INQUIMAE
(12) - QI
1994

Ref.: Expte. 432.622/80

Anexo 1 a Resolución CD N°

NUEVO MODELO DE PROGRAMA A REGIR A PARTIR
DEL 2° CUATRIMESTRE DE 1993

FACULTAD DE CIENCIAS EXCATAS Y NATURALES

U.B.A.

1.- **INSTITUTO:** INQUIMAE (Instituto de Química Física de los Materiales, Medio ambiente y Energía)

2.- **CARRERA de:** a) Actualización

3.- **CUATRIMESTRE:** 1° de 1994

4.- **N° DE CODIGO DE CARRERA:** -------

5.- **MATERIA:** Curso de "Materiales y corrosión en la industria del petróleo"
N° de CODIGO: --------

6.- **PUNTAJE PROPUESTO:** s/puntaje

7.- **PLAN DE ESTUDIO AÑO:** -------

8.- **CARACTER DE LA MATERIA:** Optativa

9.- **DURACION:** 5 días

10.- **HORAS DE CLASE SEMANAL:**
a)Teóricas: 30 hs.
b)Problemas: ---
c)Laboratorio: 10 hs.
g)Totales hs.: 40 hs.
d)Seminarios: ---
e)Teórico-problemas: ---
f)Teórico-prácticas: ---

11.- **CARGA HORARIA TOTAL:** 40 hs.

12.- **ASIGNATURAS CORRELATIVAS:** Ser graduado en Ciencias Químicas, Geológicas, Ingeniería.

13.- **FORMA DE EVALUACION:** Sin evaluación

14.- **PROGRAMA ANALITICO:** Se adjunta por separado

APROBADO POR RESOLUCION CD 1272/94

15.- **BIBLIOGRAFIA:** (indicar tíutlo del libro, autor, editorial, año de publicación)

I- Ver al pie del programa.
II-
III-

Fecha: 6 de junio de 1994

FIRMA DEL PROFESOR: Dr. Cseve p/a. **FIRMA DEL DIRECTOR:**

Aclaración firma Dr. Sergio Kopusta **Sello aclaratorio:** Dr. Roberto J. Fernández Pr. DIRECTOR

p/a Ernesto Julio B

MATERIALS AND CORROSION IN OIL INDUSTRY
COURSE OUTLINE

1. INTRODUCTION

Background

- Oil and gas industry: production, treatment, processing, distribution
- Main processes: parameters, conditions, operability
- Materials utilization - limitations

Definitions and Concepts

- Corrosion Processes
- Corrosion Problems, Costs
- Corrosion Rates: measurements, expressions, meaning
- Forms of Corrosion
- Standards: NACE, ASTM, SPE, and other organizations

Electrochemistry

- Thermodynamics - Pourbaix diagrams
- Kinetics - Reactions, measurements
- Applications

Fundamentals of Metallurgy

- Processing, fabrication
- Mechanical testing
- Welding

Environmentally Assisted Cracking

- Stress Corrosion Cracking (SCC)
- Sulfide Stress Cracking (SSC)
- Hydrogen embrittlement (HE), Hydrogen Induced Cracking (HIC, SOHIC)
- Detection - Nondestructive examination

Fundamentals of Corrosion Control

- Corrosion control methods
  - cathodic protection, inhibition, coatings
- Materials selection
- Design for corrosion control

2. CORROSION PROCESSES IN OIL INDUSTRY

Production environments
Oil and gas transportation
Oil and gas processing
Refineries
Petrochemical plants

3. CO2 CORROSION

- Environmental effects: Pressure, temperature, composition, hydrodynamics
- Metallurgical effects
- Corrosion mechanisms
- Corrosion rate prediction tools:de Waard-Millams, Barber, Tulsa, Crolet

4. H2S CORROSION

- Environmental effects: Pressure, temperature, composition, hydrodynamics

Stress cracking and hydrogen embrittlement

- Mechanism
- Prevention - metallurgy, inhibition
- NACE MR01-75

5. CORROSION MONITORING AND INSPECTION

- Monitoring techniques
- Inspection techniques
- Inspection philosophy: rules and regulations

6. CORROSION CONTROL

Corrosion inhibition

- Types of inhibitors, methods of application
- Performance monitoring - quality assurance
- Inhibitor selection - inhibitor system design
- Inhibitor problems

Coatings

- Applications and limitations
- Coating evaluations

Cathodic Protection

- Applications and limitations

Materials Selection

- Rules, guidelines and standards
- Quality control - quality assurance
- Customer-supplier interactions