



# **SATHYABAMA**

**INSTITUTE OF SCIENCE AND TECHNOLOGY**

**(DEEMED TO BE UNIVERSITY)**

**Accredited "A" Grade by NAAC | 12B Status by UGC | Approved by AICTE**

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## **School of Bio and Chemical Engineering**

### **Department of Chemical Engineering**

#### **New Courses Introduced in 2022- 2023**

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| <b>S.<br/>No.</b>    | <b>Course Code</b> | <b>Course Name</b>                              | <b>Page<br/>No.</b> |
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| <b>Employability</b> |                    |                                                 |                     |
| 1                    | SCHA3014           | Petroleum chemistry                             | 2                   |
| 2                    | SCHA3015           | HSE & FE in petroleum industry                  | 3                   |
| 3                    | SCHA3016           | Synthesis and characterization of nanomaterials | 4                   |

|                 |                            |          |          |          |           |          |                    |
|-----------------|----------------------------|----------|----------|----------|-----------|----------|--------------------|
| <b>SCHA3014</b> | <b>PETROLEUM CHEMISTRY</b> | <b>L</b> | <b>T</b> | <b>P</b> | <b>EL</b> | <b>C</b> | <b>Total Marks</b> |
|                 |                            | <b>3</b> | <b>0</b> | <b>0</b> | <b>0</b>  | <b>3</b> | <b>100</b>         |

**Course Objective:**

- A discipline which studies the various problems associated with petroleum production.
- To develop greater and better ways of solving associated problems with production of petroleum products.

**UNIT 1: INTRODUCTION**

**9 Hours**

Composition of Petroleum – separation by molecular weight, type; Composition maps; Petroleum analysis and evaluation – ASTM evaluation, spectroscopic methods

**UNIT 2: COMPOSITION OF CRUDES**

**9 Hours**

Metals and heteroatom's in heavy crude oil – heteroatom's concentrations, structure of heteroatom functions; Asphaltenes and structure of petroleum

**UNIT 3: HEAVIER DISTILLATES**

**9 Hours**

Thermal chemistry of petroleum constituents – visbreaking, coking, hydro treating, Hydrocracking

**UNIT 4: UPGRADATION PROCESS**

**9 Hours**

Heavy oil up gradation processes- carbon rejection, hydrogen addition; Hydrocracking – reactions, catalysts, process configurations

**UNIT 5: REFINING OPERATIONS**

**9 Hours**

Instability of petroleum products – distillate and residual products; Incompatibility in refining Operations

**Total hours: 45**

**COURSE OUTCOMES:**

- CO1. - Utilize the Composition of Petroleum
- CO2. - Apply the Metals and heteroatoms in heavy crude oil.
- CO3. - Examine Thermal chemistry of petroleum constituents.
- CO4. - Analyze the Heavy oil up gradation processes and its applications
- CO5. - Evaluate Hydro cracking systems
- CO6. - Apply the concept of Instability of petroleum products

**TEXT / REFERENCE BOOKS**

1. Speight, J.G., The chemistry and technology of petroleum, Marcel Dekker, New York, 1998
2. Speight, J.G., Petroleum chemistry and refining Taylor and Francis, London, 1998
3. Production Chemicals for the Oil & Gas Industry, 2 nd Edition, CRC Press, Malcolm A. Kelland
4. The Chemistry and Technology of Petroleum, by James G. Speight, Fourth Edition, 4th Edition. 2010

**END SEMESTER EXAMINATION QUESTION PAPER PATTERN**

Max.Marks:100

Exam Duration: 3Hrs.

PartA:10 Questions of 2marks each-No choice

20 Marks

PartB:2 Questions from each unit of internal choice, each carrying 16marks

80 Marks

New Course

|                 |                                           |          |          |          |           |          |                    |
|-----------------|-------------------------------------------|----------|----------|----------|-----------|----------|--------------------|
| <b>SCHA3015</b> | <b>HSE &amp; FE IN PETROLEUM INDUSTRY</b> | <b>L</b> | <b>T</b> | <b>P</b> | <b>EL</b> | <b>C</b> | <b>Total Marks</b> |
|                 |                                           | <b>3</b> | <b>0</b> | <b>0</b> | <b>0</b>  | <b>3</b> | <b>100</b>         |

**Course Objective:**

- Knowledge of environment issues and all related acts, drilling fluids and its toxic effects with environment..
- Treatment of produced water and makeup water and its disposal as per state pollution control board norms.
- Oil mines regulations and proper implementation in drilling & production mines as per Act.

**UNIT 1: INTRODUCTION**

**9 Hours**

Introduction to environmental control in the petroleum industry: Overview of environmental issues- A new attitude .Drilling and production operations

**UNIT 2: Impact of drilling and production operations**

**9 Hours**

Measuring toxicity- Hydrocarbons- Salt-Heavy metals- Production chemicals- Drilling fluids- Produced water, Air pollution- Acoustic impacts- Effects of offshore platforms- Risk assessment. Environmental transport of petroleum wastes.

**UNIT 3: Mines regulations**

**9 Hours**

Introduction>Returns, Notices and plans- Inspector, management and duties- Drilling and work over- Production- Transport by pipelines- Protection against gases and fires- Machinery, plants and equipment- General safety provisions.

**UNIT 4: RISK ANALYSIS**

**9 Hours**

Toxicity, physiological, respiratory, skin effect of petroleum hydrocarbons and their mixture. Guidelines for occupational health monitoring in oil and gas industry. Corrosion in petroleum industry- Additives during acidizing, sand control and fracturing.

**UNIT 5: HAZARDS**

**9 Hours**

Hazard identification- Hazard evaluation- Hazop and what if reviews- Developing a safe process and safety management- Personal protection systems and measures. Guidelines on internal safety audits (procedures and checklist). Work permits systems. Well blowout fires and their control- Fire fight equipment-Suppression of hydrocarbons fires.

**Total hours: 45**

**COURSE OUTCOMES:**

- CO1. - Utilize the knowledge of various act related to safety  
CO2. - Apply the concepts involved in drilling operations.  
CO3. - Examine the drilling fluids and their composition  
CO4. - Analyze the oil storage and transportation  
CO5. - Evaluate the risk analysis  
CO6. - Apply the concept safety on petroleum products

**TEXT / REFERENCE BOOKS**

1. Environmental Control in Petroleum Engineering, John C. Reis, Gulf Publishing Company, 1996.
2. Application of HAZOP and What if Reviews to the Petroleum, Petrochemical and Chemical Process Industries, Dennis P. Nolan, Noyes Publications, 1994.
3. Oil Industry Safety Directorate (OISD) Guidelines, Ministry of Petroleum & Natural Gas, Government of India and Oil Mines Regulations-1984, Directorate General of Mines Safety, Ministry of Labor and Employment, Government of India.
4. Guidelines for Process Safety Fundamentals in General Plant Operations Centre for Chemical Process Safety, American Institute of Chemical Engineers, 1995.
5. Guidelines for Fire Protection in Chemical, Petrochemical and Hydrocarbon Processing Facilities, Centre for Chemical Process Safety, American Institute of Chemical Engineers, 2003.

**END SEMESTER EXAMINATION QUESTION PAPER PATTERN**

Max.Marks:100

Exam Duration: 3Hrs.

PartA:10 Questions of 2marks each-No choice

20 Marks

PartB:2 Questions from each unit of internal choice, each carrying 16marks

80 Marks

|          |                                   |   |   |   |    |   |             |
|----------|-----------------------------------|---|---|---|----|---|-------------|
| SCHA3016 | SYNTHESIS AND CHARACTERIZATION OF | L | T | P | EL | C | Total Marks |
|          | NANOMATERIALS                     | 3 | 0 | 0 | 0  | 3 | 100         |

**Course Objective:**

- To impart knowledge on the nanomaterials
- To understand the methods of synthesizing nanomaterials
- To understand the characterization of nanomaterials

**UNIT 1: CLASSIFICATIONS**

**9 Hours**

Classifications and types of nanomaterials as nano particles and 1D 2D 3D, nanomaterials. Concept of bulk versus nanomaterials and dependence of properties on size. Introduction to 'Top down' vs. 'Bottom up' approach of synthesis with suitable examples.

**UNIT 2:SYNTHESIS OF NANOMATERIALS**

**9 Hours**

Nano synthesis techniques based on liquid and vapor phase as the starting material. The study of wet chemical method like sol-gel method, hydrothermal, micro emulsion technique, chemical reduction, decomposition of organometallic precursors and chemical vapor deposition, metallo-organic chemical vapor deposition.

**UNIT 3:MECHANICAL METHODS**

**9 Hours**

Mechanical milling, laser ablation, microwave and ultrasound assisted synthesis sputtering and microwave plasma, photolysis, radiolysis, surfactant behavior, micelles, self-assembled mono layers (SAM's), Langmuir-Blodgett (LB)films.

**UNIT 4:QD'S NANOWIRES**

**9 Hours**

Preparation of quantum dots, nanowires and films, preparation of single walled and multiwalled nanotubes

**UNIT 5:CHARATERIZATION**

**9 Hours**

Techniques of characterization of size of nano powders/ particles using BET method and laser diffraction. Various spectroscopic techniques like optical spectroscopy. UV visible and Infrared spectroscopy. Raman spectroscopy. X-ray photoelectron spectroscopy. Basic understanding of each technique with special emphasis on characterization at nano scale. X-ray Fluorescence (XRF), X-ray diffraction (XRD) and Small Angle X-ray Scattering principles

**Total hours: 45**

**COURSE OUTCOMES:**

- CO1. - Utilize the types of nanomaterials with examples  
CO2. - Apply the techniques used for top down and bottom-up approach.  
CO3. - Examine the production of nanoparticles by different methods.  
CO4. - Analyze the assemblage of nanomaterials  
CO5. - Evaluate the quantum dots, nanowires and films  
CO6. - Apply the characterization of nanomaterials

**TEXT / REFERENCE BOOKS**

1. .Nanomaterials Chemistry by Rao C. N., A. Muller, A. K. Cheetham, WileyVCH , 2007.
2. Nanomaterials and Nanochemistry by Brechignac C., P. Houdy, M. Lahmani, Springerpublication, 2007.
3. Nanoscale materials in chemistry by Kenneth J. Klabunde, Wiley IntersciencePublications,2001.
4. Nanochemistry by Sergeev G.B., Elseiver publication,2006.
5. Nanostructures and Nanomaterials, synthesis, properties and applications by Guozhong Cao, Imperial College Press, 2004.

**END SEMESTER EXAMINATION QUESTION PAPER PATTERN**

Max.Marks:100

Exam Duration: 3Hrs.

PartA:10 Questions of 2marks each-No choice

20 Marks

PartB:2 Questions from each unit of internal choice, each carrying 16marks

80 Marks

New Course

**SATHYABAMA**  
**INSTITUTE OF SCIENCE AND TECHNOLOGY**  
**SCHOOL OF BIO AND CHEMICAL ENGINEERING**

**Department of Chemical Engineering**

MINUTES OF BOARD OF STUDIES 24<sup>th</sup> June 2022

Venue: Presentation Hall, Department of Chemical Engineering, Sathyabama Institute of Science and Technology

The following members were present in the meeting:

1. Dr.Vignesh Muthu Vijayan – Associate Professor – IIT Madras – External member
2. Dr.K.Sathish Kumar – Associate Professor – SSN college of Engineering – External member
3. Dr.S.Sathish – Associate Professor – Head of the Department
4. Dr.D.Prabu – Associate Professor – Internal member
5. Dr.A. Annam Renita – Professor – Internal member
6. Dr. S.S.Dawn – Professor – Head (Centre for Waste Management) – Internal member
7. Dr.D.Venkatesan – Associate Professor – Internal member
8. Dr.M.Karthikeyan – Asst. Professor – Internal member
9. Mr.Michel Rahul Soosai– Asst. Professor – Internal member

Chairperson welcomed the members to give their valuable suggestions for enhancing the syllabus. The minutes of BoS meeting was held on 24<sup>th</sup> June 2022, were reviewed and approved by the members. The comments were placed in 15<sup>th</sup> Academic Council and the same was approved.

1. Agenda item # 1 Wide scope of open electives provided

Head of the Department proposed inclusion of many open electives in order to facilitate students from entire institute to have interdisciplinary knowledge and proposed a total of 25 open electives

**Recommendations:** The External members thoroughly discussed the syllabus of open electives and resolved to approve the same.



A handwritten signature in blue ink, appearing to be 'J. Sathish'.

CHEMICAL ENGINEERING

2. Agenda item # 2 Introduction of new courses

The Head of the department highlighted the introduction of new courses as per the current scenario

- **Recommendations:** The BOS members suggested to introduce the new courses in the curriculum.

3. Agenda item # 3 Introduction of Petroleum Chemistry (SCHA3014)

Petroleum Chemistry encompassing the core aspects of petroleum engineering was proposed for Department of Chemical Engineering

**Resolutions:** Approved as recommended.

4. Agenda item # 4 HSE & FE IN PETROLEUM INDUSTRY(SCHA3015)

HSE & FE IN PETROLEUM INDUSTRY encompassing the core aspects of health safety and environment and fire explosion was proposed for Department of Chemical Engineering

**Resolutions:** Approved as recommended.

5. Agenda item # 5 Introduction of Synthesize and Characterization of Nanomaterials (SCHA3016)

**Synthesize and Characterization of Nanomaterials** encompassing the core aspects of Preparation and characterization of nanomaterials was proposed for Department of Chemical Engineering.

**Resolutions:** Approved as recommended

6. Agenda item # 6 Included 4 new experiments in Technical Analysis and Instrumentation Lab (SCHA2203) To upgrade the syllabus some core techniques like testing pH, conductivity, TDS, turbidity and the refractive index of the samples was proposed for Technical analysis and instrumentation lab.

**Resolutions:** Approved as recommended



A handwritten signature in blue ink, appearing to be "S. Srinivasan".

CHEMICAL ENGINEERING

7. Agenda item # 7 proposed new experiments in Unit Operation Lab (SCHA2307) To upgrade the syllabus some core operations comparison of screen effectiveness by mechanical and manual, pressure drop calculation in packed bed followed by size reduction using hammer mill and jaw crusher was proposed for Unit operation lab.

**Resolutions:** Approved as recommended

8. Agenda item # 8 proposed new experiments in Chemical Reaction Engineering Lab (SCHA2505) To upgrade the curriculum, photochemical reactor and packed bed reactor performance study was proposed for chemical reaction engineering laboratory..

**Resolutions:** Approved as recommended

Meeting ended with a vote of thanks by the Chair Person.

| S.No | Name                     | Designation                                                        | Signature              |
|------|--------------------------|--------------------------------------------------------------------|------------------------|
| 1    | Dr.Vignesh Muthu Vijayan | Associate Professor – IIT Madras – External member                 | M. Vignesh             |
| 2    | Dr.K.Sathish Kumar       | Associate Professor – SSN college of Engineering – External member | K. Sathish Kumar       |
| 3    | Dr.S.Sathish             | Associate Professor – Head of the Department                       | S. Sathish             |
| 4    | Dr.A. Annam Renita       | Professor – Internal member                                        | A. Annam Renita        |
| 5    | Dr.D.Prabu               | Associate Professor – Internal member                              | D. Prabu               |
| 6    | Dr.D.Venkatesan          | Associate Professor – Internal member                              | D. Venkatesan 29/6     |
| 7    | Dr. S.S.Dawn             | Professor – Head (Centre for Waste Management) – Internal member   | S. S. Dawn             |
| 8    | Dr.M.Karthikeyan         | Asst. Professor – Internal member                                  | M. Karthikeyan         |
| 9    | Mr.Michel Rahul Soosai   | Asst. Professor – Internal member                                  | M. Michel Rahul Soosai |



*S. Sathish*  
CHEMICAL ENGINEERING

|          |                     |   |   |   |    |         |             |
|----------|---------------------|---|---|---|----|---------|-------------|
| SCHA3014 | PETROLEUM CHEMISTRY | L | T | P | EL | Credits | Total Marks |
|          |                     | 3 | 1 | 0 | 0  | 3       | 100         |

#### Course Objective

- Understand factors that affect the choice of production chemicals including greener chemicals.
- Understand the control of production chemicals for the oil & gas industry

#### UNIT I Introduction

9hr

Composition of Petroleum – separation by molecular weight, type; Composition maps; Petroleum analysis and evaluation – ASTM evaluation, spectroscopic methods

#### UNIT II Composition

9hr

Metals and heteroatom's in heavy crude oil – heteroatom's concentrations, structure of heteroatom functions; Asphaltenes and structure of petroleum

#### UNIT

III

Chemistry

9hr

Thermal chemistry of petroleum constituents – visbreaking, coking, hydro treating, Hydrocracking

#### UNIT IV Heavy oil

9hr

Heavy oil up gradation processes- carbon rejection, hydrogen addition; Hydrocracking – reactions, catalysts, process configurations

#### UNIT V Residual Products

9hr

Instability of petroleum products – distillate and residual products; Incompatibility in refining Operations

Max: 45 hrs

#### COURSE OUTCOMES:

*to be done*

On completion of the course, student will able to

- CO1 - Convert the Composition of Petroleum
- CO2 - Construct the Metals and heteroatoms in heavy crude oil.
- CO3 - Examine Thermal chemistry of petroleum constituents.
- CO4 - Analyze the Heavy oil up gradation processes and its applications
- CO5 - Evaluate Hydrocracking systems
- CO6 - Apply the concept of Instability of petroleum products

#### TEXT BOOK REFERENCE

1. Speight, J.G., The chemistry and technology of petroleum, Marcel Dekker, New York, 1998
2. Speight, J.G., Petroleum chemistry and refining Taylor and Francis, London, 1998
3. Production Chemicals for the Oil & Gas Industry, 2 nd Edition, CRC Press, Malcolm A. Kelland
4. The Chemistry and Technology of Petroleum, by James G. Speight, Fourth Edition, 4th Edition., 2010

#### END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max.Marks:100

Exam Duration:3 Hrs.

PART A : 10 Questions of 2marks each-No choice

20 MARKS

PART B : 2 Questions from each unit of internal choice, each carrying 16marks

80 MARKS



*D. Vignesh*  
*Srinivas*

|          |                                |   |   |   |    |         |             |
|----------|--------------------------------|---|---|---|----|---------|-------------|
| SCHA3015 | HSE & FE IN PETROLEUM INDUSTRY | L | T | P | EL | Credits | Total Marks |
|          |                                | 3 | 1 | 0 | 0  | 3       | 100         |

#### Course objectives

- Knowledge of environment issues and all related acts, drilling fluids and its toxic effects with environment.
- Treatment of produced water and makeup water and its disposal as per state pollution control board norms, oil mines regulations and proper implementation in drilling & production mines as per Act.

#### UNIT I Introduction

9hr

Introduction to environmental control in the petroleum industry: Overview of environmental issues- A new attitude. Drilling and production operations

#### UNIT II

Impact of drilling and production operations

9hr

: Measuring toxicity- Hydrocarbons- Salt-Heavy metals- Production chemicals- Drilling fluids- Produced water, Air pollution- Acoustic impacts- Effects of offshore platforms- Risk assessment. Environmental transport of petroleum wastes.

#### UNIT III

Oil mines regulations

9hr

Introduction-Returns, Notices and plans- Inspector, management and duties- Drilling and work over- Production- Transport by pipelines- Protection against gases and fires- Machinery, plants and equipment- General safety provisions.

#### UNIT IV Risk analysis

9hr

Toxicity, physiological, respiratory, skin effect of petroleum hydrocarbons and their mixture. Guidelines for occupational health monitoring in oil and gas industry. Corrosion in petroleum industry- Additives during acidizing, sand control and fracturing.

#### UNIT V Hazards

9hr

Hazard identification- Hazard evaluation- Hazop and what if reviews- Developing a safe process and safety management- Personal protection systems and measures. Guidelines on internal safety audits (procedures and checklist). Work permits systems. Well blowout fires and their control- Fire fight equipment- Suppression of hydrocarbons fires.

Max: 45hrs

#### TEXT BOOKS REFERENCE:

1. Environmental Control in Petroleum Engineering, John C. Reis, Gulf Publishing Company, 1996.
2. Application of HAZOP and What if Reviews to the Petroleum, Petrochemical and Chemical Process Industries, Dennis P. Nolan, Noyes Publications, 1994.
3. Oil Industry Safety Directorate (OISD) Guidelines, Ministry of Petroleum & Natural Gas, Government of India and Oil Mines Regulations-1984, Directorate General of Mines Safety, Ministry of Labor and Employment, Government of India.
4. Guidelines for Process Safety Fundamentals in General Plant Operations Centre for Chemical Process Safety, American Institute of Chemical Engineers, 1995.
5. Guidelines for Fire Protection in Chemical, Petrochemical and Hydrocarbon Processing Facilities, Centre for Chemical Process Safety, American Institute of Chemical Engineers, 2003.

#### COURSE OUTCOMES:

On completion of the course, student will be able to

- CO1 - Convert to be conversant with the knowledge of various Acts related to safety
- CO2 - Construct the various drilling fluids handling.
- CO3 - Examine Hazop to petroleum equipment operation.
- CO4 - Mitigate occupational health hazards in the industry
- CO5 - Evaluate Hydrocracking systems
- CO6 - Apply the concept of Instability of petroleum products



*D. Vignesh*  
*Srinivas*

| SCHA3016 | SYNTHESIS AND CHARACTERIZATION<br>OF NANOMATERIALS | L | T | P | EL | Credits | Total Marks |
|----------|----------------------------------------------------|---|---|---|----|---------|-------------|
|          |                                                    | 3 | 1 | 0 | 0  | 3       | 100         |

#### Course Objective

- To impart knowledge on the nanomaterials
- To understand the methods of synthesizing nanomaterials
- To understand the characterization of nanomaterials

#### UNIT I Classification

9hr

Classifications and types of nanomaterials as nano particles and 1D 2D 3D, nanomaterials. Concept of bulk versus nanomaterials and dependence of properties on size. Introduction to 'Top down' vs. 'Bottom up' approach of synthesis with suitable examples.

#### UNIT II

Synthesis of nanomaterials

9hr

Nano synthesis techniques based on liquid and vapor phase as the starting material. The study of wet chemical method like sol-gel method, hydrothermal, micro emulsion technique, chemical reduction, decomposition of organometallic precursors and chemical vapor deposition, metallo-organic chemical vapor deposition.

#### UNIT III

Mechanical methods

9hr

Mechanical milling, laser ablation, microwave and ultrasound assisted synthesis sputtering and microwave plasma, photolysis, radiolysis, surfactant behavior, micelles, self-assembled mono layers (SAM's), Langmuir-Blodgett (LB) films.

#### UNIT IV QD's nanowires

9hr

Preparation of quantum dots, nanowires and films, preparation of single walled and multiwalled nanotubes

#### UNIT V Characterization

9hr

Techniques of characterization of size of nano powders/ particles using BET method and laser diffraction. Various spectroscopic techniques like optical spectroscopy. UV visible and Infrared spectroscopy. Raman spectroscopy. X-ray photoelectron spectroscopy. Basic understanding of each technique with special emphasis on characterization at nano scale. X-ray Fluorescence (XRF), X-ray diffraction (XRD) and Small Angle X-ray Scattering principles

Max: 45hrs

#### TEXT BOOK REFERENCE

1. Nanomaterials Chemistry by Rao C. N., A. Muller, A. K. Cheetham, WileyVCH, 2007.
2. Nanomaterials and Nanochemistry by Brechignac C., P. Houdy, M. Lahmani, Springer publication, 2007.
3. Nanoscale materials in chemistry by Kenneth J. Klabunde, Wiley Interscience Publications, 2001.
4. Nanochemistry by Sergeev G.B., Elsevier publication, 2006.
5. Nanostructures and Nanomaterials, synthesis, properties and applications by Guozhong Cao, Imperial College Press, 2004.

#### COURSE OUTCOMES:

On completion of the course, student will able to

CO1 - Understand the types of nanomaterials with examples

CO2 - Study the techniques used for top down and bottom-up approach

CO3 - Production of nanoparticles by different methods *mechanical methods*

CO4 - Understand the assemblage of nanomaterials

CO5 - Understand the quantum dots, nanowires and films

CO6 - Understand the characterization of nanomaterials



*D. Vignesh*

*S. Sathish*

# SATHYABAMA

## INSTITUTE OF SCIENCE AND TECHNOLOGY

### SCHOOL OF BIO AND CHEMICAL ENGINEERING

#### Department of Chemical Engineering

#### MINUTES OF BOARD OF STUDIES 23<sup>rd</sup> Jan 2023

Venue: Presentation Hall, Department of Chemical Engineering, Sathyabama Institute of Science and Technology

The following members were present in the meeting:

1. Dr.Vignesh Muthu Vijayan – Associate Professor – IIT Madras – External member
2. Dr.K.Sathish Kumar – Associate Professor – SSN college of Engineering – External member
3. Dr.S.Sathish – Associate Professor – Head of the Department
4. Dr.D.Prabu – Associate Professor – Internal member
5. Dr.A. Annam Renita – Professor – Internal member
6. Dr. S.S.Dawn – Professor – Head (Centre for Waste Management) – Internal member
7. Dr.D.Venkastesan – Associate Professor – Internal member
8. Dr.M.Karthikeyan – Asst. Professor – Internal member
9. Mr.Michel Rahul Soosai– Asst. Professor – Internal member

Chairperson welcomed the members to give their valuable suggestions for enhancing the syllabus. The minutes of BoS meeting was held on 23<sup>rd</sup> January, were reviewed and approved by the members. The comments were placed in 15<sup>th</sup> Academic Council and the same was approved.

1. Agenda item # 1

The members had a brainstorming discussion Head of the Department proposed inclusion of many open electives in order to facilitate students from entire institute to have interdisciplinary knowledge and proposed a total of 25 open electives

**Recommendations:** The External members thoroughly discussed the syllabus of open electives and resolved to approve the same.

2. Agenda item # 2 Introduction of new courses

The Head of the department highlighted the notification from AICTE that credits of the curriculum have to be reduced from 162 from next academic year



A handwritten signature in black ink, appearing to be 'S. Sathish'.

CHEMICAL ENGINEERING

- **Recommendations:** The BOS members suggested to include the three new course in the curriculum while reduction of credits and to adjust the total credits to be adjusted across the semesters

**Resolutions:** The BoS approved the introduction of the new course.

3. Agenda item # 3 Introduction of new experiments in courses

The Head of the department highlighted the notification from AICTE that credits of the curriculum have to be reduced from 162 from next academic year

- **Recommendations:** The BOS members suggested to include the new experiments in the curriculum while reduction of credits and to adjust the total credits to be adjusted across the semesters

**Resolutions:** The BoS approved the introduction of the new course.

4. Agenda item # 9 proposed new exercises in **MAT LAB (SCHA2506)** To upgrade the curriculum, Arithmetic operations using LABVIEW, building VI to demonstrate conversion and subroutine for conversion of centigrade to Fahrenheit using Labview was proposed for MATLAB.

**Resolutions:** Approved as recommended

5. Agenda item # 10 proposed new design and drawing in **PROCESS EQUIPMENT DESIGN AND DRAWING LAB (SCHA2604)** To upgrade the design lab, design and drawing of shell and tube heat exchanger and reboiler followed by design and drawing of decantation were proposed for lab.

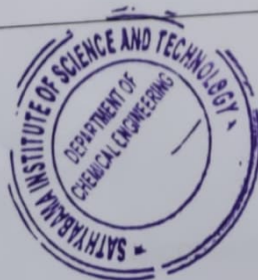
**Resolutions:** Approved as recommended

6. Agenda item # 11 proposed new mass transfer experiments in **MASS TRANSFER LAB (SCHA2405)** To enhance the mass transfer lab, T-x-y diagram for water -acetone system and RDC for extraction system were proposed for Mass transfer lab.

**Resolutions:** Approved as recommended.

Meeting ended with a vote of thanks by the Chair Person.

| S.No | Name                     | Designation                                                        | Signature        |
|------|--------------------------|--------------------------------------------------------------------|------------------|
| 1    | Dr.Vignesh Muthu Vijayan | Associate Professor – IIT Madras – External member                 | M. Vignesh       |
| 2    | Dr.K.Sathish Kumar       | Associate Professor – SSN college of Engineering – External member | K. Sathish Kumar |
| 3    | Dr.S.Sathish             | Associate Professor – Head                                         | S. Sathish       |



*[Signature]*  
CHEMICAL ENGINEERING

|   |                        | of the Department                                                |                                |
|---|------------------------|------------------------------------------------------------------|--------------------------------|
| 4 | Dr.A. Annam Renita     | Professor – Internal member                                      | <i>du</i>                      |
| 5 | Dr.D.Prabu             | Associate Professor – Internal member                            | <i>Dr. D. Prabu</i>            |
| 6 | Dr.D.Venkastesan       | Associate Professor – Internal member                            | <i>Dr. D. Venkatesan</i>       |
| 7 | Dr. S.S.Dawn           | Professor – Head (Centre for Waste Management) – Internal member | <i>Dr. S.S. Dawn</i>           |
| 8 | Dr.M.Karthikeyan       | Asst. Professor – Internal member                                | <i>Dr. M. Karthikeyan</i>      |
| 9 | Mr.Michel Rahul Soosai | Asst. Professor – Internal member                                | <i>Mr. Michel Rahul Soosai</i> |

