Universidad Juárez del Estado de Durango

Facultad de Ciencias Forestales

Learning Unit Programme
With an integral professional competences approach

I. LEARNING UNIT GENERAL DATA

1. learning Unit Name				**2. Code**	
Physics				4227	
3. Academic Unit					
FORESTRY SCIENCES FACULTY					
4. Academic programme				**5. Level**	
Environmental Management Engineering				bachelor's degree	
6. Training Area					
Basic					
7. Academy					
Basic and Methodological Sciences					
8. Modality					
Compulsory	**x**	**Course**	**x**	**Attendance**	**x**
Elective		**Course-workshop**		**Non-attendance**	
		Workshop		**Mixed**	
		Seminar			
		Laboratory, field practice, etc.	**x**		
		Professional Practice			
		Academic Stay			
9. Pre-requirements					
Pass the CENEVAL exam / approve the Semester Zero (previous course)					

10. Theory hours	Practice hours	Independent study hours	Total hours	Credits
2	2	0	4	4

11. Names of the teachers who participated in the development and/or modification of the programme
M.C. Rodolfo Alejandro Méndez de la Peña

12. Date of development	Date of modification	Date of approval
26/01/2017	06/10/2017	12/10/2017

II. LEARNING UNIT SPECIFIC DATA

13. Presentation

Characterization of the learning unit. To give an introduction to students to the topics that are normally covered in the first semester of physics that includes static, dynamics, electricity and magnetism and optics. Help the students understand and appreciate the role of scientific discoveries in the well-being of humanity. Encourage students to develop their critical and constructive thinking and be capable of expressing their ideas with clarity and consistency. Facilitate the student's familiarity with the principles and practices of scientific experimentation. Train students to participate more actively, intelligently and, besides, more efficiently in solving current problems in such field.

14. Integral professional competences to develop in the student

Generic competences	Capability for abstraction, analysis and synthesis Ability to apply knowledge in practice Skills in the use of information and communication technologies Skills to search, process and analyse information from various sources Ability to identify, pose and solve problems Ethical commitment
Professional competences	
General purpose of the course	Acquire and develop in the student general and professional competences, as well as the necessary skills and knowledge to understand the functioning of the systems found in environmental engineering, in the same way to understand and explain the functioning of biological systems and environmental phenomena.

15. Joint of axes

The learning unit articulates the principles of physics with the systems and processes that occur in the environment with social responsibility and with research so that students develop viable projects within a sustainable framework.

16. development of the course				
Module 1	Introduction to Physics			
Intended learning	**Learning contents**	**Learning product(s)**	**Strategies**	**Teaching resources and materials**
Identify the main physics concepts and their classification branches, as well as the measurements and main magnitudes used according to the international unit system Time: 17 hours Assessment instrument: Rubrics Checklist Testing Objective test	Basic concepts of Physics Classification of Physics. Unit system Scalar and vector magnitudes. Order of magnitude and significant figures. Conversion of units and dimensional Analysis.	Report of the classification of physics. Resolution of conversion problems. Written exam.	Learning based on Reading and analysis about the origin and concepts of Physics and its main branches. Roundtable discussion. Resolution of conversion problems individually Teacher presentation.	Computer, Internet, white-board, marker for white-board, projector and referred bibliography.
Module 2	Introduction and basic concepts of statics and dynamics			
Intended learning	**Learning contents**	**Learning product(s)**	**Strategies**	**Teaching resources and materials**

That the student understands and applies the basic engineering principles of statics and dynamics. Time: 17 hours Assessment instrument: Rubrics Checklist Testing Objective test	Translational balance and friction The student recognizes in nature and applies Newton's three laws. Uniform Acceleration Newton's First Law Work, energy and power Impulse and amount of movement Uniform circular motion	The student recognizes in nature and applies Newton's three laws Solve problems of speed, acceleration and trajectory correctly. Expositions	Collaborative learning Problem-based learning Development of essays Management of statistical software	Videos Bond paper, markers, letter size sheets. Computer Brush Projector Internet Marker for Paint Software Textbooks Scientific articles

Module 3	Gene impact assessment			
Intended learning	**Learning contents**	**Learning product(s)**	**Strategies**	**Teaching resources and materials**
That the student understands and applies the basic engineering principles of statics and dynamics. Time: 15 hours Assessment instrument: Rubrics Checklist Testing Objective test	Electric field and electric potential Capacitance Current and resistance Magnetism and magnetic field. Alternating current circuit.	Correctly solve problems concerning capacitors and resistors. Develops a project in which the theoretical principles seen in class are applied	Collaborative learning Problem-based learning Development of essays Management of software	Videos Bond paper, markers, letter size sheets. Computer Brush Projector Internet Marker for paint Software Textbooks Scientific articles
Module 4	Biodiversity			
Intended learning	**Learning contents**	**Learning product(s)**	**Strategies**	**Teaching resources and materials**

That the student understands and applies the basic engineering principles of statics and dynamics. Time: 15 hours Assessment instrument: Rubrics Checklist Testing Objective test	Wave motion Sound Light and lighting Reflection and mirrors Refraction Optical lenses and instruments Inference, diffraction and polarization	Written report of the subject previously provided by the facilitator Field practice report	Collaborative learning Problem-based learning Development of essays Management of software	Videos Bond paper, markers, letter size sheets. Computer Brush Projector Internet Marker for Paint Software Software Textbooks Scientific articles

17. Performance assessment:

Performance evidence(s)	Performance criteria	Application scopes	percentage
Practice reports Problems solved Projects Essays Participation in the forums of the virtual classroom Preparation of videos Oral presentations	Knowledge: expressed in terms of the disciplinary and critical training área based on the scientific method. Skills: based on actions that allow adapting to different scenarios and applying the acquired knowledge in a practical way. Attitudes and values: Expressed in terms of behaviours and as a reflection of the values that the person possesses.	In the recognition and application to natural systems and processes. In the management of statistical software. Taking relevant information of natural processes. Use of terminology of thermodynamics in other learning units. In the collection of information to develop a research project.	Percentage Formative evaluation: 20% Responsibility, commitment, tolerance, ethics, values Summative evaluation: 50% The development and presentation of the products and / or examinations Self-evaluation: 10% The development and presentation of the products

	Congruence of the preliminary project Having the requested structure Quality in written and oral presentation		Co-evaluation: 10% Students value their peers and apply the values of respect, tolerance and honesty. Heteroevaluation: 10% The teacher values the student's work Criterion: 100%

18. Evaluation criteria: Define clear criteria and parameters, precise and concrete evaluation, not forgetting the formative intention that must accompany the assessment processes. So, it must also express its value in percentage form

Criterion	Value
Formative Evaluation	20% Responsibility, commitment, tolerance, ethics, values
Summative evaluation	50% The development and presentation of the products
Self-evaluation	10% The student values his performance, compares it with what is established and determines which objectives he met successfully.
Co-evaluation	10% Students value their peers and apply the values of respect, tolerance and honesty.
Heteroevaluation	10% The teacher values the work of the student Criteria
Criteria summation	100%

19. accreditation

The accreditation of the learning unit is aligned with the provisions of the regulations of the Forestry Sciences Faculty. It is necessary to approve with a minimum of 6.0. The student who has obtained in the partial examinations a minimum average of 8.5 and had 80% attendance will be exempt from the ordinary exam; however, to raise your average you can submit it if you wish.

20. Information sources

Basic	• Tippens E. P., 2011. Física, conceptos y aplicaciones. 7ª. Ed. Mc Graw-Hill, Madrid • Bueche, F. 2007. Física General. Serie Schaum. McGraw Hill Interamericana de España, S.L.
Complementary	• Lwein, W., Goldstein, W. 2012. Por amor a la física: del final del arco iris a la frontera del tiempo. Penguin Random House. Grupo Editorial España • Serway, R., Jewett, John. 2008. Física para ciencias e ingeniería. 7ª. Ed. Editorial Cengage Learning, México, D.F.

21. Profile for the teacher who imparts this learning unit

Bachelor's, Master's or PhD degree in the area of chemistry or related professional experience in the chemical industry and in the area of environmental engineering Professional experience as a professor in the area. Teaching experience with the management of large groups of students. Ability to develop and promote teaching strategies Ability to develop and promote learning environments in the natural sciences. Have availability to give extra advices to the student. Responsibility and capability of organization. Team work ability, to work under pressure and oriented to results. Management of computer packages