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| **Course title** | **3D Computer Aided Landscape Modelling** | | | | |
| **Course code** | **GALA3504** | | | | |
| **Course type** | **Practical application** | | | | |
| **Level** | Higher Diploma | | | | |
| **Year / Semester** | 3rd Year / 5th Semester | | | | |
| **Teacher's name** | Demetris Tsimouris | | | | |
| **ECTS** | 6 | **Lectures / week** | | **Laboratories / week** | 3 |
| **Course purpose and objectives** | The objective of the course is to apply the skills and knowledge from previous courses in creating comprehensive 3D designs using the professional software AutoCAD 3D and 3DSTUDIOMAX. Upon completing the course, the students will be able to transform their 2D technical drawings into 3D digital models. Additionally, they will be capable of visualising and presenting their proposals by modelling the outcome as it would appear during the day, night, and throughout the four seasons by incorporating and editing lighting and shading materials. | | | | |
| **Learning outcomes** | Upon completing the course, students are expected to:<br><br>**Knowledge**<br><br>1. **Recognise** the fundamental principles and concepts of 3D modelling.<br>2. **Identify** the differences in the applications of the two software programs in landscape modelling.<br>**Skills**<br><br>3. **Create** and edit 3D models in AutoCAD 3D and 3D landscape visualizations in 3DSTUDIOMAX.<br>4. **Use** tools for designing, reproducing, and transforming geometric elements.<br>**Competences**<br>5. **Solve problems** related to 3D landscape modelling.<br>6. **Make decisions** regarding the selection of appropriate tools and techniques for each project. | | | | |
| **Prerequisites** | **2D Computer Aided Landscaping Design (COMP212)** | | **Required** | | |
| **Course content** | **Week 1 Practical Session**<br><br>• AutoCAD Review - 3D Introduction<br>• Introduction to the 3D Design Environment - AutoCAD 3D<br>• Creation of Solid Objects (Box, Sphere, Cylinder, Cone, Wedge, Torus)<br><br>**Week 2 Practical Session**<br><br>• AutoCAD 3D I<br>• Other Methods of Creating Solids (Extrude – Revolve) | | | | |

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| | • Use of Surfaces (Revolved, Tabulated Surface, Ruled Surface, Edge Surface)<br>• Operations Between Solids (Union, Intersection, Subtract)<br>• **Exercise 1**<br><br>**Week 3 Practical Session**<br><br>• AutoCAD 3D II<br>• Object Modification (Rotate 3D, Mirror 3D)<br>• Dimensions<br>• **Exercise 2**<br><br>**Week 4 Practical Session**<br><br>• AutoCAD 3D III<br>• Rendering / Application of Materials. Creation and Modification of Material Libraries.<br>• Lighting. Photo Capture<br><br>**Week 5 Practical Session**<br><br>• **Exercise 3 AutoCAD 3D**<br><br>**Week 6 Practical Session**<br><br>• SketchUp I<br><br>**Week 7 Practical Session**<br><br>• SketchUp II<br>• Creation of 3D Designs in SketchUp I<br><br>**Week 8 Practical Session**<br><br>• SketchUp III<br>• **Exercise 4 – SketchUp**<br><br>**Week 9 Practical Session**<br><br>• SketchUp IV<br>• Creation of 3D Designs in SketchUp II<br><br>**Week 10 Practical Session**<br><br>• SketchUp V<br>• **Exercise 5 – SketchUp**<br><br>**Weeks 11-12 Practical Session**<br><br>• SketchUp VI |
| **Teaching methodology** | The practical instruction is delivered through progressive, hands-on sessions focusing on 3D design using AutoCAD and SketchUp. Students begin by developing fundamental 3D modelling skills- creating and modifying solids, working with surfaces, and applying material libraries and lighting. The course then transitions into advanced design techniques in SketchUp, where students create and refine 3D landscape and architectural elements. |

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| | Through a series of structured exercises, students gain practical experience in digital modelling, spatial reasoning, and visual presentation of landscape design projects in three-dimensional form. |
| **Bibliography** | **Greek Bibliography**<br>• Κάππος, Γιάννης Θ. (2017), Δουλέψτε Με Autocad 2017, Κλειδάριθμος, ISBN978-960-461-730-2<br>• Σαραφίδης, Δ. (2023). Σχεδίαση με ηλεκτρονικό υπολογιστή και συστήματα CAD. [Undergraduate textbook]. Kallipos, Open Academic Editions. https://dx.doi.org/10.57713/kallipos-98<br>**English Bibliography**<br>• Hamad, Munir (2021). AutoCAD 2022 Beginning and Intermediate. Dullas, Virginia : Mercury Learning and Information. 2021. ISBN: 9781683927242. **EBSCOHost**<br>• Paricio, Jorge (2015). Perspective Sketching : Freehand and Digital Drawing Techniques for Artists & Designers. Beverly, Massachusetts : Rockport Publishers. ISBN: 9781631590320. **EBSCOHost**. |
| **Assessment** | • Attendance and course participation: 10%<br>• Drawing exercises (1-5) 30%<br>• Final drawing projects (x3): 60%<br><br>Throughout the course, students participate in structured lab sessions involving progressive practical exercises using AutoCAD 3D and SketchUp. These exercises focus on the creation, modification, and rendering of 3D solid models, the application of materials and lighting, and the development of spatial design skills. Students complete a series of targeted tasks, such as object manipulation, surface modelling, and photorealistic visualisation, designed to build confidence and technical fluency in 3D landscape and architectural drawing environments. These tasks account for the 30% of the overall course grade.<br><br>The final drawing projects consists of a comprehensive three-part drawing assignment that demonstrates students' cumulative skills in 3D design:<br><br>• AutoCAD 3D Drawing: Creation of a detailed 3D landscape element or structural feature using solid and surface modelling techniques, with correct use of dimensions and rendering tools.<br>• SketchUp Model: Development of a complete landscape or garden area in SketchUp, incorporating terrain, plant elements, and architectural features.<br>• Presentation Layout: Compilation of visual outputs (views, sections, and perspectives) into a professional presentation board, including photorealistic renderings, material use, and lighting to communicate the final design clearly.<br><br>This final project evaluates both the technical accuracy and the visual communication quality of the students' design work. The final project accounts for the 60% of the overall course grade.<br><br>Student performance is evaluated on a scale of 0 to 100, with a minimum overall passing grade of 60. The final grade is calculated as a weighted average of the assessment components disclosed above. |
| **Language** | Greek or English |