VIT/CE/01/2018 01/08/2018

NOTICE

Sub: Commencement of AutoCAD Civil Add-On Course

This is to inform you that the Civil Engineering Department will be commencing an Add-On Course on AutoCAD Civil, starting from 12th August 2018 for the first year students.

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HOD

VIJNAN INSTITUTE OF SCIENCE & TECHNOLOGY (VISAT)

SYLLABUS

Course: AutoCAD Civil

2018 - 2019

Course Objective: The course aims to equip participants with fundamental skills in AutoCAD Civil 2D for civil engineering design tasks. Students will learn to navigate the AutoCAD Civil interface efficiently, mastering essential tools for creating accurate 2D drawings. The participants will gain proficiency in drafting techniques, layer management, and annotation tools necessary for producing clear and comprehensive engineering drawings.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Civil

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create building drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

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8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of plan, section and elevation of single storied residential building	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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VIT/EEE/01/2018 01/08/2018

NOTICE

Sub: Commencement of AutoCAD Electrical Add-On Course

This is to inform you that the Electrical & Electronics Engineering Department will be commencing an Add-On Course on AutoCAD Electrical, starting from 12th August 2018 for the first year students.

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SYLLABUS

Course: AutoCAD Electrical

2018 - 2019

Course Objective: The AutoCAD Electrical course aims to provide participants with comprehensive knowledge and practical skills in using AutoCAD Electrical software for designing electrical schematics, creating panel layouts, and generating reports. The course is designed to equip participants with the essential skills required for efficient and accurate electrical design in various industries.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand AutoCAD Electrical GUI

CO2: Draw, Create and Manage electrical circuits

CO3: Understand component Insertion and Connection

CO4: Understand Library Symbol Creation

CO5: Describe Component Tools and Catalog Information

CO6: Explain Wires and Wire Numbering

CO7:Analyze PLC Layout and Wiring

CO8: Draw Point-to-Point Wiring and Connector Diagrams

CO9: Draw Panel Layout and Footprints

CO10: Analyze Audit and Report Generation

CO11: Understand Import/Export Functionality

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Module	Topics	Course Outcomes
1.1	Introduction, AutoCAD Electrical,GUI	CO1, CO2
1.2	Project,Introduction to Project Manager, Working with Projects	
1.3	Drawing, Adding a Drawing, Create a new Drawing	
1.4	Drawing Properties, Insert a Component, Connecting a component	
2.1	Create a Library Symbol, Symbol Builder, Circuit Builder	CO3
2.2	Inserting a One-line Motor Circuit, Inserting a Dual One-line Power Feed Circuit	
2.3	Copy circuitry, Save circuit to icon menu	
3.1	Component Tools, Inserting Components, Relocating Components	CO4
3.2	Inserting a Child Components	
3.3	Aligning and Editing the Components	
3.4	Catalog Information	
4.1	Component Attribute Tools	CO5
4.2	Wires, Wire layers, Wire types	
4.3	Insert wire, Modify wire	
5.1	Signal Arrows, Source arrow, Destination arrow	CO6
5.2	Ladder tools, Wire numbers, Automatic wire numbers	
5.3	Ladder tools, Wire tagging, Wire numbers	
5.4	PLC I/O wire numbers, Wire Number Edit	
6.1	PLC, Generate PLC Layout Modules, PLC parametric selection	CO7
6.2	Module layout, Insert PLC modules, Edit PLC module	
6.3	PLC Database File	
7.1	Point to Point Wiring Tools	CO8
7.2	Introduction to Connector Diagrams, Inserting Connectors, Editing & Modifying Connectors	

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7.3	Link components by dashed lines	
7.4	Grouping Wires	
8.1	Convert text, Convert block, Convert wires, Convert arrows	CO9
8.2	Special Explode, Panel Layout	
8.3	Foot Prints, Footprints from Schematic list, Footprints from icon menu	
8.4	Din rails, Balloons, Wire Annotations, Create Assembly	
8.5	Editing & Modifying Footprints, Creating Own Footprint	
8.6	Terminals, Placing a Terminal, Terminal Editor	
9.1	Audit,Missing Catalog, Electrical Audit, Signal Error/ List,Drawing Audit	CO10, CO11
9.2	Generate Reports, Types of schematic reports, Generate a schematic report	
9.3	Types of panel reports, Generate a panel report	
9.4	Run automatic reports, Automatic report generation	
9.5	Import/Export, To Spreadsheet, From Spreadsheet	

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VIT/ME/01/2018 01/08/2018

NOTICE

Sub: Commencement of AutoCAD Mechanical Add-On Course

This is to inform you that the Mechanical Engineering Department will be commencing an Add-On Course on AutoCAD Mechanical, starting from 12th August 2018 for the first year students.

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HOD

VIJNAN INSTITUTE OF SCIENCE & TECHNOLOGY (VISAT)

SYLLABUS

Course: AutoCAD Mechanical

2018 - 2019

Course Objective: The course objectives for an AutoCAD Mechanical course typically aim to provide students with a solid understanding of the software and its application in the context of mechanical design and engineering. The course is designed to equip participants with the essential skills required for efficient and accurate mechanical design in various industries.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Mechanical

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create machine drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

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8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of simple machine drawings	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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VIT/CE/01/2019 01/08/2019

NOTICE

Sub: Commencement of Add-On Course

This is to inform you that the Civil Engineering Department will be commencing an Add-On Course on AutoCAD Civil for the first year students and Revit Architecture for the second year students, starting from 10th August 2019.

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VIJNAN INSTITUTE OF SCIENCE & TECHNOLOGY (VISAT)

SYLLABUS

Course: AutoCAD Civil

2019 - 2020

Course Objective: The course aims to equip participants with fundamental skills in AutoCAD Civil 2D for civil engineering design tasks. Students will learn to navigate the AutoCAD Civil interface efficiently, mastering essential tools for creating accurate 2D drawings. The participants will gain proficiency in drafting techniques, layer management, and annotation tools necessary for producing clear and comprehensive engineering drawings.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Civil

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create building drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

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8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of plan, section and elevation of single storied residential building	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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SYLLABUS

Course: Revit Architecture

2019 - 2020

Course Objective: The course aims to equip students with a comprehensive understanding of Revit Architecture, focusing on skills such as creating detailed 3D models, producing accurate documentation, and mastering collaborative workflows for efficient building design.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Recall the fundamental features of Revit Architecture.

CO2: Create custom building elements, including walls, doors, windows, curtain walls, roofs, etc.

CO3: Use masses to study building shapes, and then convert them into actual building elements.

CO4: Extract quantities and material take-off schedules.

CO5 : Create design and construction documents with Revit Architecture.

CO6 : Create 3D models and view them through navigation tools.

CO7: Create custom materials and use them in rendered views of the model.

CO8: Learn to manipulate natural and artificial lighting to best show your model in renderings.

Module	Topics	Course Outcomes
1	Introduction to Autodesk Revit Architecture	
1.1	User interface tour	CO1

1.2	Browsers, bars, palettes and windows	
1.3	Revit Architecture help	
2	Starting an architectural project	CO1
2.1	Starting a new architectural project	
2.2	Navigation tools	
2.3	Configuring global settings	
3	Creating walls	CO2
3.1	Creating architectural walls	
3.2	Creating architectural walls II	
4	Using basic building components- I	CO2, CO8
4.1	Adding doors	
4.2	Adding windows and wall openings	
5	Using the editing tools	CO2
5.1	Working with selection sets	
5.2	Editing tools	
5.3	Editing tools II	
5.4	Grouping elements	
6	Working with datum planes and creating standard views	CO2
6.1	Working with levels	
6.2	Working with grids	
6.3	Working with reference planes and work planes	
6.4	Controlling the display of elements	
6.5	Working with project views	

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7	Using basic building components- II	CO2
7.1	Creating floors	
7.2	Creating roofs	
7.3	Shape editing tools	
7.4	Creating ceilings	
7.5	Adding rooms	
8	Using basic building components- III	CO2
8.1	Working with components	
8.2	Adding stairs	
8.3	Adding railings and ramps	
8.4	Creating curtain walls	
9	Adding site features	CO2
9.1	Working with site features	
9.2	Property lines and building pads	
9.3	Adding site components	
9.4	Adding site features	
10	Using massing tools	CO3
10.1	Understanding massing concepts	
10.2	Creating massing geometry in the family editor	
10.3	Editing massing geometry in the family editor	
10.4	Massing in the conceptual design environment	
10.5	Creating massing geometry in a project	
10.6	Creating building elements from massing geometry	

10.7	Creating families	
11	Adding annotations and dimensions	CO4
11.1	Adding tags	
11.2	Room tags	
11.3	Keynotes	
11.4	Adding symbols and dimensions	
11.5	Dimensioning terminology and dimensioning tools	
11.6	Adding alternate dimension units and spot dimensions	
12	Creating project details and schedules	CO4
12.1	Project detailing in Autodesk Revit Architecture	
12.2	Crop regions, fills patterns, and detail components	
12.3	Adding text notes for creating drafting views	
12.4	Revision clouds	
12.5	Working with schedules	
13	Creating drawing sheets, and plotting	CO5
13.1	Creating drawing sheets	
13.2	Creating duplicate dependent views	
13.3	Printing in Revit Architecture	
14	Creating 3D views	CO6
14.1	Three dimensional (3D) views	
14.2	Dynamically viewing models with navigation tools	
14.3	Orienting a 3D view	
14.5	Generating perspective views	
14.6	Using a section box	

15	Rendering views and creating walkthroughs	CO7, CO8
15.1	Rendering in Revit Architecture	
15.2	Working with materials	
15.3	Lights, decals and entourage	
15.4	Rendering settings	
15.5	Creating a walkthrough	
15.6	Autodesk 360 | Rendering	

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VIT/ME/01/2019 22/07/2019

NOTICE

Sub: Commencement of AutoCAD Mechanical Add-On Course

This is to inform you that the Mechanical Engineering Department will be commencing an Add-On Course on AutoCAD Mechanical, starting from 10th August 2019 for the first year students.

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VIJNAN INSTITUTE OF SCIENCE & TECHNOLOGY (VISAT)

SYLLABUS

Course: AutoCAD Mechanical

2019 - 2020

Course Objective: The course objectives for an AutoCAD Mechanical course typically aim to provide students with a solid understanding of the software and its application in the context of mechanical design and engineering. The course is designed to equip participants with the essential skills required for efficient and accurate mechanical design in various industries.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Mechanical

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create machine drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

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8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of simple machine drawings	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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SCIENCE AND TECHNOLOGY (VISAT)
ELANJI, ERNAKULAM (Dt.)
KERALA-686 665

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VIT/CE/03/2021 22/11/2021

NOTICE

Sub: Commencement of AutoCAD Civil Add-On Course

This is to inform you that the Civil Engineering Department will be commencing an Add-On Course on AutoCAD Civil for the first year students, starting from 28th November 2021. All the students should mandatorily enroll in the course to take advantage of this valuable opportunity.

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SYLLABUS

Course: AutoCAD Civil

2021 - 2022

Course Objective: The course aims to equip participants with fundamental skills in AutoCAD Civil 2D for civil engineering design tasks. Students will learn to navigate the AutoCAD Civil interface efficiently, mastering essential tools for creating accurate 2D drawings. The participants will gain proficiency in drafting techniques, layer management, and annotation tools necessary for producing clear and comprehensive engineering drawings.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Civil

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create building drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of plan, section and elevation of single storied residential building	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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VIT/CE/02/2021 15/11/2021

NOTICE

Sub: Commencement of Revit Architecture Add-On Course

This is to inform you that the Civil Engineering Department will be commencing an Add-On Course on Revit Architecture for the second year students, starting from 21st November 2021. All the students should mandatorily enroll in the course to take advantage of this valuable opportunity.

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SYLLABUS

Course: Revit Architecture

2021 - 2022

Course Objective: The course aims to equip students with a comprehensive understanding of Revit Architecture, focusing on skills such as creating detailed 3D models, producing accurate documentation, and mastering collaborative workflows for efficient building design.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Recall the fundamental features of Revit Architecture.

CO2: Create custom building elements, including walls, doors, windows, curtain walls, roofs, etc.

CO3: Use masses to study building shapes, and then convert them into actual building elements.

CO4: Extract quantities and material take-off schedules.

CO5 : Create design and construction documents with Revit Architecture.

CO6 : Create 3D models and view them through navigation tools.

CO7: Create custom materials and use them in rendered views of the model.

CO8: Learn to manipulate natural and artificial lighting to best show your model in renderings.

Module	Topics	Course Outcomes
1	Introduction to Autodesk Revit Architecture	CO1
1.1	User interface tour	
1.2	Browsers, bars, palettes and windows	
1.3	Revit Architecture help	

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2	Starting an architectural project	CO1
2.1	Starting a new architectural project	
2.2	Navigation tools	
2.3	Configuring global settings	
3	Creating walls	CO2
3.1	Creating architectural walls	
3.2	Creating architectural walls II	
4	Using basic building components- I	CO2, CO8
4.1	Adding doors	
4.2	Adding windows and wall openings	
5	Using the editing tools	CO2
5.1	Working with selection sets	
5.2	Editing tools	
5.3	Editing tools II	
5.4	Grouping elements	
6	Working with datum planes and creating standard views	CO2
6.1	Working with levels	
6.2	Working with grids	
6.3	Working with reference planes and work planes	
6.4	Controlling the display of elements	
6.5	Working with project views	
7	Using basic building components- II	CO2
7.1	Creating floors	

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7.2	Creating roofs	
7.3	Shape editing tools	
7.4	Creating ceilings	
7.5	Adding rooms	
8	Using basic building components- III	CO2
8.1	Working with components	
8.2	Adding stairs	
8.3	Adding railings and ramps	
8.4	Creating curtain walls	
9	Adding site features	CO2
9.1	Working with site features	
9.2	Property lines and building pads	
9.3	Adding site components	
9.4	Adding site features	
10	Using massing tools	CO3
10.1	Understanding massing concepts	
10.2	Creating massing geometry in the family editor	
10.3	Editing massing geometry in the family editor	
10.4	Massing in the conceptual design environment	
10.5	Creating massing geometry in a project	
10.6	Creating building elements from massing geometry	
10.7	Creating families	
11	Adding annotations and dimensions	CO4

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11.1	Adding tags	
11.2	Room tags	
11.3	Keynotes	
11.4	Adding symbols and dimensions	
11.5	Dimensioning terminology and dimensioning tools	
11.6	Adding alternate dimension units and spot dimensions	
12	Creating project details and schedules	
12.1	Project detailing in Autodesk Revit Architecture	
12.2	Crop regions, fills patterns, and detail components	
12.3	Adding text notes for creating drafting views	CO4
12.4	Revision clouds	
12.5	Working with schedules	
13	Creating drawing sheets, and plotting	
13.1	Creating drawing sheets	
13.2	Creating duplicate dependent views	CO5
13.3	Printing in Revit Architecture	
14	Creating 3D views	
14.1	Three dimensional (3D) views	
14.2	Dynamically viewing models with navigation tools	
14.3	Orienting a 3D view	CO6
14.5	Generating perspective views	
14.6	Using a section box	
15	Rendering views and creating walkthroughs	CO7, CO8

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15.1	Rendering in Revit Architecture	
15.2	Working with materials	
15.3	Lights, decals and entourage	
15.4	Rendering settings	
15.5	Creating a walkthrough	
15.6	Autodesk 360 | Rendering	

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VIT/CE/01/2021 30/09/2021

NOTICE

Sub: Commencement of 3ds Max Add-On Course

This is to inform you that the Civil Engineering Department will be commencing an Add-On Course on 3ds Max for the third year students, starting from 9th October 2021. All the students should mandatorily enroll in the course to take advantage of this valuable opportunity.

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SYLLABUS

Course: 3ds Max

2021 - 2022

Course Objective: The primary objective of this course is to teach students the essential of working in 3D using an array of features and tools. On completing the course you will be able to do:

- Navigate Autodesk 3ds Max Design user interface.
- To be able to use basic Autodesk 3ds Max Design commands for professional 3D model, design and rendering.
- Understand concepts and techniques in 3D modeling.
- To be able to provide complete rendering and animation.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand 3dsMax Software

CO2: Create and customize 3D objects

CO3: Create and edit extended primitive objects, aligning etc.

CO4: Understand and extruding 2d splines & shape

CO5: Model simple objects with splines

CO6: Understand loft & terrain

CO7: Understand morph, scatter, conform

CO8: Create 3D Modelling

CO9: Model with patches & NURBS

CO10: Understand particle flow user interface, how particle flow works

CO11: Create and apply standard materials, adding material, details with maps

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Module	Topics	Course Outcome
1	Computer-Based animation & getting started with 3ds Max	CO1, CO2, CO3
1.1	Definition of computer-based animation	
1.2	Basic types of animation: Real-time, non-real-time	
1.3	Definition of modelling	
1.4	Creation of 3D objects	
1.5	Exploring the max interface	
1.6	Controlling & configuring the viewports	
1.7	Customizing the max interface & setting preferences	
1.8	Working with files importing & exporting	
1.9	Selecting objects & setting object properties	
1.10	Duplicating objects	
1.11	Creating & editing- standard primitive & extended primitives objects, transforming objects, pivoting, aligning etc.	
2	Creating a walkthrough 2d Splines & shapes & compound object	CO4, CO5, CO6, CO7
2.1	Understanding 2d splines & shape	
2.2	Extrude & bevel 2d object to 3d	

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2.3	Understanding loft & terrain	
2.4	Boolean, pro boolean & pro cutter compound object	
2.5	Modeling simple objects with splines	
2.6	Understanding morph, scatter, conform	
2.7	Connect compound objects, blob mesh	
3	3D Modelling	CO8, CO9
3.1	Modeling with polygons	
3.2	Building simple scenes	
3.3	Deforming surfaces using the mesh modifiers	
3.4	Modeling with patches & NURBS	
4	Keyframe animation	CO9
4.1	Creating keyframes, auto keyframes	
4.2	Animation modifiers & complex controllers	
4.3	Function curves in the track view, motion mixer	
5	Simulation & effects	CO10, CO11
5.1	Creating particle system through PArray	

5.2	Understanding particle flow user interface, how particle flow works	
5.3	Hair & and fur modifier, cloth & and garment maker modifiers etc.	
6	Lighting & camera	CO11
6.1	Configuring & aiming cameras, camera tracking	
6.2	Using basic lights & lighting techniques	
6.3	Working with advanced lighting, mental ray lighting etc.	
7	Texturing with Max	CO11, CO12
7.1	Using the material editor & the material explorer	
7.2	Creating and applying standard materials, adding material, details with maps	
7.3	Creating compound materials & material modifiers, unwrapping UVs & mapping texture, using atmospheric & render effects etc.	
8	Rendering with V-Ray	CO12
8.1	V-ray light setup, V-ray rendering settings	
8.2	HDRI illumination, fine-tuning shadows, final render setting etc.	

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VIT/EEE/01/2021 22/11/2021

NOTICE

Sub: Commencement of AutoCAD Electrical Add-On Course

This is to inform you that the Electrical & Electronics Engineering Department will be commencing an Add-On Course on AutoCAD Electrical for the first year students, starting from 28th November 2021.

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SYLLABUS

Course: AutoCAD Electrical

2021 - 2022

Course Objective: The AutoCAD Electrical course aims to provide participants with comprehensive knowledge and practical skills in using AutoCAD Electrical software for designing electrical schematics, creating panel layouts, and generating reports. The course is designed to equip participants with the essential skills required for efficient and accurate electrical design in various industries.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand AutoCAD Electrical GUI

CO2: Draw, Create and Manage electrical circuits

CO3: Understand component Insertion and Connection

CO4: Understand Library Symbol Creation

CO5: Describe Component Tools and Catalog Information

CO6: Explain Wires and Wire Numbering

CO7:Analyze PLC Layout and Wiring

CO8: Draw Point-to-Point Wiring and Connector Diagrams

CO9: Draw Panel Layout and Footprints

CO10: Analyze Audit and Report Generation

CO11: Understand Import/Export Functionality

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Module	Topics	Course Outcomes
1.1	Introduction, AutoCAD Electrical, GUI	CO1, CO2
1.2	Project, Introduction to Project Manager, Working with Projects	
1.3	Drawing, Adding a Drawing, Create a new Drawing	
1.4	Drawing Properties, Insert a Component, Connecting a component	
2.1	Create a Library Symbol, Symbol Builder, Circuit Builder	CO3
2.2	Inserting a One-line Motor Circuit, Inserting a Dual One-line Power Feed Circuit	
2.3	Copy circuitry, Save circuit to icon menu	
3.1	Component Tools, Inserting Components, Relocating Components	CO4
3.2	Inserting a Child Components	
3.3	Aligning and Editing the Components	
3.4	Catalog Information	
4.1	Component Attribute Tools	CO5
4.2	Wires, Wire layers, Wire types	
4.3	Insert wire, Modify wire	
5.1	Signal Arrows, Source arrow, Destination arrow	CO6
5.2	Ladder tools, Wire numbers, Automatic wire numbers	
5.3	Ladder tools, Wire tagging, Wire numbers	
5.4	PLC I/O wire numbers, Wire Number Edit	
6.1	PLC, Generate PLC Layout Modules, PLC parametric selection	CO7
6.2	Module layout, Insert PLC modules, Edit PLC module	
6.3	PLC Database File	
7.1	Point to Point Wiring Tools	CO8
7.2	Introduction to Connector Diagrams, Inserting Connectors, Editing & Modifying Connectors	

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7.3	Link components by dashed lines	
7.4	Grouping Wires	
8.1	Convert text, Convert block, Convert wires, Convert arrows	CO9
8.2	Special Explode, Panel Layout	
8.3	Foot Prints, Footprints from Schematic list, Footprints from icon menu	
8.4	Din rails, Balloons, Wire Annotations, Create Assembly	
8.5	Editing & Modifying Footprints, Creating Own Footprint	
8.6	Terminals, Placing a Terminal, Terminal Editor	
9.1	Audit, Missing Catalog, Electrical Audit, Signal Error/ List, Drawing Audit	CO10, CO11
9.2	Generate Reports, Types of schematic reports, Generate a schematic report	
9.3	Types of panel reports, Generate a panel report	
9.4	Run automatic reports, Automatic report generation	
9.5	Import/Export, To Spreadsheet, From Spreadsheet	

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VIT/ME/01/2021 22/11/2021

NOTICE

Sub: Commencement of AutoCAD Mechanical Add-On Course

This is to inform you that the Mechanical Engineering Department will be commencing an Add-On Course on AutoCAD Mechanical for the first year students, starting from 28th November 2021.

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SYLLABUS

Course: AutoCAD Mechanical

2021 - 2022

Course Objective: The course objectives for an AutoCAD Mechanical course typically aim to provide students with a solid understanding of the software and its application in the context of mechanical design and engineering. The course is designed to equip participants with the essential skills required for efficient and accurate mechanical design in various industries.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Mechanical

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create machine drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

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8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of simple machine drawings	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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VIT/ECE/01/2022 12/04/2022

NOTICE

Sub: Commencement of Add-On Course

This is to inform you that the Electronics & Communication Engineering Department will be commencing an Add-On Course on Mastering Raspberry Pi: From Basics to Advance for the third year students, starting from 23rd April 2022.

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SYLLABUS

Course: Mastering Raspberry Pi: From Basics to Advance

2021 - 2022

Course Objective: This course is designed to provide comprehensive coverage of Raspberry Pi, a versatile and affordable single-board computer. From the basics of setting up and configuring a Raspberry Pi to advanced topics such as IoT applications, robotics, and multimedia projects, students will gain hands-on experience and practical skills through a combination of lectures, demonstrations, and project-based learning.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamental concepts of Raspberry Pi, including its history, models, specifications, and applications.

CO2: Set up and configure a Raspberry Pi board, including installation of the operating system and basic system administration tasks.

CO3: Develop proficiency in Linux command line usage and navigate the Raspbian operating system environment effectively.

CO4:Utilize the GPIO interface of Raspberry Pi for interfacing with external sensors, actuators, and electronic components.

CO5: Program Raspberry Pi using Python and CircuitPython to control hardware peripherals and implement various projects.

CO6: Establish network connections, including Ethernet, Wi-Fi, and Bluetooth, and implement IoT applications using MQTT protocol.

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CO7: Design and implement multimedia applications on Raspberry Pi for image, audio, and video processing.

CO8: Configure Kodi Media Center and RetroPie for multimedia entertainment and retro gaming experiences.

CO9: Implement advanced Raspberry Pi projects involving robotics, computer vision, machine learning, and home automation.

CO10: Collaborate effectively in group projects, demonstrate project management skills, and present their work professionally.

CO11 :Apply acquired knowledge and skills to develop innovative projects and solutions using Raspberry Pi in various domains, including home automation, entertainment, education, and IoT.

Module	Topics	Course Outcomes
1.1	Overview of Raspberry Pi: History, Models, and Specifications	CO1, CO2, CO3
1.2	Getting Started with Raspberry Pi: Setup and Configuration	
1.3	Introduction to Linux and Raspbian OS	
1.4	Command Line Basics: Navigation, File Management, and System Administration	
2.1	GPIO (General Purpose Input/Output) Interface: Pinout, Wiring, and Programming	CO4, CO5
2.2	Python Programming on Raspberry Pi: Syntax, Data Types, and Control Structures	
2.3	Interfacing Sensors and Actuators with Raspberry Pi	
2.4	Introduction to Breadboarding and Electronics Prototyping	

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2.5	Introduction to Circuit Python for Microcontroller Projects	
3.1	Networking Basics: Ethernet, Wi-Fi, and Bluetooth Setup	CO6, CO9
3.2	Introduction to Internet of Things (IoT) and MQTT Protocol	
3.3	Setting Up a MQTT Broker and Client on Raspberry Pi	
3.4	Implementing IoT Projects: Sensor Data Collection and Remote Control	
3.5	Introduction to Home Automation with Raspberry Pi and IoT Devices	
4.1	Multimedia Applications on Raspberry Pi: Image, Audio, and Video Processing	CO7, CO8, CO9
4.2	Setting Up Kodi Media Center on Raspberry Pi	
4.3	Retro Gaming with RetroPie: Emulation and Gamepad Setup	
4.4	Streaming Media and Internet Radio on Raspberry Pi	
4.5	Building Digital Signage and Kiosk Applications	
5.1	Robotics with Raspberry Pi: Introduction to Motor Control and Robotics Kits	CO9, CO10, C011
5.2	Introduction to Computer Vision with Raspberry Pi Camera Module	

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5.3	Building a Home Security System with Raspberry Pi	
5.4	Introduction to Machine Learning on Raspberry Pi	
5.5	Final Project: Design and Implementation of a Raspberry Pi-based System	
6.1	Group Project: Implementation of Advanced Raspberry Pi Project	CO10, C011
6.2	Project Development and Implementation	
6.3	Project Presentations and Feedback	

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NOTICE

Sub: Commencement of Add-On Course

This is to inform you that the Computer Science & Engineering Department will be commencing an Add-On Course on Object Oriented Programming using Java for the third year students, starting from 4th June 2022.

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SYLLABUS

Course: Object- Oriented Programming with Java

2021 - 2022

Course Objective: Equip students with a comprehensive understanding of Java programming, covering fundamental concepts, advanced language features, object-oriented principles, data structures, graphical user interface development, and database interaction, enabling them to design, implement, and troubleshoot Java applications effectively.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Master Java basics, set up an environment, and write programs with control structures.

CO2: Understand OOP principles, design classes, and implement basic Java applications.

CO3: Gain proficiency in interfaces, abstract classes, exception handling, and file I/O for robust Java development.

CO4: Acquire skills in working with arrays, linked lists, stacks, queues, and hash maps for efficient data manipulation.

CO5: Understand advanced Java features like generics, multithreading, synchronization, and basic GUI programming with Swing.

CO6: Create Java Swing applications, understand event handling, layout managers, and build sophisticated graphical interfaces.

CO7: Connect to databases, execute SQL queries, manipulate data with ResultSets, and follow best practices for Java database interactions.

CO8: Apply knowledge in small projects, solidify skills, and leave with a strong foundation for further Java development or advanced studies.

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Module	Topics	Course Outcomes
1.1	Overview of Java	CO1
1.2	Setting up the environment (JDK, IDE)	
1.3	Writing your first Java program	
1.4	Data types, variables, and basic input/output	
1.5	Operators and expressions	
1.6	Control flow: if statements and loops	
2.1	Introduction to Object-Oriented Programming (OOP)	CO2
2.2	Classes, objects, methods, and constructors	
2.3	Encapsulation, getters, and setters	
2.4	Inheritance and polymorphism	
3.1	Interfaces and abstract classes	CO3
3.2	Exception handling: try-catch blocks	
3.3	File I/O	
3.4	Introduction to packages and libraries	
4.1	Arrays and ArrayLists	CO4
4.2	Linked lists	
4.3	Stacks and queues	
4.4	Hashing and hash maps	
5.1	Multithreading basics	CO5
5.2	Synchronization and thread communication	
5.3	GUI Programming with Swing (Basic Introduction)	
6.1	Event handling in Swing	CO6
6.2	Creating simple Java Swing applications	
6.3	Layout managers	

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6.4	Building a more complex Swing application	
7.1	Introduction to JDBC (Java Database Connectivity)	CO7
7.2	Connecting to databases and executing SQL queries	
7.3	ResultSet and data manipulation	
7.4	Closing database connections and best practices	
8.1	Small group projects and coding exercises	CO8
8.2	Review of the course	
8.3	Q&A session	
8.4	Future learning paths and resources	

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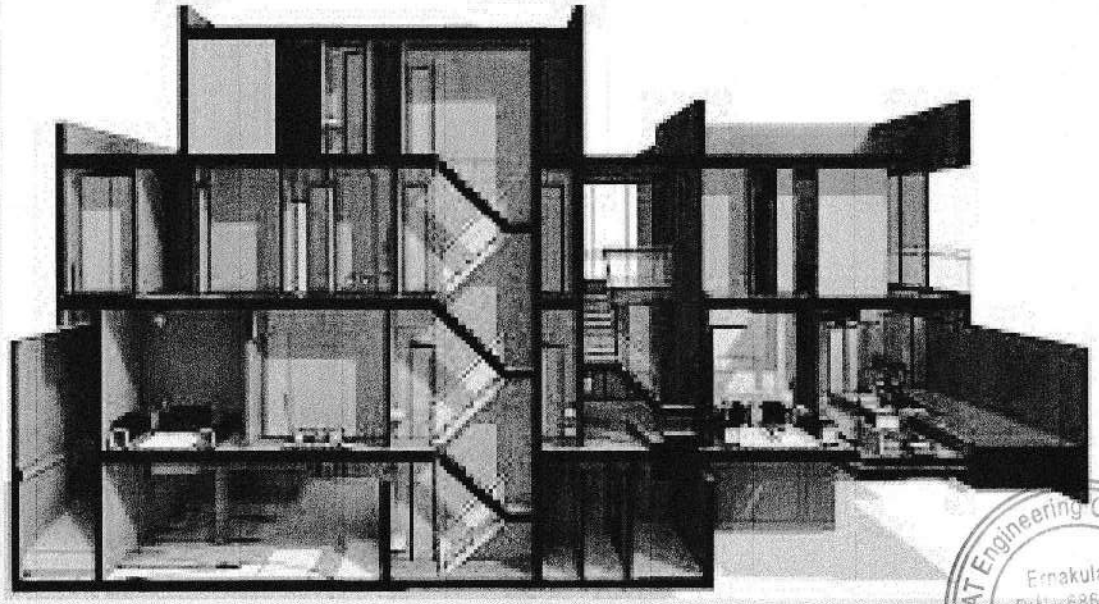
Department of Civil Engineering

ADD-ON COURSE ON REVIT ARCHITECTURE



Date: 18th September 2022

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SYLLABUS

Course: Revit Architecture

2022 - 2023

Course Objective: The course aims to equip students with a comprehensive understanding of Revit Architecture, focusing on skills such as creating detailed 3D models, producing accurate documentation, and mastering collaborative workflows for efficient building design.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Recall the fundamental features of Revit Architecture.

CO2: Create custom building elements, including walls, doors, windows, curtain walls, roofs, etc.

CO3: Use masses to study building shapes, and then convert them into actual building elements.

CO4: Extract quantities and material take-off schedules.

CO5 : Create design and construction documents with Revit Architecture.

CO6 : Create 3D models and view them through navigation tools.

CO7: Create custom materials and use them in rendered views of the model.

CO8: Learn to manipulate natural and artificial lighting to best show your model in renderings.

Module	Topics	Course Outcomes
1	Introduction to Autodesk Revit Architecture	CO1
1.1	User interface tour	
1.2	Browsers, bars, palettes and windows	
1.3	Revit Architecture help	

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2	Starting an architectural project	CO1
2.1	Starting a new architectural project	
2.2	Navigation tools	
2.3	Configuring global settings	
3	Creating walls	CO2
3.1	Creating architectural walls	
3.2	Creating architectural walls II	
4	Using basic building components- I	CO2, CO8
4.1	Adding doors	
4.2	Adding windows and wall openings	
5	Using the editing tools	CO2
5.1	Working with selection sets	
5.2	Editing tools	
5.3	Editing tools II	
5.4	Grouping elements	
6	Working with datum planes and creating standard views	CO2
6.1	Working with levels	
6.2	Working with grids	
6.3	Working with reference planes and work planes	
6.4	Controlling the display of elements	
6.5	Working with project views	
7	Using basic building components- II	CO2
7.1	Creating floors	

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7.2	Creating roofs	
7.3	Shape editing tools	
7.4	Creating ceilings	
7.5	Adding rooms	
8	Using basic building components- III	CO2
8.1	Working with components	
8.2	Adding stairs	
8.3	Adding railings and ramps	
8.4	Creating curtain walls	
9	Adding site features	CO2
9.1	Working with site features	
9.2	Property lines and building pads	
9.3	Adding site components	
9.4	Adding site features	
10	Using massing tools	CO3
10.1	Understanding massing concepts	
10.2	Creating massing geometry in the family editor	
10.3	Editing massing geometry in the family editor	
10.4	Massing in the conceptual design environment	
10.5	Creating massing geometry in a project	
10.6	Creating building elements from massing geometry	
10.7	Creating families	
11	Adding annotations and dimensions	CO4

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11.1	Adding tags	
11.2	Room tags	
11.3	Keynotes	
11.4	Adding symbols and dimensions	
11.5	Dimensioning terminology and dimensioning tools	
11.6	Adding alternate dimension units and spot dimensions	
12	Creating project details and schedules	
12.1	Project detailing in Autodesk Revit Architecture	
12.2	Crop regions, fills patterns, and detail components	
12.3	Adding text notes for creating drafting views	CO4
12.4	Revision clouds	
12.5	Working with schedules	
13	Creating drawing sheets, and plotting	
13.1	Creating drawing sheets	
13.2	Creating duplicate dependent views	CO5
13.3	Printing in Revit Architecture	
14	Creating 3D views	
14.1	Three dimensional (3D) views	
14.2	Dynamically viewing models with navigation tools	
14.3	Orienting a 3D view	CO6
14.5	Generating perspective views	
14.6	Using a section box	
15	Rendering views and creating walkthroughs	
15.1	Rendering in Revit Architecture	CO7, CO8

15.2	Working with materials	
15.3	Lights, decals and entourage	
15.4	Rendering settings	
15.5	Creating a walkthrough	
15.6	Autodesk 360 | Rendering	

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Department of Civil Engineering

ADD-ON COURSE ON 3DS MAX

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SYLLABUS

Course: 3ds Max

2022 - 2023

Course Objective: The primary objective of this course is to teach students the essential of working in 3D using an array of features and tools. On completing the course you will be able to do:

- Navigate Autodesk 3ds Max Design user interface.
- To be able to use basic Autodesk 3ds Max Design commands for professional 3D model, design and rendering.
- Understand concepts and techniques in 3D modeling.
- To be able to provide complete rendering and animation.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand 3dsMax Software

CO2: Create and customize 3D objects

CO3: Create and edit extended primitive objects, aligning etc.

CO4: Understand and extruding 2d splines & shape

CO5: Model simple objects with splines

CO6: Understand loft & terrain

CO7: Understand morph, scatter, conform

CO8: Create 3D Modelling

CO9: Model with patches & NURBS

CO10: Understand particle flow user interface, how particle flow works

CO11: Create and apply standard materials, adding material, details with maps

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2.2	Extrude & bevel 2d object to 3d	
2.3	Understanding loft & terrain	
2.4	Boolean, pro boolean & pro cutter compound object	
2.5	Modeling simple objects with splines	
2.6	Understanding morph, scatter, conform	
2.7	Connect compound objects, blob mesh	
3	3D Modelling	CO8, CO9
3.1	Modeling with polygons	
3.2	Building simple scenes	
3.3	Deforming surfaces using the mesh modifiers	
3.4	Modeling with patches & NURBS	
4	Keyframe animation	CO9
4.1	Creating keyframes, auto keyframes	
4.2	Animation modifiers & complex controllers	
4.3	Function curves in the track view, motion mixer	
5	Simulation & effects	CO10, CO11

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CO12: Understanding Rendering with V-Ray

Module	Topics	Course Outcome
1	Computer-Based animation & getting started with 3ds Max	CO1, CO2, CO3
1.1	Definition of computer-based animation	
1.2	Basic types of animation: Real-time, non-real-time	
1.3	Definition of modelling	
1.4	Creation of 3D objects	
1.5	Exploring the max interface	
1.6	Controlling & configuring the viewports	
1.7	Customizing the max interface & setting preferences	
1.8	Working with files importing & exporting	
1.9	Selecting objects & setting object properties	
1.10	Duplicating objects	
1.11	Creating & editing- standard primitive & extended primitives objects, transforming objects, pivoting, aligning etc.	
2	Creating a walkthrough 2d Splines & shapes & compound object	CO4, CO5, CO6, CO7
2.1	Understanding 2d splines & shape	

5.1	Creating particle system through PArray	
5.2	Understanding particle flow user interface, how particle flow works	
5.3	Hair & and fur modifier, cloth & and garment maker modifiers etc.	
6	Lighting & camera	CO11
6.1	Configuring & aiming cameras, camera tracking	
6.2	Using basic lights & lighting techniques	
6.3	Working with advanced lighting, mental ray lighting etc.	
7	Texturing with Max	CO11, CO12
7.1	Using the material editor & the material explorer	
7.2	Creating and applying standard materials, adding material, details with maps	
7.3	Creating compound materials & material modifiers, unwrapping UVs & mapping texture, using atmospheric & render effects etc.	
8	Rendering with V-Ray	CO12
8.1	V-ray light setup, V-ray rendering settings	
8.2	HDRI illumination, fine-tuning shadows, final render setting etc.	

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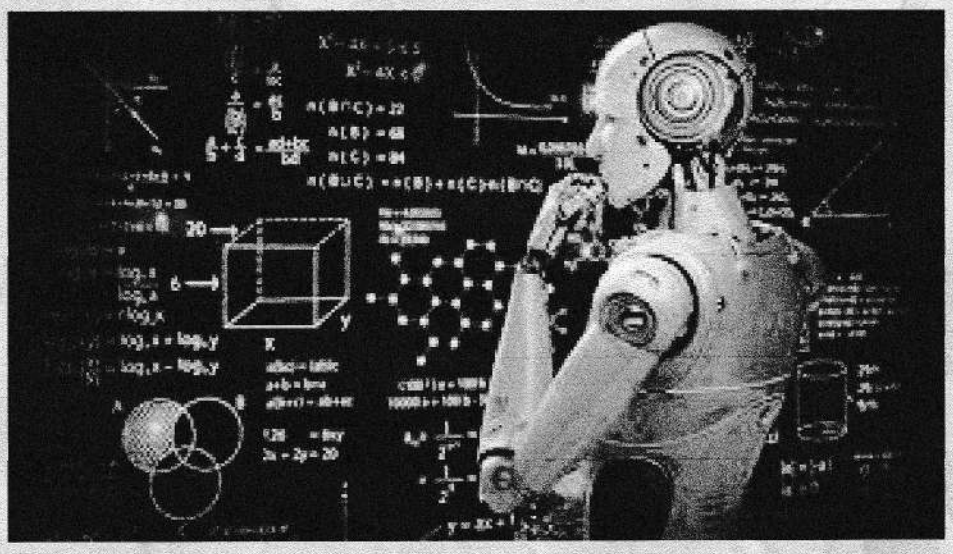
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ADD-ON COURSE ON 'TRAINING EXPERIENCE ON ARTIFICIAL INTELLIGENCE WITH ROBOTICS'

DATE: 18TH NOVEMBER 2022



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SYLLABUS

Course: Training Experience on Artificial Intelligence with Robotics

2022 - 2023

Course Objective: This course provides a comprehensive knowledge and fundamentals of Artificial Intelligence (AI) with a focus on robotics. Students will learn about the core concepts, techniques, and applications of AI in the context of robotics, including machine learning, computer vision, control systems, and human-robot interaction. Through a combination of lectures, hands-on exercises, and projects, students will gain practical skills in designing, implementing, and evaluating AI-based robotic systems.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Demonstrate a comprehensive understanding of the core concepts and principles of Artificial Intelligence (AI) as applied to robotics.

CO2: Apply fundamental knowledge of robotics, including kinematics, dynamics, sensors, actuators, and programming languages, to design and control robotic systems.

CO3: Analyze and implement various machine learning algorithms, including supervised, unsupervised, and reinforcement learning, for solving robotic tasks such as perception, decision-making, and control.

CO4: Utilize computer vision techniques to process and interpret visual data for object detection, recognition, and localization in robotic applications.

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CO5: Design and implement control systems, including PID controllers, state-space representations, and motion planning algorithms, to achieve precise and efficient robotic motion and manipulation.

CO6: Evaluate and assess the performance of AI-based robotic systems through experimentation, testing, and validation methodologies.

CO7: Demonstrate effective collaboration and communication skills in interdisciplinary teams while working on robotics projects.

CO8: Critically analyze and discuss ethical, social, and legal implications associated with the development and deployment of AI-enabled robotic technologies.

CO9: Explore emerging trends and advancements in the field of AI and robotics and identify potential areas for future research and innovation.

CO10: Apply acquired knowledge and skills to tackle real-world challenges in various domains such as manufacturing, healthcare, transportation, and entertainment using AI-powered robotic systems.

Module	Topics	Course Outcomes
1.1	Overview of Artificial Intelligence and Robotics	CO1
1.2	History and Evolution of AI and Robotics	
1.3	Applications of AI in Robotics	
1.4	Ethical and Societal Implications of AI and Robotics	
2.1	Introduction to Robotics: Definitions and Components	CO2
2.2	Robot Kinematics and Dynamics	
2.3	Sensors and Actuators in Robotics	
2.4	Robot Programming: Languages and Paradigms	
2.5	Robot Localization and Mapping	
3.1	Basics of Machine Learning: Supervised, Unsupervised, and	CO3

	Reinforcement Learning	
3.2	Regression and Classification Algorithms	
3.3	Neural Networks and Deep Learning	
3.4	Training and Evaluation of Machine Learning Models	
3.5	Applications of Machine Learning in Robotics	
4.1	Introduction to Computer Vision	CO4
4.2	Image Processing Techniques	
4.3	Feature Detection and Matching	
4.4	Object Detection and Recognition	
4.5	Visual SLAM (Simultaneous Localization and Mapping)	
5.1	Introduction to Control Theory	CO5
5.2	PID Controllers and Feedback Control	
5.3	State-Space Representation	
5.4	Motion Planning and Trajectory Generation	
5.5	Robotic Manipulation and Grasping	
6.1	Overview of Human-Robot Interaction (HRI)	CO6, C07, C08
6.2	Design Principles for HRI	
6.3	Collaborative Robotics	
6.4	Social and Emotional Interaction with Robots	
6.5	Ethical Considerations in HRI	
7.1	Group Project: Design and Implementation of an AI-based Robotic System	CO9, C010
7.2	Project Development and Implementation	
7.3	Project Presentations and Feedback	

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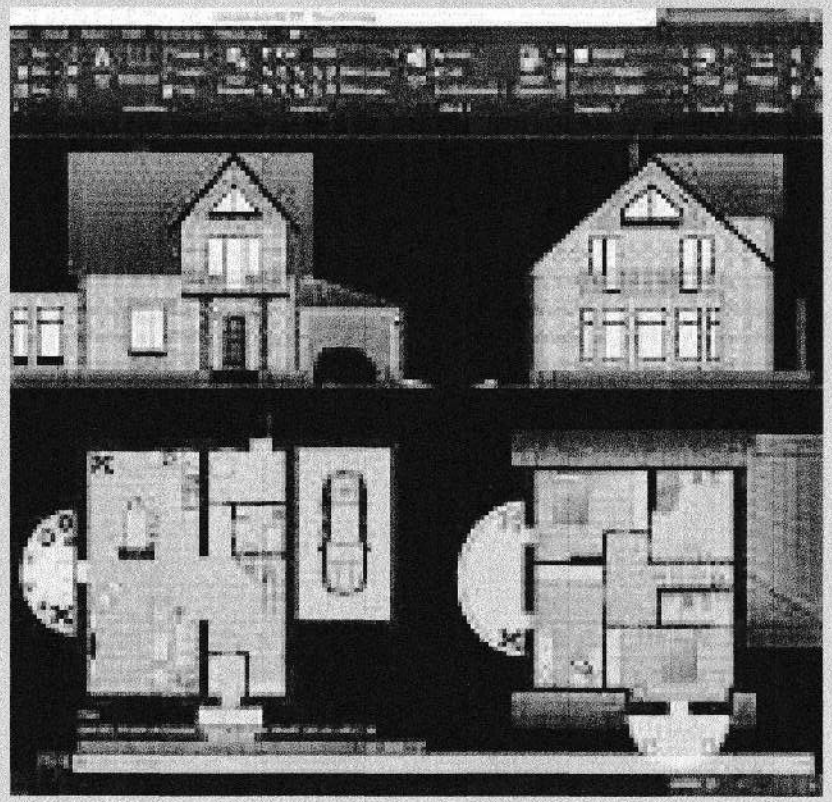
DEPARTMENT OF CIVIL ENGINEERING

Add-On Coure on AutoCAD Civil



Date: 26 November 2022

Venue: MSME, Ettumanoor

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SYLLABUS

Course: AutoCAD Civil

2022 - 2023

Course Objective: The course aims to equip participants with fundamental skills in AutoCAD Civil 2D for civil engineering design tasks. Students will learn to navigate the AutoCAD Civil interface efficiently, mastering essential tools for creating accurate 2D drawings. The participants will gain proficiency in drafting techniques, layer management, and annotation tools necessary for producing clear and comprehensive engineering drawings.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Civil

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create building drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

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8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of plan, section and elevation of single storied residential building	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ADD-ON COURSE ON PYTHON PULSE: JUMPSTART YOUR PROGRAMMING PASSION

DATE: 26TH NOVEMBER 2022

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SYLLABUS

Course: Python Pulse- Jumpstart Your Programming Passion

2022 - 2023

Course Objective: The course aims to provide students with a solid foundation in programming fundamentals using Python, while also introducing them to web development with Django and providing an overview of data science and machine learning concepts.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand and apply basic programing concepts using Python.

CO2: Demonstrate proficiency in solving computational problems using arithmetic operations and functions.

CO3: Develop and implement control structures and functions for algorithmic problem-solving.

CO4: Demonstrate proficiency in advanced function concepts and input handling techniques.

CO5: Gain practical experience in web development using the Django framework.

CO6: Understand the basics of data science and machine learning and their applications.

Module	Topics	Course Outcomes
1.1	Introduction to Python syntax and basic arithmetic operations	CO1
1.2	Algebraic identity implementation in Python	
1.3	Calculating area and perimeter of a circle	
1.4	Handling user input for area and perimeter calculation	
1.5	String concatenation and slicing operations	

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1.6	Introduction to loops (for loop) and input handling techniques	
2.1	Defining and implementing functions to find product, sum, and factorial	CO2
2.2	Calculating area of a rectangle and square of the sum of numbers in a list	
2.3	List manipulation: appending elements and counting numbers in a string	
2.4	Introduction to list comprehension for efficient list manipulation	
2.5	Exploring even list comprehension and product of even numbers' squares	
3.1	Understanding advanced data structures: dictionaries and ranges	CO3
3.2	Utilizing dictionary operations: printing keys and values, adding values, and counting values	
3.3	Exploring control structures: split and list comprehension, finding odd numbers in a range	
3.4	Exploring control structures: split and list comprehension, finding odd numbers in a range	
3.5	Implementing product of a range and sum using range operations	
4.1	Defining and using functions with arguments for addition and subtraction	CO4
4.2	Implementing advanced function concepts: multiplying and finding products with user input	
4.3	Introducing basic calculator functionalities using functions	
4.4	Checking letters in a word using function	
5.1	Overview of web development with Django framework	CO5
5.2	Creating Django projects and applications	
5.3	Understanding views, URLs, and HTML basics	
5.4	Running Django server and serving web pages	
5.5	Introduction to Django app creation and management	
6.1	Overview of data science and machine learning concepts	CO6
6.2	Discussing applications and significance of data science and machine learning	
6.3	Exploring basic data visualization and statistical analysis techniques	

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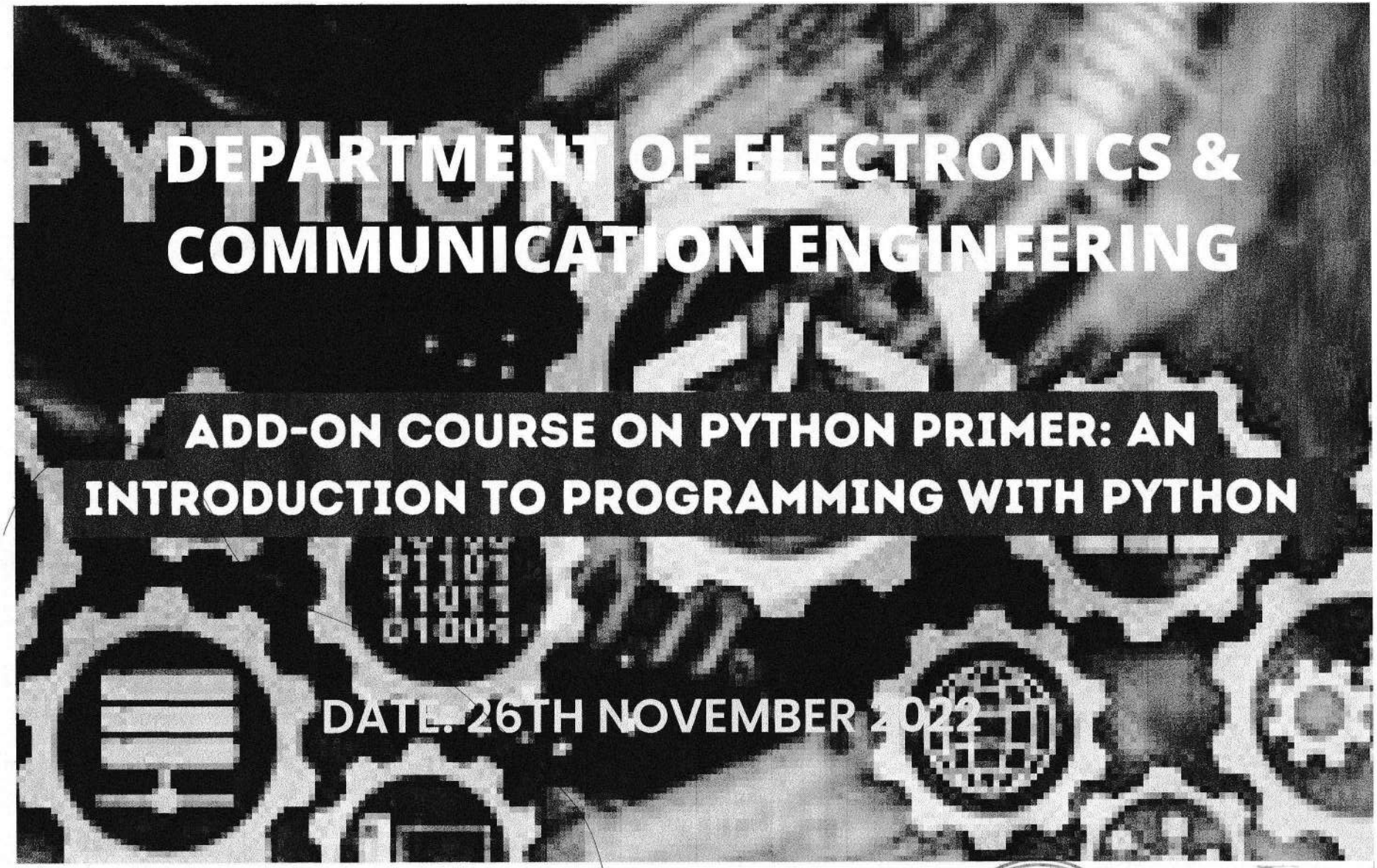

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ADD-ON COURSE ON PYTHON PRIMER: AN INTRODUCTION TO PROGRAMMING WITH PYTHON

DATE: 26TH NOVEMBER 2022

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SYLLABUS

Course: Python Primer- An Introduction to Programming with Python

2022 - 2023

Course Objective: The course aims to provide students with a solid foundation in programming fundamentals using Python, while also introducing them to web development with Django and providing an overview of applications of Python on Raspberry Pi Platform.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand and apply basic programing concepts using Python in Electronics Engineering.

CO2: Demonstrate proficiency in solving computational problems using arithmetic operations and functions.

CO3: Develop and implement control structures and functions for algorithmic problem-solving.

CO4: Demonstrate proficiency in advanced function concepts and input handling techniques.

CO5: Gain practical experience in web development using the Django framework.

CO6: Understand the application of Python on the Raspberry Pi platform

Module	Topics	Course Outcomes
1.1	Introduction to Python syntax and basic arithmetic operations	CO1
1.2	Algebraic identity implementation in Python	
1.3	Calculating area and perimeter of a circle	
1.4	Handling user input for area and perimeter calculation	
1.5	String concatenation and slicing operations	

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1.6	Introduction to loops (for loop) and input handling techniques	
2.1	Defining and implementing functions to find product, sum, and factorial	CO2
2.2	Calculating area of a rectangle and square of the sum of numbers in a list	
2.3	List manipulation: appending elements and counting numbers in a string	
2.4	Introduction to list comprehension for efficient list manipulation	
2.5	Exploring even list comprehension and product of even numbers' squares	
3.1	Understanding advanced data structures: dictionaries and ranges	CO3
3.2	Utilizing dictionary operations: printing keys and values, adding values, and counting values	
3.3	Exploring control structures: split and list comprehension, finding odd numbers in a range	
3.4	Exploring control structures: split and list comprehension, finding odd numbers in a range	
3.5	Implementing product of a range and sum using range operations	
4.1	Defining and using functions with arguments for addition and subtraction	CO4
4.2	Implementing advanced function concepts: multiplying and finding products with user input	
4.3	Introducing basic calculator functionalities using functions	
4.4	Checking letters in a word using function	
5.1	Overview of web development with Django framework	CO5
5.2	Creating Django projects and applications	
5.3	Understanding views, URLs, and HTML basics	
5.4	Running Django server and serving web pages	
5.5	Introduction to Django app creation and management	
6.1	Discussing applications of Python on Raspberry pi	CO6
6.2	Sensor Interfacing	
6.3	Project Development	

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DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Add-On Course on Python Kickstart: Getting Started with Python

Date: 26th November 2

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SYLLABUS

Course: Python Kickstart- Getting Started with Python

2022 - 2023

Course Objective: The course aims to provide students with a solid foundation in programming fundamentals using Python, while also introducing them to web development with Django and providing an overview of applications of Python on Raspberry Pi Platform.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand and apply basic programing concepts using Python in Electrical Engineering.

CO2: Demonstrate proficiency in solving computational problems using arithmetic operations and functions.

CO3: Develop and implement control structures and functions for algorithmic problem-solving.

CO4: Demonstrate proficiency in advanced function concepts and input handling techniques.

CO5: Gain practical experience in web development using the Django framework.

CO6: Understand the application of Python on the Raspberry Pi platform

Module	Topics	Course Outcomes
1.1	Introduction to Python syntax and basic arithmetic operations	CO1
1.2	Algebraic identity implementation in Python	
1.3	Calculating area and perimeter of a circle	
1.4	Handling user input for area and perimeter calculation	
1.5	String concatenation and slicing operations	

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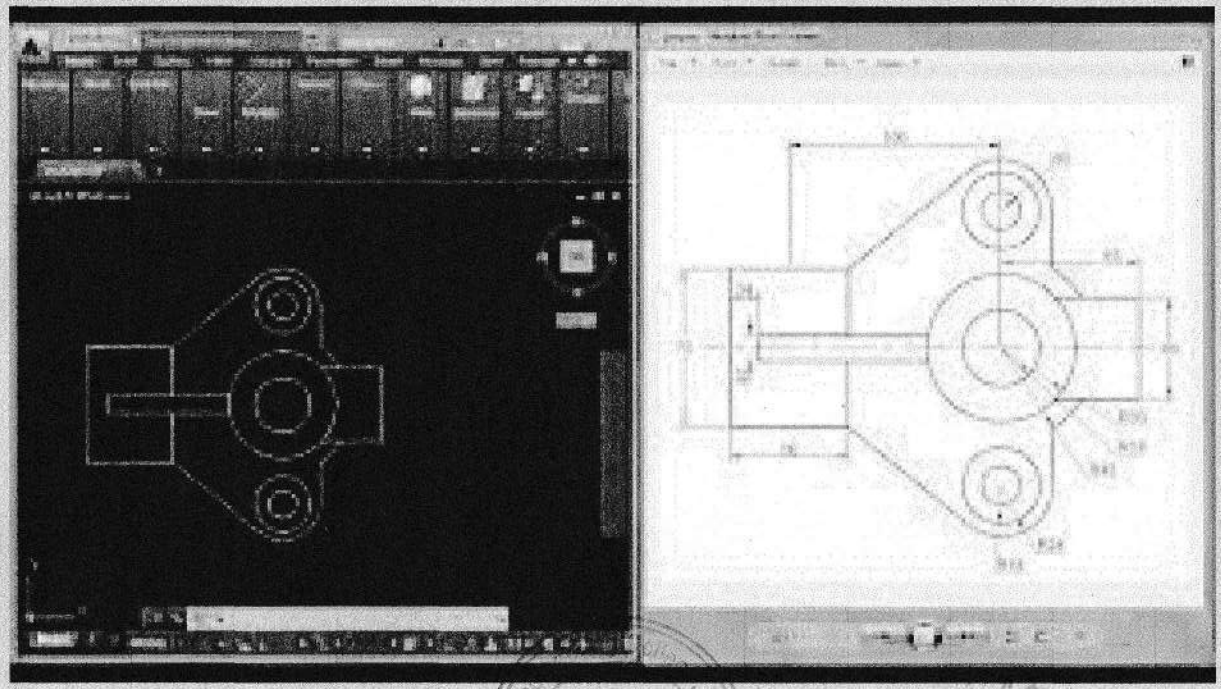
1.6	Introduction to loops (for loop) and input handling techniques	
2.1	Defining and implementing functions to find product, sum, and factorial	CO2
2.2	Calculating area of a rectangle and square of the sum of numbers in a list	
2.3	List manipulation: appending elements and counting numbers in a string	
2.4	Introduction to list comprehension for efficient list manipulation	
2.5	Exploring even list comprehension and product of even numbers' squares	
3.1	Understanding advanced data structures: dictionaries and ranges	CO3
3.2	Utilizing dictionary operations: printing keys and values, adding values, and counting values	
3.3	Exploring control structures: split and list comprehension, finding odd numbers in a range	
3.4	Exploring control structures: split and list comprehension, finding odd numbers in a range	
3.5	Implementing product of a range and sum using range operations	
4.1	Defining and using functions with arguments for addition and subtraction	CO4
4.2	Implementing advanced function concepts: multiplying and finding products with user input	
4.3	Introducing basic calculator functionalities using functions	
4.4	Checking letters in a word using function	
5.1	Overview of web development with Django framework	CO5
5.2	Creating Django projects and applications	
5.3	Understanding views, URLs, and HTML basics	
5.4	Running Django server and serving web pages	
5.5	Introduction to Django app creation and management	
6.1	Discussing applications of Python on Raspberry pi	CO6
6.2	Sensor Interfacing	
6.3	Project Development	

DEPARTMENT OF MECHANICAL ENGINEERING

Add-On Coure on AutoCAD Mechanical

Date: 26 November 2022

Venue: MSME, Ettumanoor



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SYLLABUS

Course: AutoCAD Mechanical

2022 - 2023

Course Objective: The course objectives for an AutoCAD Mechanical course typically aim to provide students with a solid understanding of the software and its application in the context of mechanical design and engineering. The course is designed to equip participants with the essential skills required for efficient and accurate mechanical design in various industries.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamentals of AutoCAD Mechanical

CO2: Navigate the software interface efficiently

CO3: Create and manage basic 2D sketches

CO4: Apply basic sketching and editing commands to create accurate geometry

CO5: Demonstrate proficiency in using modify commands for editing sketches

CO6: Utilize layers and properties for efficient drawing management

CO7: Implement dimensioning techniques for clear and accurate drawings

CO8: Apply geometric and dimensional constraints for parametric design

CO9: Create machine drawings

CO10: Understand the principles of 3D modeling

CO11: Create and edit 3D models using extrusion, revolution, and other techniques

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Module	Topics	Course Outcomes
1	Introduction: File management, user interface, basic settings, navigation bar, steering wheel, view port	CO1
2	Draw setting & condition: Units, limits, UCS icon function keys	CO2
3	Drawing tools: Line, polyline, circle, arc, rectangle, polygon, ellipse, elliptical arc, spline, spline edit, X line, ray, points measure, divide, region wipe out, helix, donut, revision cloud, hatch, gradient	CO3, CO4
4	Modify Tools: Move, copy, rotate, scale stretch, fillet, chamfer erase, offset, explode array, polar array, path array trim, extend, mirror, edit polyline, edit spline, edit hatch, edit array, break, break at point blend vertex, joint, overkill, lengthen	CO4
5.1	Annotations Dimensions: Dimension setting linear dimension, aligned dimension, angular dimensions, arc length, radius, diameter, ordinates, jogged baseline dimension, dim base.	CO7
5.2	Continuous dimension multi leader: Multi leader setting, create multi leader, multi leader edit, multi leader align	
5.3	Text: Text style, single text, multi text	
5.4	Table: Table style, create table, table Edit, text placement	
6.1	Properties: Colour, line type, line weight, show icon, match properties	CO5
6.2	Group: New group, edit group, active and inactive group	
7	Layers: Create layers, edit layers, properties, layer control (hide, freeze, lock layout lock, print lock)	CO6
8.1	Utilities tools: UT tools - distance, radius, angle area, volume, quick select, quick calculator, point, ID point	CO5

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8.2	Clip board: Copy, cut, paste, paste as a block, paste special	
9.1	Block & attributes block: Create block (block & write block), insert block, block editor	CO4. CO5, CO6
9.2	Attributes: Create attributes, attributes mode setting, block attributes, insert attributes, edit attributes tool palettes, design centre, add object to tool palettes and design centre, insert object from tool palettes and design centre	
10.1	Geometric constraint: Coincident, parallel, tangent collinear, midpoint, smooth concentric, horizontal, symmetric lock, vertical, equal, show and hide constraints	CO8
10.2	Dimension constraint: Linear, aligned, radius, diameter angle, show and hide dim constraints, delete constraints, parameters.	
11	Preparation of simple machine drawings	CO9
12.1	References: External reference, attach files	CO10, CO11
12.2	Import: Import 2D, import 3D, OLE	
12.3	Layouts: Multi view, paper space, model space, page setup, print setup print setting, PDF conversion DXF, batch print	

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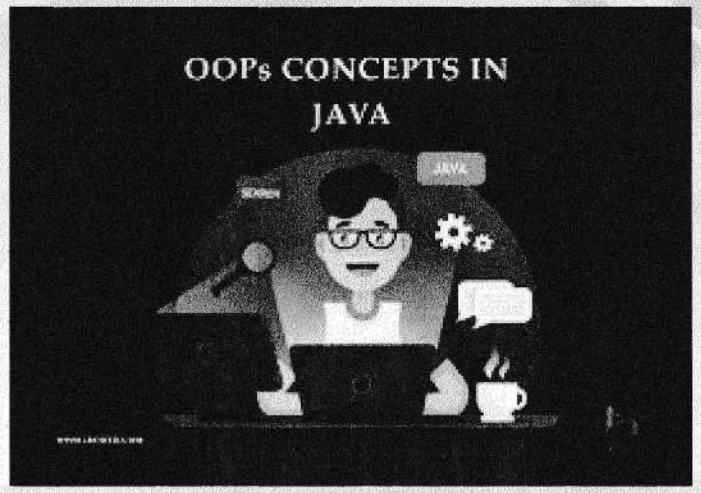
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ADD-ON COURSE ON OBJECT ORIENTED PROGRAMMING WITH JAVA



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SYLLABUS

Course: Object- Oriented Programming with Java

2022 - 2023

Course Objective: Equip students with a comprehensive understanding of Java programming, covering fundamental concepts, advanced language features, object-oriented principles, data structures, graphical user interface development, and database interaction, enabling them to design, implement, and troubleshoot Java applications effectively.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Master Java basics, set up an environment, and write programs with control structures.

CO2: Understand OOP principles, design classes, and implement basic Java applications.

CO3: Gain proficiency in interfaces, abstract classes, exception handling, and file I/O for robust Java development.

CO4: Acquire skills in working with arrays, linked lists, stacks, queues, and hash maps for efficient data manipulation.

CO5: Understand advanced Java features like generics, multithreading, synchronization, and basic GUI programming with Swing.

CO6: Create Java Swing applications, understand event handling, layout managers, and build sophisticated graphical interfaces.

CO7: Connect to databases, execute SQL queries, manipulate data with ResultSets, and follow best practices for Java database interactions.

CO8: Apply knowledge in small projects, solidify skills, and leave with a strong foundation for further Java development or advanced studies.

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Module	Topics	Course Outcomes
1.1	Overview of Java	CO1
1.2	Setting up the environment (JDK, IDE)	
1.3	Writing your first Java program	
1.4	Data types, variables, and basic input/output	
1.5	Operators and expressions	
1.6	Control flow: if statements and loops	
2.1	Introduction to Object-Oriented Programming (OOP)	CO2
2.2	Classes, objects, methods, and constructors	
2.3	Encapsulation, getters, and setters	
2.4	Inheritance and polymorphism	
3.1	Interfaces and abstract classes	CO3
3.2	Exception handling: try-catch blocks	
3.3	File I/O	
3.4	Introduction to packages and libraries	
4.1	Arrays and ArrayLists	CO4
4.2	Linked lists	
4.3	Stacks and queues	
4.4	Hashing and hash maps	
5.1	Multithreading basics	CO5
5.2	Synchronization and thread communication	
5.3	GUI Programming with Swing (Basic Introduction)	
6.1	Event handling in Swing	CO6
6.2	Creating simple Java Swing applications	
6.3	Layout managers	

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6.4	Building a more complex Swing application	
7.1	Introduction to JDBC (Java Database Connectivity)	CO7
7.2	Connecting to databases and executing SQL queries	
7.3	ResultSet and data manipulation	
7.4	Closing database connections and best practices	
8.1	Small group projects and coding exercises	CO8
8.2	Review of the course	
8.3	Q&A session	
8.4	Future learning paths and resources	

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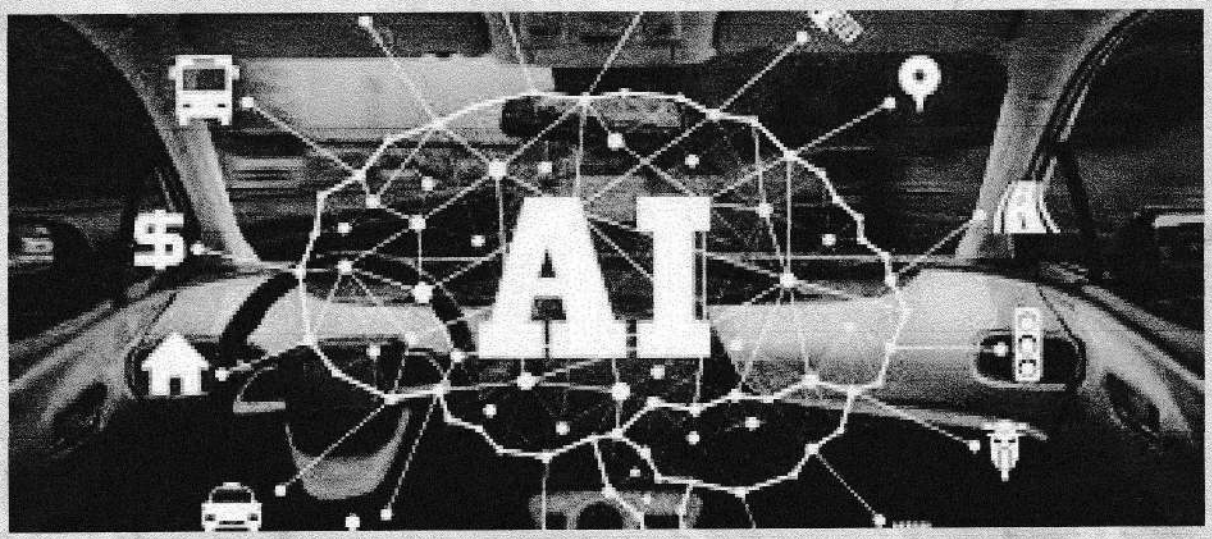
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

ADD-ON COURSE ON ARTIFICIAL INTELLIGENCE BASED SELF DRIVING CAR "

DATE: 5TH FEBRUARY 2023



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SYLLABUS

Course: Artificial Intelligence Based Self Driving Car

2022 - 2023

Course Objective: This course provides a comprehensive overview of the technologies and algorithms underlying autonomous driving systems. Students will learn about the various components of self-driving cars, including perception, decision-making, and control, and how artificial intelligence (AI) techniques are employed to enable safe and efficient navigation. Through a combination of lectures, hands-on exercises, and simulation-based projects, students will gain practical skills in designing, implementing, and testing AI-based self-driving car algorithms.

Course Outcomes:

After the completion of this course the student will be able to

CO1: Understand the fundamental concepts, challenges, and technologies involved in autonomous driving systems.

CO2: Describe the various components of a self-driving car, including sensors, perception systems, decision-making algorithms, and control systems.

CO3: Apply artificial intelligence (AI) and machine learning techniques to enable perception, decision-making, and control in autonomous vehicles.

CO4: Implement sensor fusion techniques to integrate data from multiple sensors and achieve robust perception in dynamic environments.

CO5: Develop decision-making algorithms and planning strategies to enable safe and efficient navigation in complex traffic scenarios.

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CO6: Design and implement control systems for trajectory tracking and path following in autonomous driving applications.

CO7: Utilize simulation environments for testing, validation, and deployment of self-driving car algorithms.

Module	Topics	Course Outcomes
1.1	Overview of Self-Driving Car Technology: History, Challenges, and Applications	CO1
1.2	Components of a Self-Driving Car: Sensors, Actuators, Perception Systems, and Control Systems	
1.3	Introduction to AI and Machine Learning in Autonomous Driving	
2.1	Sensor Types and Data Fusion: Lidar, Radar, Cameras, and GPS	CO2, CO3, CO4
2.2	Perception Algorithms: Object Detection, Tracking, and Classification	
2.3	Sensor Calibration and Synchronization	
2.4	Simultaneous Localization and Mapping (SLAM) Techniques	
2.5	Robot Localization and Mapping	
3.1	Decision-Making Architectures: Rule-based Systems, Behavior Trees, and Reinforcement Learning	CO5
3.2	Path Planning Algorithms: A* Search, Dijkstra's Algorithm, and Probabilistic Roadmaps (PRMs)	

3.3	Behavior Prediction and Motion Planning in Dynamic Environments	
3.4	Integration of Decision-Making with Perception and Control Systems	
4.1	Vehicle Dynamics and Kinematics	CO6
4.2	PID Controllers and Model Predictive Control (MPC)	
4.3	Trajectory Tracking and Path Following	
4.4	Integration of Control Systems with Perception and Decision-Making Modules	
5.1	Introduction to Simulation Environments for Autonomous Driving	CO7
5.2	Simulation Tools: CARLA, Apollo, and LGSVL Simulator	

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