemical equilibrium
309344.6	Able to calculate equilibrium constant

##### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309344.1</b>	2	2		1						2		
<b>C309344.2</b>	2	2	1	1						2		
<b>C309344.3</b>	2	2	1							2		
<b>C309344.4</b>	2	2	1							2		
<b>C309344.5</b>	2	2	1							2		
<b>C309344.6</b>	2	2	1	1						2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

##### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309344.1</b>	2	
<b>C309344.2</b>	2	
<b>C309344.3</b>	2	
<b>C309344.4</b>	2	
<b>C309344.5</b>	2	
<b>C309344.6</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Chemical Industry Management (309345)

#### Course Outcome:

On completion of the course, students will be able to	
309345.1	Apply the concepts of Management Science.
309345.2	Identify managerial skills to increase the productivity.
309345.3	Analyze major knowledge of international trade
309345.4	Understand knowledge of Management laws
309345.5	Acquire the knowledge of Stores management
309345.6	Abstract knowledge of export and import management

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309345.1</b>	2	2	1		1							
<b>C309345.2</b>	2	2	1		1							
<b>C309345.3</b>	2	2	1		1							
<b>C309345.4</b>	2	2	1		1			1				
<b>C309345.5</b>	2	2	1		1	1						
<b>C309345.6</b>	2	2	1		1	1		1				

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309345.1</b>	1	
<b>C309345.2</b>		1
<b>C309345.3</b>		1
<b>C309345.4</b>	1	
<b>C309345.5</b>		1
<b>C309345.6</b>	1	



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Computer Aided Chemical Engineering-I (309346)

##### Course Outcome:

On completion of the course, students will be able to	
309346.1	Apply principles of calculus to chemical engineering problems
309346.2	Design algorithms for numerical integration and differentiation.
309346.3	Develop algorithms for root finding and numerical optimization.
309346.4	Analyze data-fitting methods with regression.
309346.5	Create a MS-Excel sheet for process calculation.
309346.6	Discuss the applications of artificial intelligence methods to chemical engineering systems.

##### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C309346.1	2	2			2					2		
C309346.2	2	2			2					2		
C309346.3	2	2			2					2		
C309346.4	2	2			2					2		
C309346.5	2	2			2					2		
C309346.6	2	2								2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

##### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309346.1</b>	2	2
<b>C309346.2</b>	1	1
<b>C309346.3</b>	1	1
<b>C309346.4</b>	1	1
<b>C309346.5</b>	2	2
<b>C309346.6</b>		1



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Seminar (309347)

#### Course Outcome:

On completion of the course, students will be able to	
309347.1	Undertake literature review on selected topic.
309347.2	Understand the process methodology.
309347.3	Undertake detailed case study of selected topic.
309347.4	Prepare a technical report.
309347.5	Prepare and present the findings on investigated topic.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309347.1</b>	2	2				1	2	2	2	2		2
<b>C309347.2</b>	2	2				1	2	2	2	2		2
<b>C309347.3</b>	2	2				1	2	2	2	2		2
<b>C309347.4</b>						1	2	2	2	2		2
<b>C309347.5</b>						1	2	2	2	2		2

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning



## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309347.1</b>	2	
<b>C309347.2</b>	2	
<b>C309347.3</b>	2	
<b>C309347.4</b>	2	
<b>C309347.5</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



**Department of Chemical Engineering**

---

# CO-PO & CO-PSO Mapping 2019 Course

## TE Term-2



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Chemical Reaction Engineering-I (309348)

##### Course Outcome:

On completion of the course, students will be able to	
309348.1	Implement basic homogeneous kinetics calculations.
309348.2	Analyze and interpret batch reactor data.
309348.3	Perform reactor design for Batch reactor, Ideal PFR and MFR.
309348.4	Design reactors for parallel and series reactions.
309348.5	Investigate the effect of temperature and pressure on reaction kinetics.
309348.6	Design reactors for deviations from ideal reactors.

##### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C309348.1	3	2	1	2					1	2		
C309348.2	3	2	2	2					1	2		
C309348.3	3	2	2	2					1	2		
C309348.4	3	2	1	2						2		
C309348.5	3	2	2	2					1	2		
C309348.6	3	2	2	2						2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

##### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309348.1</b>	2	
<b>C309348.2</b>	2	1
<b>C309348.3</b>	2	1
<b>C309348.4</b>	2	
<b>C309348.5</b>	2	
<b>C309348.6</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

### Mass Transfer-II (309349)

#### Course Outcome:

On completion of the course, students will be able to	
309349.1	Apply mass transfer theories and principles to distillation operation and study different types of distillation.
309349.2	Solve problems related to continuous distillation.
309349.3	Understand Liq.-Liq. Extraction operation and solve problems.
309349.4	Understand leaching operation and solve single stage and multistage leaching problems.
309349.5	Understand basic principle and equilibria in adsorption and solve single stage, multistage adsorption problems.
309349.6	Solve problems of crystallization and understand membrane separation techniques.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309349.1</b>	3	3	2	2					1	2		
<b>C309349.2</b>	3	3	2	2					1	2		
<b>C309349.3</b>	3	3	2	2					1	2		
<b>C309349.4</b>	3	3	2	2					1	2		
<b>C309349.5</b>	3	3	2	2					1	2		
<b>C309349.6</b>	3	3	2	2					1	2		

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309349.1</b>	2	
<b>C309349.2</b>	2	
<b>C309349.3</b>	2	
<b>C309349.4</b>	2	
<b>C309349.5</b>	2	
<b>C309349.6</b>	2	



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Transport Phenomena (309350)

#### Course Outcome:

On completion of the course, students will be able to	
309350.1	Apply the fundamentals of momentum transport in a fluid flow.
309350.2	Apply the concept of energy transport for different configurations.
309350.3	Develop understanding of mass transport across boundaries.
309350.4	Understand various unsteady state equations of change
309350.5	Implement the basics of interphase transport for isothermal systems.
309350.6	Develop understanding of interphase transport for multi-component systems.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C309350.1	3	2	1	2						1		
C309350.2	3	2	1	2						1		
C309350.3	3	2	1	2						1		
C309350.4	3	2	1	2						1		
C309350.5	3	2	1	2						1		
C309350.6	3	2	1	2						1		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309350.1</b>	2	
<b>C309350.2</b>	2	
<b>C309350.3</b>	2	
<b>C309350.4</b>	2	
<b>C309350.5</b>	2	
<b>C309350.6</b>	2	





**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Process Instrumentation & Control (309351)

#### Course Outcome:

On completion of the course, students will be able to	
309351.1	Discuss the fundamentals of process instrumentation.
309351.2	Understand the temperature measuring instruments.
309351.3	Understand the pressure measuring instruments.
309351.4	Understand the level and flow measuring instruments.
309351.5	Outline the basics of instrumental methods of analysis.
309351.6	Analyze the concepts of process dynamics and control.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309351.1</b>	1	1							1	2		
<b>C309351.2</b>	2	1	1	2					1	2		
<b>C309351.3</b>	2	1	1	2					1	2		
<b>C309351.4</b>	2	1	1	2					1	2		
<b>C309351.5</b>	2	1	1	2					1	2		
<b>C309351.6</b>	2	2	2						1	2		

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309351.1</b>	1	1
<b>C309351.2</b>	1	1
<b>C309351.3</b>	1	1
<b>C309351.4</b>	1	1
<b>C309351.5</b>	1	1
<b>C309351.6</b>	1	1



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Internship (309352)

#### Course Outcome:

On completion of the course, students will be able to	
309352.1	Evaluate actual working environment.
309352.2	Understand the actual operation of the chemical plants.
309352.3	Apply theoretical knowledge to industrial practice.
309352.4	Prepare a report based on the experiences gained in Industry.
309352.5	Develop technical writing and oral presentation skills.
309352.6	Apply ethics in industrial practice.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C309352.1</b>	2	1		2	2	1	1		1			
<b>C309352.2</b>	2	1		2	2	1	1		1			
<b>C309352.3</b>	2	1		2	2	1	1		1			
<b>C309352.4</b>	2								1	2		
<b>C309352.5</b>	2								1	2		
<b>C309352.6</b>								2	1			

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C309352.1</b>	2	2
<b>C309352.2</b>	2	2
<b>C309352.3</b>	2	2
<b>C309352.4</b>	2	
<b>C309352.5</b>	2	
<b>C309352.6</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



**Department of Chemical Engineering**

---

# CO-PO & CO-PSO Mapping 2019 Course

## BE Term-1



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Process Dynamics and Control (409341)

#### Course Outcome:

On completion of the course, students will be able to	
409341.1	Understand the dynamic modeling of simple processes.
409341.2	Understand the design of single-loop feedback control system.
409341.3	Apply the knowledge of stability analysis to feedback systems.
409341.4	Analyze the stability of linear processes by frequency response.
409341.5	Understand the design of complex control system.
409341.6	Understand the recent digital and computer-based control system schemes.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C409341.1	2	2	2	2	2				1	2		
C409341.2	2	2	2	2	2				1	2		
C409341.3	2	2	2	2	2				1	2		
C409341.4	2	2	2	2	2				1	2		
C409341.5	2	2								2		
C409341.6	2									2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409341.1</b>	2	2
<b>C409341.2</b>	2	2
<b>C409341.3</b>	2	2
<b>C409341.4</b>	2	2
<b>C409341.5</b>	1	
<b>C409341.6</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Chemical Reaction Engineering-II (409342)

#### Course Outcome:

On completion of the course, students will be able to	
409342.1	Develop rate equation and design reactors for Fluid Particle reaction system
409342.2	Develop rate equation and design reactors for Fluid-Fluid reaction system
409342.3	Find out the physical properties of catalyst like surface area, Void Volume etc
409342.4	Study Effectiveness of Catalytic reaction
409342.5	Study different methods for finding out rate equations for catalytic reactions
409342.6	Develop rate equation for Biochemical Reaction

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C409342.1</b>	2	3	3	3						2		
<b>C409342.2</b>	2	3	3	3						2		
<b>C409342.3</b>	2	3		3						2		
<b>C409342.4</b>	2	3		3						2		
<b>C409342.5</b>	2	3	3	3						2		
<b>C409342.6</b>	2	3	3	3						2		

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning



## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409342.1</b>	3	
<b>C409342.2</b>	3	
<b>C409342.3</b>	3	
<b>C409342.4</b>	3	
<b>C409342.5</b>	3	
<b>C409342.6</b>	3	



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Chemical Engineering Design (409343)

#### Course Outcome:

On completion of the course, students will be able to	
409343.1	Estimate power required for Agitator and design a Reaction Vessel.
409343.2	Design storage vessels for liquids and gases and supports for vessels.
409343.3	Design Heat Exchanger and Evaporator.
409343.4	Calculate size of a Plate Distillation Column and overall column efficiency.
409343.5	Calculate size of packed Absorption and Distillation columns and do the choice between plates and packing.
409343.6	Evaluate size of a pipeline on the basis of fluid dynamic parameters.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C409343.1</b>	2	2	3	2	2	2	2	3	2	2	3	3
<b>C409343.2</b>	2	2	3	2	2	2	2	3	2	2	3	3
<b>C409343.3</b>	2	2	3	2	2	2	2	3	2	2	3	2
<b>C409343.4</b>			2		2	2	1	3	2	2	2	2
<b>C409343.5</b>	2	2	2		2	2	2	3	3	2	2	2
<b>C409343.6</b>				3	2	2	2	3	3	3	2	2

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409343.1</b>	3	3
<b>C409343.2</b>	3	3
<b>C409343.3</b>	3	2
<b>C409343.4</b>	3	3
<b>C409343.5</b>	3	3
<b>C409343.6</b>	3	1



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Computer Aided Chemical Engineering- II (409346)

##### Course Outcome:

On completion of the course, students will be able to	
409346.1	Solve chemical engineering problems using various tools such as MATLAB, UniSim and ChemCAD.
409346.2	Develop computer programs for solving linear, non-linear, steady state and unsteady state equations.
409346.3	Develop computer programs for solving ODE and PDE.
409346.4	Develop computer programs for plotting P-x-y and T-x-y diagram.
409346.5	Develop computer programs for reactor design, distillation column, heat exchangers, mass transfer equipment and fluid flow operations problems.
409346.6	Analyze simulation of steady state flow sheeting.

##### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C409346.1</b>	2	2	2	1	3				1	2		
<b>C409346.2</b>	2	2	2	1	3				1	2		
<b>C409346.3</b>	2	2	2	1	3				1	2		
<b>C409346.4</b>	2	2	2	1	3				1	2		
<b>C409346.5</b>	2	2	2	1	3				1	2		
<b>C409346.6</b>	2	2	2	1	3				1	2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409346.1</b>	1	2
<b>C409346.2</b>	1	2
<b>C409346.3</b>	1	2
<b>C409346.4</b>	1	2
<b>C409346.5</b>	1	2
<b>C409346.6</b>	1	2



# AISSMS

## COLLEGE OF ENGINEERING

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Project Stage-I (409347)

#### Course Outcome:

On completion of the course, students will be able to	
409347.1	Undertake literature survey.
409347.2	Select suitable process from various synthesis methods.
409347.3	Analyze thermodynamic feasibility.
409347.4	Calculate Material Balances.
409347.5	Calculate Energy Balances.
409347.6	Investigate the process and effect of parameters thereon experimentally or theoretically.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C409347.1</b>	2	3	2	2				2	2	3	1	2
<b>C409347.2</b>	2	3	3					2	2	3	1	1
<b>C409347.3</b>	3	3	3		3			2	2	3	1	1
<b>C409347.4</b>	3	3	3	3	3			2	2	3	1	1
<b>C409347.5</b>	2	3	3	3				2	2	3	1	1
<b>C409347.6</b>						3		2	2	3	1	2

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409347.1</b>	2	
<b>C409347.2</b>	2	
<b>C409347.3</b>	2	1
<b>C409347.4</b>	2	1
<b>C409347.5</b>	2	1
<b>C409347.6</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय  
Accredited by NAAC with "A+" Grade



**Department of Chemical Engineering**

---

# CO-PO & CO-PSO Mapping 2019 Course

## BE Term-2





### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Process Modeling and Simulation (409349)

#### Course Outcome:

On completion of the course, students will be able to	
409349.1	Derive laws of conservation of mass, momentum and energy needed for modeling.
409349.2	Develop model equations for Fluid Flow Phenomena.
409349.3	Establish Model Development Process for Heat Transport Phenomena.
409349.4	Develop model equations for the Mass transfer Operations.
409349.5	Develop model equations and solution methodology for Chemical Reactors
409349.6	Apply modeling concepts to transient analysis of Chemical Processes

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C409349.1	2	1	1		1				1	2		
C409349.2	2	2	2		2				1	2		
C409349.3	3	3	2		2				1	2		
C409349.4	2	2	2		2				1	2		
C409349.5	1	1	1		2				1	2		
C409349.6	1	1	1		2				1	2		

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409349.1</b>	2	2
<b>C409349.2</b>	2	2
<b>C409349.3</b>	2	2
<b>C409349.4</b>	2	2
<b>C409349.5</b>	2	2
<b>C409349.6</b>	2	2



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Process Engineering Costing and Plant Design (409350)

#### Course Outcome:

On completion of the course, students will be able to	
409350.1	Distinguish the knowledge of basic process development, process selection and equipment specification sheet.
409350.2	Interpret basic principles of process economics, costing and depreciation of process equipment.
409350.3	Evaluate the knowledge of cost estimation of process equipment, related taxes and insurances.
409350.4	Optimize design of batch and cyclic operations.
409350.5	Recite the selected process equipment case studies for optimum design of equipments.
409350.6	Analyze and design project using PERT and CPM Technique.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C409350.1</b>	2	1		1						2	2	1
<b>C409350.2</b>	2									2	2	1
<b>C409350.3</b>	2									2	2	2
<b>C409350.4</b>	2									2	2	2
<b>C409350.5</b>										2	2	1
<b>C409350.6</b>	2	2	1	1						2	2	1

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409350.1</b>	2	
<b>C409350.2</b>	2	
<b>C409350.3</b>	2	
<b>C409350.4</b>	2	
<b>C409350.5</b>	2	
<b>C409350.6</b>	2	



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Chemical Process Safety (Elective-V: 409351(B))

#### Course Outcome:

On completion of the course, students will be able to	
409351.1	Understand concept, definitions in safety, Government regulations, Health & Safety laws and accident process.
409351.2	Understand industrial hygiene and evaluate effects of exposure of employees to toxic and hazardous materials.
409351.3	Select suitable process to avoid/minimize accidents due to fires and explosion in chemical industries.
409351.4	Control toxic chemicals and design systems to prevent fires and explosion.
409351.5	Do the identification of hazards and risk assessment.
409351.6	Tackle disasters and plan for emergency shutdowns systems.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C409351.1</b>	1	2	2		1	3	2	3	1	2		2
<b>C409351.2</b>	2	3	3	2	2	2	3	2	1	1	1	1
<b>C409351.3</b>	2	1	2	1	1	1	2	2	1	1	1	2
<b>C409351.4</b>	2	2	3	3	2	2	3	3	2	2	2	2
<b>C409351.5</b>	2	2	1	2	3	2	2	2	2	2	3	2
<b>C409351.6</b>	1	1	1	1	3	1	1	2	3	3	3	1

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409351.1</b>	1	1
<b>C409351.2</b>	3	2
<b>C409351.3</b>	1	1
<b>C409351.4</b>	3	3
<b>C409351.5</b>	2	3
<b>C409351.6</b>	2	2



**AISSMS**  
**COLLEGE OF ENGINEERING**

ज्ञानम् सकलजनहिताय

Accredited by NAAC with "A+" Grade



## Department of Chemical Engineering

### CO – PO – PSO Mapping

#### Petrochemical Engineering (Elective-VI: 409352(D))

#### Course Outcome:

On completion of the course, students will be able to	
409352.1	Choose basic building blocks of petrochemical industry.
409352.2	Identify the first generation raw material of petrochemical industry.
409352.3	Understand the production methods of first generation petrochemicals.
409352.4	Study the second generation of petrochemical materials.
409352.5	Undertake studies on polymer synthesis.
409352.6	Study integration of refinery, petrochemical plants with power generation and pollution control.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
<b>C409352.1</b>	1	1	1						2	1		
<b>C409352.2</b>	1	1	1						2	1		
<b>C409352.3</b>	1	1	1						2	1		
<b>C409352.4</b>	1	1	1						2	1		
<b>C409352.5</b>	1	1	1						2	1		
<b>C409352.6</b>	1	1	1			1	2		2	1		

**Mapping Levels: – 1 – Low, 2 - Medium, 3– High**

### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

### Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

### CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409352.1</b>	1	
<b>C409352.2</b>	1	
<b>C409352.3</b>	1	
<b>C409352.4</b>	1	
<b>C409352.5</b>	1	
<b>C409352.6</b>	1	





### Department of Chemical Engineering

#### CO – PO – PSO Mapping

#### Project Phase-II (409353)

#### Course Outcome:

On completion of the course, students will be able to	
409353.1	Discuss the knowledge of chemical Process & operation.
409353.2	Understand the knowledge of chemical Process & operation.
409353.3	Apply the knowledge of chemical Process & operation.
409353.4	Outline the basic need of different systems.
409353.5	Check the economy and safety aspects of chemical Process & operation.
409353.6	Plan the solution for chemical Process & operation.

#### CO - PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
C409353.1	2							2	2	3	1	1
C409353.2	2							2	2	3	1	1
C409353.3	3	3	3					2	2	3	3	1
C409353.4				3	3			2	2	3	1	1
C409353.5							3	2	2	3	1	1
C409353.6						3		2	2	3	3	2

Mapping Levels: – 1 – Low, 2 - Medium, 3– High

#### Program Outcomes

Engineering Knowledge	Modern tool usage	Individual and team work
Problem Analysis	The engineer and society	Communication
Design/development of solutions	Environment and sustainability	Project management and finance
Conduct investigations of complex Problems	Ethics	Life-long learning

## Program Specific Outcomes:

	Our Graduates will be able to
<b>PSO1</b>	Identify, analyze, design and develop solutions to Chemical Engineering problems of practical importance to industry and society.
<b>PSO2</b>	Demonstrate sound understanding of Chemical engineering fundamentals to solve problems through the use of modern experimental methods and computer aided design and simulation software.

## CO - PSO Mapping:

CO	PSO1	PSO2
<b>C409353.1</b>	2	
<b>C409353.2</b>	2	
<b>C409353.3</b>	2	1
<b>C409353.4</b>	2	1
<b>C409353.5</b>	2	1
<b>C409353.6</b>	2	