Date 11 April '21

Expt. No. _____ Page No. 01

☆ Vission & Mission of D.T.U. ☆

I ☆) Vission :->

To be a world class university through education, innovation and research for service of humanity

II ☆) Mission :->

1.) To establish centres of excellence in emerging areas of science, engineering, management in allied areas

2.) To ~~power~~ foster an ecosystem for innovation, development of technology and entrepreneurship

3.) To create environment of collaboration, imagination and creativity.

4.) To develop human potential, abilities, ethics & integrity

5.) To provide environment friendly and sustainable solutions for global needs.

Teacher's Signature _____

Date 11th April '21

Expt. No. _____ Page No. 02

Vission & Mission of Department of Applied Chemistry.

I.) Vission ☆

To be a centre of excellence in areas of applied chemistry, polymer science & technology.

II.) Mission ☆

1.) To be a world class centre for education, research & innovation in field of applied chemistry, focus on cutting-edge technologies and foster environment of seamlessness b/w academics & industries.

2.) To meet need for engineers & scientists at all levels of tertiary education; UG, PG & doctoral levels

Teacher's Signature _____

Date 11th April 21

Expt. No. _____ Page No. 03

Course Objectives

1) To familiarize students with concepts of engineering chemistry, material characterisitics & green chemistry

2) To give hands on training on various subjects taught in theory classes, to help them do work systematically

Course Outcomes

1) Understand theoretical principles behind conventional and modern methods of analysis and apply them to perform chemical analysis experiments

2) Understand synthesis, properties & applications of various materials

3) Apply knowledge of thermodynamics in studying chemical synthesis

4) Understand concepts of chemistry for achieving sustainable development

Teacher's Signature _____

Date 11th April 2021

Expt. No. _____ Page No. 04

General Safety Practices

1) Never work alone in labs

2) Wear lab coat, safety goggles and proper shoes while working in the lab.

3) Locate fire extinguishers, first-aid kits etc in lab

4) No food/drinks are allowed in labs

5) Never taste any chemicals or inhale any vapours.

6) Spilled chemicals (acid/base) should be rinsed with water & dry sponge ASAP (as soon as possible)

7) Seek Medical attention, post-rinsing of eyes if chemicals get into them.

8) Broken glass items should be placed in appropriate containers.

9) Keep your working area clean

10) All Lab packages must be free from blockage.

Teacher's Signature _____

11.) Wash hands after experiment is done.

12.) Report injuries to concerned staff.

Date 11th April 21

Expt. No. _____ Page No. 06

Material Safety (MSDS) Data sheet

Section 1: Chemical product and company identification

Section 2: Composition & Information on ingredients

Section 3: Hazards Identification

Section 4: First Aid Measures

Section 5: Fire and Explosion Data

Section 6: Accidental release measures

Section 7: Handling & Storage

Section 8: Exposure controls / personal protection

Section 9: Physical & Chemical properties

Section 10: Stability & Reactivity Data

Section 11: Toxicological Information

Section 12: Ecological Information

Teacher's Signature _____

Section 13: Disposal Considerations

Section 14: Transport Information

Section 15: Other regulatory

Section 16: Other Information

GHS - Hazard Pictograms and Related Hazard Classes

Exploding Bomb
- Explosives
- Self-reactives
- Organic Peroxides

Corrosion
- Skin corrosion/burns
- Eye damage
- Corrosive to metals

Flame Over Circle
- Oxidizing gases
- Oxidizing liquids
- Oxidizing solids

Gas Cylinder
- Gases under pressure

Enviroment
- Aquatic toxicity

Skull & Crossbones
- Acute toxicity (fatal or toxic)

Exclamation Mark
- Irritant (eye & skin)
- Skin sensitizer
- Acute toxicity
- Narcotic effects

Health Hazard
- Carcinogen
- Mutagenicity
- Reprodcutive toxicity
- Respiratory sensitizer

Flame
- Flammables
- Pyrophorics
- Self-heating
- Emits flammable gas

Date 11th April, 21

Expt. No. _____ Page No. 08

Globally Harmonized System (GHS) of Classification & Labelling of Chemicals

The GHS pictogram consists of a symbol on a white background framed within a red border and represents distinct hazards.

National Fire Protection Association Diamond

The NFPA has developed a hazard warnings symbol called 'NFPA' Diamond. It conveys information regarding hazards quickly. The type of hazard is indicated by colour & location.

Hazards are rated from '0' (very low) to '4' (extreme) in each category, with a provision for special hazards.

Teacher's Signature _____

Date 11th April 21

Expt. No. _____ Page No. 09

#Special Hazards

OX	Oxidizer
ACID	Acid
ALK	Alkali
W	Use of no water
COR	Corrosive
BIO	Biohazard
POI	Poisonous

Rating Summary.

#Health (BLUE)

4: Danger: Maybe fatal on short exposure specialized protective equipment required

3: Warning: Corrosive; Avoid Skin contact

Teacher's Signature _____

2: Warning :-> May be harmful on Inhalation

1: Caution :-> May be irritating

0: No Unusual Hazard.

#flammability (RED).

4: Danger :-> Flammable gas / liquid.

3: Warning :-> Flammable ; Flash point below 100°F (37.8°C)

2: Caution :-> Combustible, flash point below 100°F to 200°F (93.8°C)

1: - Combustible if heated

0: - Combustible Stability

#Reactivity (Yellow).

4: - Danger :- Explosive material at room temp.

3: - Danger :- Explosive if heated under

Teacher's Signature _____

confinement / mixed with water.

2:- Caution :- Unstable / Reacts violently with water

1:- Caution :- May react with water.

0:- Stable :- Not reactive when mixed with water

Date 11th April 21

Expt. No. _____ Page No. 12

Program Outcomes

Engineering graduates will be able to :-

1.) Apply knowledge of maths, science and engineering, specialization to solution of complex engineering problems.

2.) Identify, formulate, review and analyze complex engineering problems reaching substantial conclusions using maths, science.

3.) Design solutions for complex engineering problems & design systems components that meet specified needs with apt conditions for health, culture & environmental consideration

4.) Conduct investigations of complex problems use research-based knowledge for design of experiments and synthesis of information to provide valid conclusions

Teacher's Signature _____

Date 11th April 2021

Expt. No. _____ Page No. 13

5.) Enhance modern tool usage, create, select & apply techniques, resources & tools with an understanding of limitations.

6.) Apply reasoning paired with continual knowledge to access societal, health issues and responsibilities relevant to professional engineering practice.

7.) Understand impact of engineering ~~control~~ solutions in environmental contexts & demonstrate need for sustainable development.

8.) Apply ethical principles & commit to professional ethics & norms of engineering practice

9.) Function effectively as an individual and as a member/leader in diverse teams & in multi disciplinary settings.

10.) Communicate effectively on complex activities with engineering community & society at large, design & present instructions

11.) Demonstrate knowledge & understanding of engineering & management principles &

Teacher's Signature _____

apply these to one's own work to manage projects.

12.) Recognise need for preparation & ability to engage in independent learning in broadest cast context of technological change.

Bijohri