# 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** |
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| Green Areas Design | 8495 |
| **3. Academic Unit** | |
| ***FORESTRY SCIENCES FACULTY*** | |
| **4. Academic programme** | **5. Level** |
| Engineering in environmental management | Higher |
| **6. Training Area** | |
| Disciplinary | |
| **7. Academy** | |
| Academy of environmental engineering | |
| **8. Modality** | |

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| **Mandatory** | **x** | **Course** | | **Attendance** | |
| **Elective** | **x** | **Course-workshop** | | **Non-attendance** | |
| | | **Workshop** | | **Mixed** | |
| | | **Seminar** | | | |
| | | **Laboratory, field practice, etc.** | **x** | | |
| | | **Professional Practice** | | | |
| | | **Academic Stay** | | | |

| **9. Pre-requirements** |
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| Ecology, Digital Cartography, Health and the Environment and Environmental Legislation |

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| **10. Theory hours** | **Practice hours** | **Independent study hours** | **Total hours** | **Credits** |
| 2 | 2 | | 4 | 5 |
| **11. Names of the teachers who participated in the development and/or modification of the programme** | | | | |
| Evaristo Vázquez Ramírez | | | | |
| **12. Date of development** | | **Date of modification** | **Date of approval** | |
| 15/01/2015 | | 01/02/16 | 04/10/17 | |

| **II. LEARNING UNIT SPECIFIC DATA** | |
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| **13. Presentation** | |
| The Green Areas Design is a learning unit for planning green areas through the guidelines for the integrated and systematic management of such areas in urban and surrounding-urban zones, taking into account, on the one hand, its social importance as necessary elements for developing recreational and sport activities and, on the other hand, valuing its environmental attributes, with the objective of defining strategies for preserving, regenerating or optimizing them and thus contributing with the population development.<br>The Green areas design must set out the accurate knowledge for the conformation of spaces, as well as for structuring the harmonically. Creating the most adequate ornamental compositions for each design circumstance. This is why it is important to know the plants general features, their role in design and their general behavior. All these concepts, regrettably forgotten in many projects, are analyzed in detail in the different chapters. | |
| **14. Integral professional competences to develop in the student** | |
| **Generic competences** | • **Instrumental:** Capacity for analysis and synthesis, Capacity for organization and planning, Capacity for oral and written communication and Capacity for information management.<br>• **Personal:** Team work and ethical and quality commitment.<br>• **Systemic:** Motivation for quality, Ability to apply knowledge in practice, Ability to communicate with non-experts in the field. |
| **Specific competences** | • **Disciplinary**: General basic knowledge of environmental engineering, capability for addressing environmental problems in a multidisciplinary manner and planning, managing and conservations of natural resources |

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| **Professional competences** | • **Professional:** Restoration of the natural environment, Air quality and purification of atmospheric emissions |
| **General purpose of the course** | Providing the necessary bases and elements for the student to structure a design and management plan for Green spaces through the analysis of experiences in the planning and criteria processes for providing Green areas in Mexico and other countries. Also, by the examining the benefits of such areas from the social, environmental and economic perspectives, as well as their contribution to the sustainable development and the quantification and characterization of the green areas and the establishing of criteria for determining the optimum endowment indexes of green spaces according to the urban area. |

**15. Joint of axes**

The learning unit articulates the respect for the environment, the human rights of the beneficiaries as an important part of the formulation of green area designs with adherence to ethics and values and social responsibility, so that students develop viable projects within a sustainable framework.

**16. development of the course**

| **Module 1** | The strategic planning of green areas | | | |
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| **Intended learning** | **Learning contents** | **Learning product(s)** | **Strategies** | **Teaching resources and materials** |

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| It Justifies to always work thinking more about the city of the future and developing strategic plans, where green areas are planned, both in quantity, quality and typologies. In these plans the green areas will be a very significant component of the strategic vision of the city and will mark one of the priority lines in planning. | - Justification<br>- The green city and its biodiversity model<br>- The strategic vision<br>- Priority lines of action<br>- The urban green<br>- The architecture of the landscape in the city<br>- Urban planning and urban equipment<br>- The green areas in the current practice of urban planning<br>- City, green areas and sustainable development<br>- Approaches, methods and processes in the planning of green areas<br>- Methodological proposal for the planning of urban green areas. | Advances of the design plan for green areas, according to each stage of the programming. | Conformation of working groups of students for the development of the green areas design project, by organizing themselves in such a way that an attitude of responsibility and teamwork is formed in the students.<br>Monthly review of the landscape design project progress, according to the predetermined schedule of each stage. | White board, projector, rotated folios, directed reading, analysis of readings, solution of problems related to the design plan of green areas. |
| **Module 2** | Agronomic reports | | | |
| **Intended learning** | **Learning contents** | **Learning product(s)** | **Strategies** | **Teaching resources and materials** |

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| Learning how to collect and analyze the factors related to these reports, and which are necessary to determine the environmental conditions of an area and, in its case, if they are adequate for the normal growth of certain plants. | - Edaphological Study<br>- Climate study<br>-Water quality<br>- Other factors<br>- Structure of the agronomic report | Advances of the design plan for green areas, according to each stage of the programming. | Monthly review of the progress of the landscape design project, according to the predetermined schedule of each stage. | White board, projector, rotated folios, directed reading, analysis of readings, solution of problems related to the design plan of green areas. |
| **Module 3** | Spatial composition | | | |
| **Intended learning** | **Learning contents** | **Learning product(s)** | **Strategies** | **Teaching resources and materials** |
| Know how a preliminary division of space is made, differentiating which are the places destined to transit and which have other functions or specific uses. The zoning allows us to organize the space, make the distribution of the necessary | - The conformation of the landscape<br>- Functions of the plants in landscape design<br>- Structural characteristics of plants<br>- Spatial composition<br>- Dynamics of spaces | Advances of the design plan for green areas, according to each stage of the programming. | Monthly review of the progress of the landscape design project, according to the predetermined schedule of each stage. | White board, projector, rotated folios, directed reading, analysis of readings, solution of problems related to the design plan of green areas. |

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| elements and, if necessary, compensate the surface dedicated to each group. Once the spaces are organized, they can be hierarchized, which will imply that we highlight some elements over others. | - Focal points<br>- Spatial organization. | | | |
| **Module 4** | Ornamental composition | | | |
| **Intended learning** | **Learning contents** | **Learning product(s)** | **Strategies** | **Teaching resources and materials** |

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| Describing that ornamental composition, in addition to meeting functional and environmental objectives, it should also be aesthetically pleasing and that people sensibly respond to plants based on their physical and sensory attributes, such as color, aroma, texture, way or any other. The principles of visual composition are also described and analyzed: harmony and contrast, balance, emphasis, sequence and scale. | - The perception of objects<br>- Visual characteristics of the plants<br>- Principles of visual composition. | Advances of the design plan for green areas, according to each stage of the programming. | Monthly review of the progress of the landscape design project, according to the predetermined schedule of each stage. | White board, projector, rotated folios, directed reading, analysis of readings, solution of problems related to the design plan of green areas. |
| **Module 5** | Technological characteristics of plants | | | |

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| **Intended learning** | **Learning contents** | **Learning product(s)** | **Strategies** | **Teaching resources and materials** |
| Identifying the plants selection criteria for the formulation of the green area design. Also, how to evaluate the quality of them and how to group them to obtain the best benefits. | - The names of the plants<br>- Criteria for the selection of plants<br>- Quality of the plants<br>- Plants and vegetation levels<br>- Main groups and elements<br>Vegetables<br>- Invasive plants<br>- Useful data in projects | Advances of the design plan for green areas, according to each stage of the programming. | Monthly review of the progress of the landscape design project, according to the predetermined schedule of each stage. | White board, projector, rotated folios, directed reading, analysis of readings, solution of problems related to the design plan of green areas. |
| **Module 6** | Pavements and surfaces | | | |
| **Intended learning** | **Learning contents** | **Learning product(s)** | **Strategies** | **Teaching resources and materials** |

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| Learning that soils and pavements, as visible elements of a green area, should be integrated and designed appropriately, to provide an adequate final composition. | - Soils in gardening<br>- Vegetable surfaces and roofs<br>- Pavements for various activities<br>- Justification of the pavements | Advances of the design plan for green areas, according to each stage's schedule. | Monthly review of the progress of the landscape design project, according to the predetermined schedule of each stage. | White board, projector, rotated folios, directed reading, analysis of readings, solution of problems related to the design plan of green areas. |
| **Module 7** | Xero-gardening and watering | | | |
| **Intended learning** | **Learning contents** | **Learning product(s)** | **Strategies** | **Teaching resources and materials** |
| To know that the Xero-gardening includes a series of practices and advanced techniques for the creation of green areas without any loss in its ornamental potential, but using water amounts much lower than those of free design. | - Gardening and irrigation<br>- Xero-gardening | Advances of the design plan for green areas, according to each stage's schedule. | Monthly review of the progress of the landscape design project, according to the predetermined schedule of each stage. | White board, projector, rotated folios, directed reading, analysis of readings, solution of problems related to the design plan of green areas. |
| **17. Performance assessment:** | | | | |
| **Performance evidence(s)** | **Performance criteria** | **Application scopes** | **Percentage** | |

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| Reports on the progress of the green area design plan, final report of the green area design plan, the exhibition and defense of such a document, peer assessment, checklists, self-assessment, value judgments, management of the debate and work on equipment. | In all the tasks, content is evaluated, argumentation of the ideas, spelling, analysis and synthesis capability, didactic resources used, use of tools, defense of their work before the group, the opportunity in the delivery of the different stages or documents, team work and level of reflection of their conclusions. | In the formulation and execution of design plans for green areas in the urban area, in the development of works both in the scope of state and municipal governments and by individuals. | Formative evaluation: 15<br>Summative evaluation: 70<br>Self-evaluation: 10<br>Co-evaluation: 5 |

**18. Evaluation criteria:**

| Criterion | Value |
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| **Formative Evaluation** | Team work, attendance and punctuality, opportunity for submitting products, positive and proactive attitude based on respect for people, property and the rules of coexistence established for the course. 15 % |
| **Summative evaluation** | Form and content of products, defense of the design plan for green areas, management of the debate. 70% |
| **Self-evaluation** | Through an analysis where the degree of domain is shown. During the semester each student will get up to a 10% |
| **Coevaluation** | Checklist where the students assess the degree of proficiency of their classmates and feed them back about the areas of opportunity, reaching up to 5% |
| **Criteria summation** | 100 |

**19. accreditation**

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| Presenting in time and form the progress of each of the stages of the design plan of green areas and the defense that is made of such a plan before their peers. They as ell must have a minimum attendance to the course of 80%. | |
| **20. Information sources** | |
| **Basic** | **EL COLEGIO DE LA FRONTERA NORTE, A.C.** 2015. Cuando las áreas verdes se transforman en paisajes urbanos. La visión de Baja California. Tijuana, Baja California. México.<br><br>**FERNÁNDEZ GONZÁLEZ, L. y RODRÍGUEZ PÉREZ J.M.** 2015. Fundamentos para la implantación de jardines y zonas verdes. Editorial Síntesis. Madrid, España.<br>**H. AYUNTAMIENTO DEL MUNICIPIO DE DURANGO.** 2006. Plan Director de Forestación Urbana. Gaceta Municipal No. 165 Tomo XXII. Durango, Dgo., Mex.<br>**H. AYUNTAMIENTO DEL MUNICIPIO DE DURANGO.** 2006. Reglamento de Parques y Jardines del Municipio de Durango y de la Administración de los Parques Guadiana y Sahuatoba. Gaceta Municipal No. 168 Tomo XXII. Durango, Dgo. Mex.<br>**MUNCHARAZ POU, MANUEL.** 2013. Proyecto y diseño de áreas verdes. Editorial Mundiprensa. Madrid, España. 478 p.<br>**PEÑA SALMÓN, CÉSAR ÁNGEL.** 2011. Metodología para la planificación de áreas verdes urbanas: El caso de Mexicali, Baja California. Universidad Autónoma de Baja California. 338 p<br>**RÍOS ORTA, SERAFÍN.** 2013. Planificación y gestión integral de parque y jardines. Editorial Mundiprensa. Madrid, España. 368 p.<br>**RUÍZ BELLO ALEJANDRINA**. 2016. Plantas atractivas en el Sistema Tezcotzingo – Metecatl. Colegio de Postgraduados. Montecillos, Mex.<br>**UAC. FACULTAD DE ARQUITECTURA.** 2013. Sustentabilidad y arquitectura del paisaje: diagnóstico de proyectos del paisaje urbano y rural. Saltillo, Coah. México. |
| **Complementary** | **COMISIÓN NACIONAL DE FOMENTO A LA VIVIENDA.**2005. Guía para el diseño de áreas verdes en desarrollos habitacionales. México, D. F.<br>**COMISIÓN DE COOPERACIÓN ECOLÓGICA FRONTERIZA.** 2009. Manual para el diseño de desarrollos habitacionales sustentables. Cd. Juárez, Chih. |

**DEPARTAMENTO DEL DISTRITO FEDERAL.** 2000. Manual técnico para el establecimiento y manejo integral de las áreas verdes urbanas del Distrito Federal. Tomo 1. 236 p.
**GONZÁLEZ ELIZONDO, M.; GONZÁLEZ ELIZONDO, M.S.; ÁLVAREZ ZAGOYA, R. Y LÓPEZ ENRÍQUEZ, I.L.** 2008. Árboles y arbustos de los parques y jardines del norte-centro de México. Guía de identificación. I.P.N. México, D.F.
**INTERNATIONAL SOCIETY OF ARBORICULTURE; UAM.** 1999. Manual de Arboricultura. Guía de estudio para la certificación del arborista. México, D.F.
**PEÑA SALMÓN, C. A.** 1990. Usos, funciones y características de las plantas en el diseño del paisaje. Funciones ecológicas. UABC. Mexicali, B. C.
**PEÑA SALMÓN, C. A.** 1998. Las plantas en el diseño del paisaje. Funciones arquitectónicas y estéticas. UABC. Mexicali, B C.
**RIVAS TORRES, D.** 2001. Beneficios de los Bosques y Árboles Urbanos. Chapingo, México.
**UNIVERSIDAD AUTONOMA CHAPINGO.** 1998. Áreas verdes urbanas en Latinoamérica y el Caribe. Chapingo, México.

**21. Profile for the teacher who imparts this learning unit**

Expertise in the teaching of the course and in design projects of green areas.
University professional experience as a professor in the area.
Teaching Expertise with the management of the subject with large groups of students.
Have systematically evaluated students' performance and developed teaching strategies to promote a more active learning environment in the scope of the green area design.
Must demonstrate proactivity, punctuality, responsibility, organization, excellent interpersonal relationships and communication and work ability
Also to allow working in multi and interdisciplinary groups, encouraging openness, tolerance, creativity, criticality, transdisciplinary vision, social responsibility and respect for the environment.