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**Department of Geomatics (Surveying)**

**College of Engineering**

**University of Salahaddin**

**Subject: Data Processing**

**Course Book: Semester 4 / 2nd Stage**

**Lecturer's name: Assistant Lecturer Mrs. Hadeel Jamal Ali**

**Academic Year: 2022/2023**

**Course Book**

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| **1. Course name** | **Data Processing** * **Course AutoCAD Civil 3D Land Desktop Companion**
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| **2. Lecturer in charge** | **Assistant Lecturer Mrs. Hadeel Jamal Ali** |
| **3. Department/ College** | **Geomatics / Engineering**  |
| **4. Contact** | **e-mail:** **hadeel.ali@su.edu.krd** |
| **5. Time (in hours) per week**  | **Theory: 2** **Practical: 2**  |
| **6. Office hours** |  |
| **7. Course code** |  |
| **8. Teacher's academic profile**  | [**https://sites.google.com/a/su.edu.krd/lecturer-hadeel-jamal-ali/**](https://sites.google.com/a/su.edu.krd/lecturer-hadeel-jamal-ali/)**I am Hadeel Jamal Ali. I was born in Baghdad / Iraq. I completed my studying for M.Sc. in University of Technology/Baghdad, College of Building and Construction Engineering (2009-2012), Specialization: Geomatic Engineering. Now, I am working in Salahaddin University-Hawler as Assistant Lecturer in Engineering college/Surveying Department. I am teaching for Second (Data Processing), Third (Highway Engineering), Fourth (GIS) Stage.** |
| **9. Keywords** |  |
| **10. Course overview:** * **Course AutoCAD Civil 3D Land Desktop Companion**

The AutoCAD Civil 3D Land Desktop Companion Fundamentals course is designed for Civil Engineers and Surveyors who want to take advantage of the AutoCAD Civil 3D Land Desktop Companion software’s interactive, dynamic design functionality. The AutoCAD Civil 3D Land Desktop Companion software permits the rapid development of alternatives through its model-based design tools. It help to learn techniques enabling to organize project data, work with points, create and analyze surfaces, model road corridors, create parcel layouts, perform grading and volume calculation tasks, and layout networks. The course contains two part theory Auto Landand practical Auto Land(lab. |
| **11. Course objective:*** **Course AutoCAD Civil 3D Land Desktop Companion**

AutoCAD Civil 3D Land Desktop Companion is a comprehensive civil engineering solution for all types of civil engineering projects, covering the needs of engineers, technicians, surveyors, and drafters. It provides a base level of functionality that meets the needs of everyone in the land development process, including land planners, surveyors, civil engineers, drafters, and anyone who creates supporting documents. AutoCAD Civil 3D Land Desktop Companion provides an Application Programming Interface (API), so that other add-on products can be designed to work with AutoCAD Civil 3D Land Desktop Companion.■ Autodesk Survey: An add-on to AutoCAD Civil 3D Land Desktop Companion that provides a streamlined ability to communicate survey data to and from the field.■Autodesk Civil Design: An add-on to AutoCAD Civil 3D Land Desktop Companion that provides transportation and site engineering tools, and hydrology and hydraulics design and analysis.The Lab Course will enable the students to understand the fundamentals and programming knowledge in Auto Land. |
| **12. Student's obligation**Students are expected to attend all class meetings. There is specific penalty for missing a class; however, students are responsible for the content of each lecture, which may or may not be contained in the textbook. In-class illustrative problems are expected to be worked on during the scheduled class time; thus, student must present during these class sessions1. Homework assignments. The objective of these homework assignments are to assist in the learning of course material, so discussion of homework among students is encouraged, but remember that it will be in best interest to understand all of the assigned problems. However, every student is responsible for turning in an individual assignment. The main goal of the homework to learn the concepts of the course, so that you can prove it on the quizzes and exams.
2. Class illustrative problems. These are comprehensive problems covering the major topics of each chapter. These will be worked on in class, with the assistance of the lecturer.
3. Quizzes. These quizzes will be closed-book, consisting of qualitative questions addressing major concepts of the chapter.
4. one MidTerm exams. This exam will be closed book. The exams will consist of comprehensive quantitative problems that relate to any of the material covered during the semester.
5. One final exam. This exam will be closed-book. The exam will consist of comprehensive quantitative problems that relate to any of the material covered during the academic year.
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| **13. Forms of teaching**No two teachers are alike, and any teacher with classroom teaching experience will agree that style of teaching is uniquely own. An effective teaching style engages students in the learning process and helps them develop critical thinking skills. Traditional teaching styles have evolved with the advent of differentiated instruction; prompting teachers to adjust their styles toward students’ learning needs. There are many different types of teaching and learning materials that can be used by lecturer. Like traditional methods: pens, whiteboard, Eraser and Methods illustrative: Maps, Charts, diagrams, Books, Videos and Overhead projectors, Slide PowerPoint.Although it is not the teacher’s job to entertain students, it is vital to engage them in the learning process. Selecting a style that addresses the needs of diverse students at different learning levels begins with a personal inventory — a self-evaluation — of the teacher’s strengths and weaknesses.I will include short lectures, hands-on training (bringing my laptop to the class), homework, quizzes, class project, and a final exam. My objective is to present programming in a friendly way using a variety of methods. |
| **14. Assessment scheme**The Grade is generated from the examination result(s) with the following20% activity10% practical20% mid-term exam50% Final Exam (30% Theoretical + 20% Practical).Total = 100%  |
| **15. Student learning outcome:*** **Course AutoCAD Civil 3D Land Desktop Companion**

By the end of the course, student should be able to:1. Demonstrate the ability to :
* Read civil/construction drawings (civil plans, profiles, street sections, etc.).
* Determine drawing scale factor in drawings and final scale of drawings.
* Use AutoCAD standards and commands for creating engineering civil/construction drawings.
1. Work in teams to accomplish a variety of tasks. Includes ability to communicate, manage time, meet deadlines, resolve conflicts, etc.
2. Apply selected engineering design processes for creating a subdivision development: import survey points, create surfaces (TIN/contours), design lots, design a street alignment, and prepare a street profile. Create a site plan for a lot in the subdivision.
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| **16. Course Reading List and References‌:*** **Course AutoCAD Civil 3D Land Desktop Companion**
1. Auto desk, Inc. 2008 “Getting Started”.
2. Auto desk, Inc. 2009 “Auto desk Getting Started”.
3. Auto desk, Inc. 1999 “Auto cad land development desktop”.
4. Auto desk, Inc. 2011 “tutorials Auto desk”.
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| **17. The Main Topics and Practical Topics:** |
| * **Course AutoCAD Civil 3D Land Desktop Companion**

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| **Date** | **Week No.** | **Name of the Chapter** | **Names of the Topics** |
| February  | Week 1 | Getting Started AutoCAD | 1. Menus
2. Layer management
3. Plotter setup
4. Working with toolbars
 |
| Week 2 | Projects | 1. The project manager
2. Drawing setup
 |
| Week 3 | Points | 1. Creating points
2. Create from polyline vertices
 |
| Week 4 | Editing Points | 1. The point database
2. Editing points
3. Copying & renumbering points
4. Moving points
5. Point display properties
 |
| March  | Week 1 | Point Groups | 1. Creating point groups
2. Using filters
3. Using point groups effectively
 |
| Week 2 | Import/Export Points | 1. Using the format manager
2. File formats
3. Exporting points
4. Importing points
 |
| Week 3 | Lines & Curves | 1. Drawing lines by points
2. Drawing curves
 |
| Week 4 | Labels | 1. Labeling overview
2. Line labels
3. Curve labels
4. Point labels
5. Offset labels (building offsets)
 |
| April  | Week 1 | Alignments | 1. Alignment introduction
2. Defining alignments
3. Roadway stationing
4. Editing alignments
5. Create offset routines
6. Creating points on an alignment
 |
| Week 2 | Terrain | 1. Surfaces overview
2. Build surfaces from points
3. Editing surfaces
4. Working with terrain layers
5. Viewing surfaces
6. Setting points on a surface
 |
| Week 3 | Contours | 1. Creating contour lines
2. Labeling contours
3. Contour style manager
4. Text & label settings
 |
| Week 4 | Cross sections | 1. Cutting through multiple surfaces
2. Section tools - review
 |
| May  | Week 1 | Profiles | 1. Profile overview
2. Sampling existing ground
3. Create profile routine
4. Vertical curves
5. Labeling and point routines
 |
| Week 2 | Sheet Manager | 1. Sheet manager settings
2. Plan & profile sheet layout
3. Creating cross-section sheets Plotting
 |
| Week 3 | Land Desktop | 1. AutoCAD today
2. Balance cut & fill
3. Slope labeling between two points
4. Project import/export
5. Export LandXML
6. Import LandXML
 |
| Week 4 | Review | Review  |

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| **18. Examinations:** |
| **19. Extra notes:****Course content may vary or be adjusted in order to meet the needs of the class. The teacher reserves the right to adjust the schedule or amend the content of this syllabus at any time.** |
| **20. Peer review**   |