

Raíz
Evidencia Directa

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|------------|---------------------|
| Categoría: | 3. Plan de Estudios |
| Indicador: | 3.1 Fundamentación |

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| Acciones de mejora: |
| <ol style="list-style-type: none"> 1. Realización del curso CFD SKILLS AND TOOLS FOR COMBUSTION MECHANISMS USING “CHEMKIN MECHANISM” AND “DATA BASE LIBRARY” FOR GAS TURBINE PERFORMANCE SIMULATION y video conferencia APPLICATION OF FLOW MACHINES AND FLUID MECHNICS TO AUTOMATIZATION IN ROBOTICS PICKS AND PLACE. 2. Realización de cursos en el Centro de Idiomas para estudiantes. 3. Impartición de la experiencia educativa Flow Machines (Máquinas de Flujo). 4. Generación de proyectos finales de los alumnos de FIMCN para las experiencias educativas: Sistema de Transporte de Fluidos, Transferencia de Calor y Máquinas de Flujo |

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| Evidencia: | 3.1 |
| <ol style="list-style-type: none"> 1. Carta del curso-Cardiff y el documento Glasgow-online course. 2. Relación de calificaciones de Ingeniería Mecánica emitida por el Centro de Idiomas de la UV. 3. Constancia de Cátedra en lenguas extranjeras u originarias y Content of the Educational Experience Flow Machines 4. Reportes de Proyectos finales de las experiencias educativas Sistema de Transporte de Fluidos, Transferencia de Calor y Máquinas de Flujo. | |

3.1.1 Carta del curso-Cardiff



**School of Engineering
Ysgol Peirianneg**
Head of School, Pennaeth yr Ysgol
Professor, Yr Athro Sam Evans

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01-August-2019

Short course: **CFD SKILLS AND TOOLS FOR COMBUSTION MECHANISMS USING "CHEMKIN MECHANISM" AND "DATA BASE LIBRARY" FOR GAS TURBINE PERFORMANCE SIMULATION (60 hours)**

Aim: This course is presented to postgraduate students from Cardiff University and Universidad Veracruzana to obtain skills and knowledge to model complex combustion processes in gas turbines with validation from experimental data supporting their dissertations or thesis.

Syllabus:

Module I. GAS TURBINE PERFORMANCE & COMBUSTION (25-30 August 2019, 20 hours)

Module Leader: PhD. Marco Osvaldo Viguera Zúñiga
Language: English

Summary: 1.1 Gas turbine Performance.- description of gas turbine sections linked with the Brayton Cycle and its parameters (pressure, temperature, mass flow, efficiency, output-power and specific fuel consumption). 1.2 Performance analyses of gas turbine combustion chambers.

Module-II 7 COMBUSTION MECHANISM, CHEMKIN (1-4 October 2019, 20 hours)

Module Leader: Dra María Elena Tejeda del Cueto
Language: English (online)

Summary: 2.1 Flame Theory .- Analysis of premixed and diffusion flames including various parameters (mass flow, equivalence ratio, adiabatic temperature, mole fraction in species and flame colour). 2.2 Chemkin Mechanism.- the combustion processes in gaseous phase (chemistry, heat diffusion, species, convective heat transfer induced by turbulent flow).

Module-III. EXPERIMENTAL TESTS & COMBUSTION (from 25-29 November 2019, 20 hours)

Module Leader: PhD Agustin Valera Medina
Language: English

Summary: 3.1 Comparison between simulation and experimental tests using available references. 3.2 Post-processing CFD after simulation to be compared with experimental tests.

Previous Knowledge: Combustion, Chemistry and Gas turbine's thermodynamics

Intended learning outcomes

On successful completion of this module students should be able to:

- Undertake adequate CFD models with complex combustion;
- Approximate causes, nature and scope of complex combustion mechanisms;
- Understanding the differences between fuels, mixtures, operation conditions and how the latter generate simulation convergence conflicts;
- Recognise criteria for successful validation and recognition of representative results.



Registered Charity, no. 1136855
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Documento Glasgow-online course.

**UNIVERSIDAD VERACRUZANA – UNIVERSITY OF GLASGOW
(MEXICO - UNITED KINGDOM)**

LANGUAGE: ENGLISH ONLINE COURSR

SUBJECTS: SISTEMAS DE FLUIDOS, MAQUINAS DE FLUJO Y EXPERIENCIA RECEPCIONAL,

LEVEL: LICENCIATURA Y TEMAS DE INVESTIGACION DE POSGRADO

TOPIC:

**APPLICATION OF FLOW MACHINES AND FLUID MECHNICS TO
AUTOMATIZATION IN ROBOTICS PICKS AND PLACE**

GUESS AUTHOR: ING. JULIO CABLLERO (MEXICAN RESEARCHER IN UK)

PROFESSOR: DR. MARCO OSVALDO VIGUERAS ZUNIGA

2019-51

3.1.2 Relación de calificaciones de Ingeniería Mecánica emitida por el Centro de Idiomas de la UV.

| PERIODO | CURSO | NRC | SPRIDEN_ID | NOMBRE | CARRERA | INSCR | CALIF |
|---------|--------------------------|-------|------------|------------------------------------|---------------------|-------|-------|
| 201651 | FRANCES I BASICO | 30237 | S15001284 | HERNANDEZ-RIVERA CARMEN ELIZABETH | INGENIERIA MECANICA | 1ª | 9 |
| 201651 | INGLES I BASICO | 30270 | S15021526 | FRAY-GONZALEZ JORGE ANTONIO | INGENIERIA MECANICA | 1ª | 5 |
| 201651 | INGLES I BASICO | 30278 | S15021557 | BRAVO-CAMPOS MICHELLE DEL ROSARIO | INGENIERIA MECANICA | 1ª | 6 |
| 201651 | INGLES I INTERMEDIO | 30347 | S13016280 | VILLANUEVA-PARDO MARIA DEL PILAR | INGENIERIA MECANICA | 1ª | S/D |
| 201651 | INGLES I INTERMEDIO | 65860 | S11002478 | MONTERO-HERNANDEZ FERNANDO | INGENIERIA MECANICA | 1ª | S/D |
| 201651 | INGLES I INTERMEDIO | 65860 | S12027624 | BAXIN-ESCRIBANO CESAR ULISES | INGENIERIA MECANICA | 1ª | 8 |
| 201651 | INGLES I INTERMEDIO | 71798 | S12001237 | TREVIÑO-SILVA JONATHAN | INGENIERIA MECANICA | 1ª | 7 |
| 201651 | INGLES I INTERMEDIO | 71798 | S13001242 | GARCIA-ALEJANDRO IVAN | INGENIERIA MECANICA | 1ª | 10 |
| 201651 | INGLES III BASICO | 30327 | S13029481 | VERA-HERRERA RODOLFO ARTURO | INGENIERIA MECANICA | 1ª | S/D |
| 201651 | INGLES III BASICO | 30328 | S12001192 | JIMENEZ-RUIZ ARNOLD | INGENIERIA MECANICA | 1ª | 9 |
| 201651 | INGLES III BASICO | 30328 | S12016353 | MORALES-SANCHEZ OSCAR YAMIR | INGENIERIA MECANICA | 1ª | 8 |
| 201651 | INGLES III BASICO | 30328 | S13016283 | BENAVIDES-RODRIGUEZ MARTIN DOMINGO | INGENIERIA MECANICA | 1ª | 9 |
| 201651 | INGLES III BASICO | 59711 | S13001260 | DE LA ROSA-AHUMADA IRVING ADRIAN | INGENIERIA MECANICA | 1ª | 6 |
| 201651 | INGLES TEXTOS III BASICO | 75974 | S12001253 | MARTINEZ-FLORES MANUEL RAMSES | INGENIERIA MECANICA | 1ª | S/D |
| 201701 | ALEMAN I BASICO | 37817 | S15001336 | MOLINA-IBAÑEZ AGUSTIN | INGENIERIA MECANICA | 1ª | S/D |
| 201701 | FRANCES I BASICO | 37822 | S12001192 | JIMENEZ-RUIZ ARNOLD | INGENIERIA MECANICA | 1ª | 8 |
| 201701 | FRANCES II BASICO | 37827 | S15001284 | HERNANDEZ-RIVERA CARMEN ELIZABETH | INGENIERIA MECANICA | 1ª | 9 |
| 201701 | INGLES I BASICO | 37709 | S15021526 | FRAY-GONZALEZ JORGE ANTONIO | INGENIERIA MECANICA | 2ª | 8 |
| 201701 | INGLES II BASICO | 37738 | S14001267 | HUERTA-RUIZ GERARDO | INGENIERIA MECANICA | 1ª | 7 |

3.1.3 Constancia de Cátedra en lenguas extranjeras u originarias



Universidad Veracruzana

Ingeniería Mecánica y Ciencias Navales
Dirección
Región Veracruz

23 Octubre 2019

A QUIEN CORRESPONDA

Por medio de la presente a solicitud del interesado en participar en el programa U040 del *Indicador-7. Profesores que imparten cátedra en lenguas extranjeras u originarias (lenguas indígenas)*; se hace constar que de acuerdo a los registros de esta Facultad el **DR. MARCO OSVALDO VIGUERAS ZÚÑIGA** con número de personal **35227**:

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Fracc. Costa
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Veracruz,
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Ext. 25130

**Correo
electronico**
anortiz@uv.mx

Impartió clases en la Facultad de Ingeniería y Ciencias Navales en el programa educativo de Licenciatura Ingeniería Mecánica en la lengua extranjera "Inglés". La experiencia educativa 2019-01 (AGOSTO-DICIEMBRE 2019) que impartió es 2010-01 Flow Machines (Máquinas de Flujo) con un número de 16 horas.

ATENTAMENTE


FRANCISCO ORTIZ MARTINEZ
DIRECTOR



Universidad Veracruzana
Facultad de Ingeniería
Mecánica y
Ciencias Navales

Content of the Educational Experience Flow Machines

CONTENT OF THE EDUCATIONAL EXPERIENCE

Name: **FLOW MACHINES**
Program: **MECHANICAL ENGINEERING**
Undergraduate level
Plan: **2011**

INTEGRATOR PROJECT

1.- Hydroelectric Plant 2.- Aeolian Power Station 3.- Project of a Pumping System

ACADEMICS

Members of the academies by area of knowledge of the regions where the educational program is taught

TEACHER'S PROFILE

Engineer or Degree in an area related to the educational experience, preferably with a Master's degree in Engineering Sciences or related, preferably with a Doctorate in Engineering Sciences or related

COMPETITION UNIT

The student will acquire the knowledge of the classification, foundation and appropriate selection of the different types of flow machines so that he / she will have the ability to make decisions for the most efficient use of them, depending on the operating conditions of each application.

ARTICULATION OF THE AXLES

In this educational experience, students will acquire commitments of responsibility and technical and energy sustainability both individually and in groups, of the various factors that influence the problems of their environment, so that later through a positive attitude and respect they apply their knowledge to the better use of resources for the benefit of society from a respectful approach to the environment.

DESCRIPTION

This experience is located in the Terminal Training area of the Mechanical Engineering Education Program (2 Hrs Theoretical and 2 Hrs Workshop, 6 credits) and the thematic contents in this course will provide the student with necessary and sufficient knowledge for the design, selection, installation, operation and maintenance of flow machines, such as hydraulic turbines, wind turbines, axial compressors, centrifugal or reciprocating, centrifugal pumps, axial, or positive displacement.

Topics included: formal theoretical principles of the statics, fluid dynamics, dimensional analysis, and similarity applied to the theory of models.

JUSTIFICATION

This educational experience is essential in the training of the mechanical engineer since it allows him to give solutions to real problems in the handling of fluids required in the public or private productive sector, in the handling of hydraulic or thermal machines.

THEORETICAL KNOWLEDGE

UNIT 1. GENERAL PRINCIPLES OF FLUID MACHINES

- 1.1. Definitions
- 1.2. Classification
- 1.3. Components of absolute speed.
- 1.4. Euler's equation.
- 1.5 Equation of the transfer in the form of the energetic components.
- 1.6. Degree of Reaction
- 1.7. Laws of operation of the turbomachinery.
- 1.8. Operating coefficients.
- 1.9. Specific speed
- 1.10. Characteristic curves

UNIT 2. CENTRIFUGAL AND AXIAL PUMPS.

- 2.1. General characteristics
Functioning.
- 2.2. Analysis of an operating curve
- 2.3. Real characteristic curves.
- 2.4. Load in the suction and cavitation parameter.

UNIT 3. POSITIVE DISPLACEMENT PUMPS.

3.1.4 Reportes de Proyectos finales de las experiencias educativas Sistema de Transporte de Fluidos, Transferencia de Calor y Máquinas de Flujo.

VERACRUZ UNIVERSITY
FACULTY OF ENGINEERING



FLUID DYNAMICS
SHIP PROPELLER CAVITATION
AND VENTURI TUBE

CERQUEDA BRAVO FIDEL GASPAR
LUIS ANGEL SALDAÑA DE LA CRUZ

DR. MARCO OSVALDO VIGUERAS ZÚÑIGA.

UNIVERSIDAD VERACRUZANA
FACULTY OF ENGINEERING

SUBJECT: TRANSPORT OF FLUIDS SYSTEMS
NAMES: EDSSON ADRIAN ORTÍZ ÁVILA-MARTIN PEÑA
HERNANDEZ
TOPIC: AQUEDUCTS
DATE: MAY-18-2017



UNIVERSIDAD VERACRUZANA.



Facultad de Ingeniería.

Subject: Heat Transfer.

Students Names: Martinez Lacorte Roger Emmanuel.
Alfaro Medina Miguel Angel.

Professor: Dr. Marco Osvaldo Viguera Zúñiga.

Date: May-28-2018.

Topic: Heaters by Steam.
Equipment: HRS-315 Roller Grill with SGXP-31 Sneeze Guard.



Farm Industry (Growing)


Professor:
Marco Osvaldo Viguera Zúñiga
Subject:
Heat Transfer
Name:
García López Jairo Antonio
Santiago, Veracruz, México

Universidad Veracruzana – Facultad Ingeniería

Subject: Turbo machinery

Student: Ulises Castillo Aguirre

Topic: Aeroméxico, gas turbine and airplane models



Universidad Veracruzana
Facultad de Ingeniería

Subject: Heat Transfer
Professor: Dr. Marcos Osvaldo Viguera Zúñiga
Student Name: Alexis Ortiz Juárez
Date: 18/05/17
Project Name: Steam application industrial boiler
bosch 8000s



UNIVERSIDAD VERACRUZANA
FACULTY OF ENGINEERING
TURBOMACHINERY

DIANA KARLA FISCAL HERNÁNDEZ
SOLAR INDUSTRIAL, GAS TURBINE
(CENTAUR 40)

DR. MARCO OSVALDO VIGUERAS ZÚÑIGA