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Guru Nanak Educational Society's

GURU NANAK INSTITUTE OF TECHNOLOGY

APPROVED BY AICTE, DTE & AFFILIATED TO RTM NAGPUR UNIVERSITY, NAGPUR

Dahegaon, Opp. IOC Petrol pump, Kalmeshwar Road, Nagpur-441501 Ph.: 07118-661450
Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

**Date: 07/05/2022**

## TO WHOMESOEVER IT MAY CONCERN

This is to certify that the number of Add on / Certificate courses offered during the Academic Year 2021-22.

| Academic Year | Number of Courses |
|---|---|
| 2021-22 | 12 |

These add on / Certificate courses conducted by various department of our institute are not the part of curriculum prescribed by Rashtrasant Tukadoji Maharaj Nagpur University.

Dr. Sudhir N. Shelke
PRINCIPAL
Principal
Guru Nanak Institute of Technology

1.2.1 Number of Add on /Certificate/Value added programs offered in the year 2021-22

| Name of Certificate/ Value added course offered and online courses of MOOCs, SWAYAM, NPTEL etc. where the students of the institution have enrolled and successfully completed | Course Code | Year of offering/ study | Period (from date - to date) | Duration of course | Number of students enrolled in the year | Number of Students completing the course in the year |
|---|---|---|---|---|---|---|
| REVIT Architecture | CE134 | 2021-2022 | 01.10.21 - 30.11.21 | 40 hrs | 90 | 80 |
| STAAD Pro | CE135 | 2021-2022 | 01.01.22 - 31.03.22 | 40 hrs | 32 | 32 |
| Project Management with Microsoft Project (MSP)" | CE136 | 2021-2022 | 01.04.22-30.05.22 | 41 hrs | 95 | 80 |
| Building Information Modelling (BIM) | CE137 | 2021-2022 | 01.08.21-30.09.21 | 40 hrs | 105 | 80 |
| Refrigeration Air Conditioning (RAC) | ME125 | 2021-2022 | 01.01.22 - 28.02.22 | 40 hrs | 16 | 16 |
| Electrical Vehicle Technology and Advanced Automotive System | ME141 | 2021-2022 | 02.03.22-30.04.22 | 30 hrs | 50 | 40 |
| CATIA | ME142 | 2021-2022 | 02.09.21-30.01.22 | 41 hrs | 134 | 80 |
| SOLIDWORKS | ME143 | 2021-2022 | 02.08.21 - 30.11.21 | 37 hrs | 71 | 63 |
| Cloud Computing | CSE165 | 2021-2022 | 01.08.21-30.09.21 | 40 hrs | 60 | 53 |
| Data Science Big Data and Learning Analytics | CSE169 | 2021-2022 | 01.03.22-30.04.22 | 40 hrs | 55 | 54 |
| "AWS Solution Architect" | CSE170 | 2021-2022 | 01.01.22 - 16.04.22 | 38 hrs | 60 | 52 |
| Salesforce Admin | CSE171 | 2021-2022 | 01.10.21-30.11.21 | 40 hrs | 67 | 54 |

Guru Nanak Institute of Technology GNIT 4196 Nagpur

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Guru Nanak Institute of Technology

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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 15-09-2021

To

The Head of the Department,
Department of Civil Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"REVIT"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 14-09-2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **REVIT**

1. Prof. Sushant M. Gajbhiye, Civil Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal
Principal
Guru Nanak Institute of
Technology

## DEPARTMENT OF CIVIL ENGINEERING

*Session 2021-22*

### Syllabus for Revit Architecture (Add-On Course)

**COURSE OBJECTIVES:**

1. Learn and get familiar with Autodesk Revit Architecture; this course aims to make the participants productive by giving them the ability to produce drawings and redefine images of buildings.
2. Also, it will help you navigate user interface, architectural objects such as floor, walls, roofs, windows, and stairs.
3. Covering the basics of Revit Architecture, this course will assist in the creation of schematic design through construction documentation.

**COURSE OUTCOMES: The students shall be able to**

1. Learn basic drawing and modifying techniques for drafting and technical drawing, using AutoCAD to create drawings that can be used to build and real objects both mechanical and architectural.
2. We'll cover basic methods of printing and plotting layouts and sheets, working between model space and paper space, and scaling drawings through viewports.
3. Learn techniques for inserting blocks, making text, dimensioning drawings, and working with layers and templates.

**Unit – I**

**Introduction to BIM and Autodesk Revit-** Bim and Autodesk Revit, overview of the interface, starting projects, viewing commands

**Basic Drawing and Modify Tools-** Using General Drawing Tools, Editing Elements, Working with Basic Modify Tools, Working with Additional Modify Tools

**Setting Up Levels and Grids-** Setting up Levels, Creating Structural Grids, Adding Columns, Linking and Importing CAD Files, Design Development Phase

**Modelling Walls-** Modelling Walls, Modifying Walls

**Unit – II**

**Working with Doors and Windows-** Inserting Doors and Windows, Loading Door and Window Types from the Library, Creating Additional Door and Window Sizes

**Working with Curtain Walls-** Creating Curtain Walls, Adding Curtain Grids, Working with Curtain Wall Panels, Attaching Mullions to Curtain Grids

**Working with Views-** Setting the View Display, Duplicating Views, Adding Callout Views, Elevations and Sections

**Adding Components-** Adding Components, Modifying Components

**Unit – III**

**Modelling Floors-** Modelling Floors, Creating Shaft Openings, Creating Sloped Floors

**Modelling Ceilings-** Modelling Ceilings, Adding Ceiling Fixtures, Creating Ceiling Soffits.

**Modelling Roofs-** Modelling Roofs, Creating Roofs by Footprint, Establishing Work Planes, and Creating Roofs by Extrusion

**Modelling Stairs, Railings, and Ramps-** Creating Component Stairs, Modifying Component Stairs, Working with Railings, Sketching Custom Stairs, Creating Ramps, Construction Documents Phase.

**Unit – IV**

**Creating Construction Documents-** Setting up Sheets, Placing and Modifying Views on Sheets, Printing Sheets

**Annotating Construction Documents-** Working with Dimensions, Working with Text, Adding Detail Lines and Symbols, Creating Legends

**Adding Tags and Schedules-**Adding Tags, Adding Rooms and Tags, Working with Schedules

**Creating Details-** Setting up Detail Views, Adding Detail Components, Annotating Details, Keynoting and Keynote Legends

**Lesson Plan:**

| DAY | TOPICS | HOURS |
|---|---|---|
| 1 | BIM and Autodesk Revit, Overview of the Interface, | 1 |
| 2 | Starting Projects, Viewing Commands, Using General Drawing Tools, Editing Elements, | 1 |
| 3 | Working with Basic Modify Tools, Working with Additional Modify Tools, | 1 |
| 4 | Setting up Levels, Creating Structural Grids, | 1 |
| 5 | Adding Columns, Linking and Importing CAD Files, Design Development Phase | 1 |
| 6 | Modeling Walls, Modifying Walls | 1 |
| 7 | Inserting Doors and Windows, Loading Door and Window Types from the Library, | 1 |
| 8 | Creating Additional Door and Window Sizes, Creating Curtain Walls | 1 |
| 9 | Adding Curtain Grids, Working with Curtain Wall Panels, Attaching Mullions to Curtain Grids | 2 |
| 10 | Creating Component Stairs, Modifying Component Stairs, | 2 |
| 11 | Working with Railings, Sketching Custom Stairs | 2 |
| 12 | Creating Ramps, Construction Documents Phase | 1 |
| 13 | Adding Components, Modifying Components | 2 |
| 14 | Modelling Floors, Creating Shaft Openings, | 2 |
| 15 | Creating Sloped Floors | 2 |
| 16 | Modelling Ceilings, Adding Ceiling Fixtures, | 2 |
| 17 | Creating Ceiling Soffits, Creating Component Stairs, | 2 |
| 18 | Modifying Component Stairs, Working with Railings, | 2 |
| 19 | Sketching Custom Stairs, Creating Ramps, Construction Documents Phase | 2 |
| 20 | Setting up Sheets, Placing and Modifying Views on Sheets, Printing Sheets | 2 |
| 21 | Working with Dimensions, Working with Text, | 2 |
| 22 | Adding Detail Lines and Symbols, Creating Legends | 2 |
| 23 | Adding Tags, Adding Rooms and Tags, | 2 |
| 24 | Working with Schedules, Setting up Detail Views, | 2 |
| 25 | Adding Detail Components, Annotating Details, Keynoting and Keynote Legends | 2 |

Prof. Sushant M. Gajbhiye
Coordinator

HOD
Head
Dept. of Civil Engineering
Guru Nanak Institute of Technology
Nagpur

Principal
Principal
Guru Nanak Institute of
Technology

# GURU NANAK INSTITUTE OF TECHNOLOGY

*NAAC ACCREDITED*

*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF CIVIL ENGINEERRING**

*Session 2021-22*

Date: 16.09.2021

ADD-ON COURSE SCHEDULE

**"Revit Architecture"**

| Sr. No. | Year | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|
| 1 | 3rd | B-1 | 01.10.21 | To | 30.11.21 | Min. 40 | Mon To Fri | 11:00 am -12.00pm |
| 2 | | B-2 | | | | Min. 40 | | 01:00 am - 2.00pm |

Batch No. 1: Prof. Fanindra F. Katre / Prof. Raju A. Bondre

Batch No. 2: Prof. Sushant M. Gajbhiye / Prof. Arpita A. Nandanwar

Prof. Sushant M. Gajbhiye
Coordinator

HOD
Head
Dept. of Civil Engineering
Guru Nanak Institute of Technology
Nagpur

Principal
Principal
Guru Nanak Institute of Technology

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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 15-03-2022

To

The Head of the Department,
Department of Civil Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"Project Management with Microsoft Project (MSP)"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 14-03-2022.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **Project Management with Microsoft Project (MSP)**

1. Ms. Fanindra Katre, Civil Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal

Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF CIVIL ENGINEERING

*Session 2021-22*

**Add-On Course Name: Project Management with Microsoft Project (MSP)**

**Syllabus:**

**COURSE OBJECTIVES:**

- To understand project management processes, estimates, budgets, schedules and project feasibility.
- To cultivate right approach towards monitor and tract project performance and change control.
- To familiarize students with the applications of Microsoft project. It is designed to assist a project manager in developing a schedule, assigning resources to tasks, tracking progress, managing the budget, and analysing workloads.

**COURSE OUTCOMES:**

- Student will learn project management processes, estimates, budgets, schedules and project feasibility.
- Students will able to monitor and tract project performance and change control.
- This course will help the students with the applications of Microsoft project. Students will able to create project schedules, Ability to manage Multiple Projects, Ability to implement resources, Generates Project Reports etc.

**Theory Syllabus:**

**Module 1: Project Management (PM): Integration & Scope Management**

Definition, PM methodology and application, Project life cycle, Project stake holders and Organizational influences, Project charter, Project integration management, Identifying PM Processes, Groups, Functions of a Project Manager, Requirements and scope of project, Scope variation and control, WBS.

**Module 2: Project budgeting, Cost and Time (Scheduling) Management**

Levels of estimate, Top-down and bottom-up budgeting methods, Types of project costs and estimates, Curves on cost estimating and cost control. Project budgeting parameters, Scheduling tools – Bar charts, Gantt charts and Network analysis. Precedence relationships, determining task dependency, Sequencing, Estimating activity durations, Schedule development and schedule control.

**Module 3: Project Feasibility Reports and Clearances**

Pre-feasibility Report (PFR), Techno-economic and other feasibility studies and reports, Detailed Project Report (DPR), various project clearances.

**Module 4: Quality, Communication & Performance Management**

Concepts of Quality planning, Quality assurance & Quality control, Communication planning, Performance tracking and reporting, Earned value analysis, variance analysis.

**Module 5: Change Control**

Elements of good change control process, analyzing the change with respect to cost impact, schedule impact and risks.

**Module 6: Project Closeout**

Project closeout, Customer and Organizational closeouts, Lessons learned.

**Lesson Plan:**

| DAY | TOPICS | HOURS |
|---|---|---|
| 1 | Definition, PM methodology and application, Project life cycle, | 1 |
| 2 | Project stake holders and Organizational influences, Project charter, Project integration management, | 1 |
| 3 | Identifying PM Processes, Groups, Functions of a Project Manager, | 1 |
| 4 | Requirements and scope of project, Scope variation and control, WBS. | 1 |
| 5 | Levels of estimate | 1 |
| 6 | Top-down and bottom-up budgeting methods | 1 |
| 7 | Types of project costs and estimates | 1 |
| 8 | Curves on cost estimating and cost control. | 1 |
| 9 | Project budgeting parameters | 2 |
| 10 | Scheduling tools – Bar charts, Gantt charts and Network analysis. | 2 |
| 11 | Precedence relationships, determining task dependency, | 2 |
| 12 | Sequencing, Estimating activity durations | 1 |
| 13 | Schedule development and schedule control. | 2 |
| 14 | Pre-feasibility Report (PFR) | 2 |
| 15 | Techno-economic and other feasibility studies and reports | 2 |
| 16 | Detailed Project Report (DPR), various project clearances. | 2 |
| 17 | Concepts of Quality planning | 2 |
| 18 | Quality assurance & Quality control, Communication planning | 2 |
| 19 | Performance tracking and reporting | 2 |
| 20 | Earned value analysis, variance analysis | 2 |
| 21 | Elements of good change control process | 2 |
| 22 | Analyzing the change with respect to cost impact, schedule impact and risks. | 2 |
| 23 | Project closeout | 2 |
| 24 | Customer and Organizational closeouts | 2 |
| 25 | Lessons learned. | 2 |

Prof. Fanindra F. Katre
Coordinator
Assistant Professor
Dept. of Civil Engineering
G.N.I.T., Nagpur

HOD
Head
Dept. of Civil Engineering
Guru Nanak Institute of Technology
Nagpur

Principall
Principal
Guru Nanak Institute of Technology

# GURU NANAK INSTITUTE OF TECHNOLOGY

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF CIVIL ENGINEERRING**

*Session 2021-22*

Date: 16-03-2022

ADD-ON COURSE SCHEDULE

**"Project Management with Microsoft Project (MSP)"**

| Sr. No. | Sem. | Roll No. | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|---|
| 1 | III[rd] | 01- 40 | B-1 | 01-04-22 | To | 30-05-22 | Min. 40 | Mon To Fri | 11:00 am -12.00pm |
| 2 | | 41- 80 | B-2 | | | | Min. 40 | | 01:00 am - 02.00pm |

Batch No. 1 : Prof. Fanindra F. Katre / Prof. Raju A. Bondre

Batch No. 2: Prof. Sushant M. Gajbhiye / Prof. Arpita A. Nandanwar

Prof. Fanindra F. Katre
Coordinator

HOD
Head
Dept. of Civil Engineering
Guru Nanak Institute of Technology
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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 15-07-2021

To

The Head of the Department,
Department of Civil Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"Building Information Modelling (BIM)"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 14-07-2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **Building Information Modelling (BIM)**

1. Mr. Sushant Gajbhiye, Civil Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal
Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF CIVIL ENGINEERING

*Session 2021-22*

**Add-On Course Name: Building Information Modelling (BIM)**

### COURSE OBJECTIVES:

- To study BIM Concept, Benefits, Uses, BIM Processes, overview of Various Tools & Techniques used for implementing BIM on Projects.

### COURSE OUTCOMES:

- Student will learn BIM Concept, Benefits, Uses, BIM Processes, overview of Various Tools & Techniques used for implementing BIM on Projects.

### Syllabus:

1) Workshops on Autodesk Revit
2) Workshops on Autodesk Navisworks
3) Workshops on Autodesk BIM360 Collaborate Pro
4) Workshop on Autodesk Civil 3D
5) Workshop on Autodesk Infraworks

**Projects:** Student will work on developing Industry Level Projects here for the following:

1) Infrastructure Modeling using Autodesk Infraworks
2) Creating a Revit Model for an Industry Equivalent Project and conduct the following use cases:

a. Architecture, Structural and MEP Model Development
b. Producing Drawings from Model
c. Clash Detection & Coordination
d. Cloud based Live Model Collaboration
e. Model Visualization
f. Quantities Extraction and BoQ
g. 4D & 5D BIM using Navisworks

**Exercises:**

1. Building Information Modelling (BIM): Global Digital Project Information Management Standard
2. Building Information Modelling (BIM): Digital Twin
3. Building Information Modelling (BIM): 4D & 5D BIM
4. Minimum 5 case-studies to be discussed (The Case-Studies should have based on One International, One Natation and One Local example)

**Lesson Plan:**

| DAY | TOPICS | HOURS |
|---|---|---|
| 1 | Workshops on Autodesk Revit | 3 |
| 2 | Workshops on Autodesk Navisworks | 3 |
| 3 | Workshops on Autodesk BIM360 Collaborate Pro | 3 |
| 4 | Workshop on Autodesk Civil 3D | 3 |
| 5 | Workshop on Autodesk Infraworks | 3 |
| 6 | Infrastructure Modeling using Autodesk Infraworks | 2 |
| 7 | Architecture, Structural and MEP Model Development | 2 |
| 8 | Producing Drawings from Model | 2 |
| 9 | Clash Detection & Coordination | 2 |
| 10 | Cloud based Live Model Collaboration | 2 |
| 11 | Model Visualization | 2 |
| 12 | Quantities Extraction and BoQ | 2 |
| 13 | 4D & 5D BIM using Navisworks | 2 |
| 14 | Building Information Modelling (BIM): Global Digital Project Information Management Standard | 2 |
| 15 | Building Information Modelling (BIM): Digital Twin | 2 |
| 16 | Building Information Modelling (BIM): 4D & 5D BIM | 2 |
| 17 | Minimum 5 case-studies to be discussed (The Case-Studies should have based on One International, One Natation and One Local example) | 3 |

Prof. Fanindra F. Katre
Coordinator
Assistant Professor
Dept. of Civil Engineering
G.N.I.T., Nagpur

HOD
Head
Dept. of Civil Engineering
Guru Nanak Institute of Technology
Nagpur

Principall
Principal
Guru Nanak Institute of Technology

# GURU NANAK INSTITUTE OF TECHNOLOGY

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF CIVIL ENGINEERRING**

*Session 2021-22*

Date: 16-07-2021

ADD-ON COURSE SCHEDULE

**"Building Information Modelling (BIM)"**

| Sr. No. | Sem. | Roll No. | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|---|
| 1 | VII$^{th}$ | 01- 40 | B-1 | 01-08-21 | To | 30-09-21 | Min. 40 | Mon To Fri | 11:00 am -12.00pm |
| 2 | | 41- 80 | B-2 | | | | Min. 40 | | 01:00 am - 02.00pm |

Batch No. 1: Prof. Fanindra F. Katre / Prof. Raju A. Bondre

Batch No. 2: Prof. Sushant M. Gajbhiye / Prof. Arpita A. Nandanwar

Prof. Fanindra F. Katre
Coordinator

HOD

Head
Dept. of Civil Engineering
Guru Nanak Institute of Technology
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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 15-12-2021

To

The Head of the Department,
Department of Structural Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"STAAD Pro"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 14-12-2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **STAAD Pro**

1. Ms. Bobby Ramteke, Structural Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal
Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF STRUCTURAL ENGINEERING

*Session 2021-22*

### Syllabus for STAAD Pro (Add-On Course)

**COURSE OBJECTIVES:**

The course will cover all the steps involved in structural analysis & designing of concrete & steel. This course will introduce one to STAAD Pro's state of the art user interface, prevailing analysis and design engines with a sophisticated finite element (FEM), visualization tools, and dynamic analysis capabilities.

**Unit – I**

Introduction to STAAD.Pro® V8i
Model Generation and Editing

**Unit – II**

Introduction to Loading
Automatic Load Generation

**Unit – III**

Concrete Design
Seismology
FEM / FEA

**Unit – IV**

Steel Design
Report Generation
Foundation Design

**COURSE OUTCOMES: The students shall be able to**

i. Student will be able to complete object-oriented instinctive 2D/3D graphic model generation.
ii. Student will learn to use pull-down menus, tool-tip help, and floating toolbars.
iii. Student will be able for carrying out flexible zooms and multiple views.
iv. Student will know to make isometric & perspective views and 3D shapes.
v. Student will know the use of simple command language and built-in command file editor.
vi. Student will learn how to generate graphics/text input.

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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

**Lesson Plan:**

| S. N. | TOPICS | HOURS |
|---|---|---|
| 1 | Introduction to STAAD.Pro® V8i | 3 hours |
| 2 | Model Generation and Editing | 3 hours |
| 3 | Introduction to Loading | 4 hours |
| 4 | Automatic Load Generation | 4 hours |
| 5 | Concrete Design | 6 hours |
| 6 | Seismology | 5 hours |
| 7 | FEM / FEA | 4 hours |
| 8 | Steel Design | 4 hours |
| 9 | Report Generation | 4 hours |
| 10 | Foundation Design | 3 hours |

30

Prof. Bobby N. Ramteke
Coordinator

HOD
Dept. of Civil Engg
GNIT, Nagpur 441501

Principall
Principal
Guru Nanak Institute of Technology

# GURU NANAK INSTITUTE OF TECHNOLOGY

*NAAC ACCREDITED*

*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF STRUCTURAL ENGINEERRING**

*Session 2021-22*

Date: 20-12-2021

ADD-ON COURSE SCHEDULE

**"STAAD Pro"**

| Sr. No. | Roll No. | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|
| 1 | 01-40 | B-1 | 01-01-22 | To | 31-03-22 | Min. 40 | Mon to Fri | 11:30 AM To 12.30 PM |

Batch No. 1: Prof. Bobby Ramteke

Batch No. 2: Prof. Anjali Palheriya

Prof. Bobby N. Ramteke
Coordinator

HOD

Dept. of Civil Engg
GNIT, Nagpur 441501

Principal

Principal
Guru Nanak Institute of
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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 16/12/2021

To

The Head of the Department,
Department of Heat Power Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"Refrigeration & Air Conditioning"** and appointment of faculty for course curriculum design for the academic year 2021-22 dated 15/12/2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **Refrigeration & Air Conditioning**

3. Mr. Avinash Mankar, Heat Power Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal

Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF HEAT POWER ENGINEERING

*Session 2021-22*

**Syllabus for Refrigeration & Air Conditioning (Add-On Course)**

| Sr. No. | Content | Time | Remarks by Third Party Expert (Validation) |
|---|---|---|---|
| 1 | Introduction of Refrigeration | 1 Hr. | All these points, of course, are totally suitable and excellent to the said training program. |
| 2 | Simple Vapour Compression Refrigeration System | 2 Hr. | |
| 3 | Actual Vapour Compression Refrigeration System | 2 Hr. | |
| 4 | Vapour Absorption Refrigeration System | 2 Hr. | |
| 5 | Aqua Ammonia, Lithium Bromide –Water System | 2 Hr. | |
| 6 | Compressor, Condenser, Expansion Device, Evaporator | 2 Hr. | |
| 7 | Refrigerants | 2 Hr. | |
| 8 | Multiple Evaporator System | 2 Hr. | |
| 9 | Air Cycle Refrigeration | 2 Hr. | |
| 10 | Defrosting, Refrigeration Controls | 2 Hr. | |
| 11 | Introduction to Air Conditioning, Properties of Moist Air | 2 Hr. | |
| 12 | Psychometric Chart, psychometric process | 2 Hr. | |
| 13 | Cryogenics | 2 Hr. | |
| 14 | Air Transmission & Heat Load Calculation | 2 Hr. | |
| 15 | Method of duct Design | 2 Hr. | |
| 16 | Application of psychometric to various air conditioning system | 2 Hr. | |
| 17 | Demonstration on vapour compression test rig. | 2 Hr. | |
| 18 | Demonstration on air conditioning test rig. | 2 Hr. | |
| 19 | Demonstration on desert cooler to evaluate its performance | 2 Hr. | |

All content of course are very important and useful in company, for all employees for continuous improvement. This content will surely support all trainees in self-employment and employment in present scenario.

# GURU NANAK INSTITUTE OF TECHNOLOGY

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF HEAT POWER ENGINEERRING**

*Session 2021-22*

Date: 17-12-2021

ADD-ON COURSE SCHEDULE

## "Refrigeration & Air Conditioning"

| Sr. No. | Roll No. | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|
| 1 | 1-20 | B-1 | 01-01-22 | To | 28-02-22 | Min. 20 | Mon To Fri | 11:00 am -12.00 pm |

Batch No. 1: Prof. S. B. Bhajankar / Prof. I. P. Lade

Batch No. 2: Prof. Satish Markad / Prof. A. R. Mankar

Prof. S. B. Bhajankar
Coordinator

HOD
Head
Dept. of. Heat Power Engg.
Guru Nanak Institute of Technology
Nagpur.

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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 16/02/2022

To

The Head of the Department,
Department of Mechanical Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course "**Electric Vehicle Technology & Advanced Automotive Systems**" and appointment of faculty for course curriculum design for the academic year 2021-22 dated 15/02/2022.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **Electric Vehicle Technology & Advanced Automotive Systems**

4. Dr. N. N. Wadaskar, Mechanical Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal

Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF MECHANICAL ENGINEERING

*Session 2021-22*

**Syllabus for Electric Vehicle Technology & Advanced Automotive Systems**

**(ADD-ON Course)**

| Sr. No. | Course Content | Time | Remarks by Third Party Expert (Validation) |
|---|---|---|---|
| 1 | Introduction | 2 Hr. | All these points, of course, are totally suitable and excellent to the said training program. |
| 2 | Advanced Two Wheeler technology, Ergonomics and Basics of Motorcycle, Power Generating System | 2 Hr. | |
| 3 | Carburettor, Transmission System Electrical Circuit ,Electronics and FI ,Periodic Maintenance and Service of bikes | 3 Hr. | |
| 4 | Advanced Four Wheeler technology ,Introduction/ History of the automobile, automobile terminologies ,Engine & its basic components | 3 Hr | |
| 5 | Air induction & exhaust system ,Power flow system, AT The braking system, ABS/EBD/ESP ,Steering system, Engine management system | 3 Hr. | |
| 6 | Lubrication and cooling system ,Axles & differentials ,Emission norms, bs-4, bs-6,Fuel system ,Auto electrical | 3 Hr | |
| 7 | Basic & Advanced Electric Vehicle Technology, Introduction to EV, History of Automobile, History of EV, What is an EV? Major EV Components, How EV works? Types of EV. Indian EV Market, History, Current EV Market, Problems faced | 3 Hr. | |
| 8 | Battery Definition, Types of battery, Internals of battery Working principle, EV Battery, Types of EVB, Lead-acid battery Working, Advantage/Disadvantage, Li-ion Battery ,Types of Li-ion battery, Working principle, Internals of Li-ion battery, Advantage/Disadvantage | 3 Hr. | |
| 9 | Definition, Components of motors, Classification, AC Motor types, AC motor working, DC Motor types, DC motor working | 2 Hr. | |
| 10 | Definition, Types of BMS, Working of BMS Functions of BMS (collaborative study), Battery Cooling system | 2 Hr | |
| 11 | What is EV charger? Classification of EV chargers Methods of charging EVB, EVB Current Ratings Modern technologies for charging | 2 hr | |
| 12 | Introduction to Hybrid Electric Vehicles (HEV) History of HEV, Modern day HEV, what are HEV? Working of HEV, Brief Description of Major components in an HEV, Degree of Hybridization in HEV ,Advantages/Disadvantages, HEV Power-train Hybrid Electric Power | 3 Hr | |

**Note.** All content of course are very important and useful in company, for all employees for continuous improvement. This content will surely support all trainees in self employment and employment in present scenario.

# GURU NANAK INSTITUTE OF TECHNOLOGY

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF MECHANICAL ENGINEERRING**

*Session 2021-22*

Date: 17-02-2022

ADD-ON COURSE SCHEDULE

## "Electric Vehicle Technology & Advanced Automotive Systems'"

| Sr. No. | Sem. | Roll No. | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 5th | 1-20 | B-1 | 02-03-22 | To | 30-04-22 | Min. 20 | Mon To Fri | 11:00 am -12.00 pm |
| 2 | | 21-40 | B-2 | | | | Min. 20 | | 01.00 pm - 02.00 pm |

Batch No. 1: Dr. N. N. Wadaskar / Prof. I. P. Lade

Batch No. 2: Dr. N. N. Wadaskar / Prof. A. R. Mankar

Dr. N. N. Wadaskar
Coordinator

HOD

Head
Dept. of Mechanical Engineering
Guru Nanak Institute of Technology
Nagpur

Principal

Principal
Guru Nanak Institute of Technology

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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date: - 15/07/2021

To

The Head of the Department,
Department of Mechanical Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course "**CATIA**" and appointment of faculty for course curriculum design for the academic year 2021-22 dated 14/07/2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - CATIA.

1. Mr. Suyog B. Bhajankar, Mechanical Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal

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## DEPARTMENT OF MECHANICAL ENGINEERING

*Session 2021-22*

### Syllabus for CATIA (Add-On Course)

**OBJECTIVES**:

The objective of this course is to teach students the basic commands and tools necessary for professional 3D drawing, design and drafting using CATIA.

**Unit – I**

**INTRODUCTION TO CATIA**: CATIA Workbenches System Requirements Getting Started with CATIA Important Terms and Definitions Understanding the Functions of the Mouse Buttons Toolbars Hot Keys Colour Scheme.

**Unit – II**

**CREATING DRESS-UP AND HOLE FEATURES** : Advanced Modelling Tools, Creating Hole Features, Creating Fillets, Creating Chamfers, Adding a Draft to the Faces of the Model.

**Unit – III**

**EDITING FEATURES** Editing Features of a Model, Editing Using the Definition Option, Editing by Double-Clicking, Editing the Sketch of a Sketch-Based Feature Redefining the Sketch Plane of Sketches, Managing Features and Sketches by using the Cut, Copy, And Paste, Functionalities Understanding the Concept of Update Diagnosis Cut, Copy, and Paste Features and Sketches Copying Features Using Drag and Drop Copying and Pasting Part Bodies Deactivating Features Activating Deactivated Features

**Unit – IV**

**ADVANCED MODELING TOOLS-II** Advanced Modelling Tools, Creating Rib Features, Creating Slot Features, Creating Multi-Sections Solid Features.

**Unit V: WORKING WITH SHEET METAL COMPONENTS**

The Sheet metal Component Starting a New File in Generative Sheet Metal Workbench Setting Sheet Metal Parameters Parameters Tab Bend Extremities Tab Bend Allowance Tab Introduction to Sheet Metal Walls Creating the Base Wall.

**COURSE OUTCOMES: The students shall be able to**

1. Learn basic drawing and modifying techniques for drafting and technical drawing, using Catia to create drawings that can be used to build and real objects both mechanical and architectural.
2. We'll cover basic methods of printing and plotting layouts and sheets, working between model space and paper space, and scaling drawings through viewports.
3. Learn techniques for inserting blocks, making text, dimensioning drawings, and working with layers and templates.

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**LESSON PLAN:**

| DAY | TOPICS | HOURS |
|---|---|---|
| 1 | Catia versions Interface | 1 |
| 2 | Function keys, Catia basics | 1 |
| 3 | Absolute coordinate system, Relative coordinate system | 1 |
| 4 | Line command, Poly line command & Rectangle command | 1 |
| 5 | Move, Rotate, Scale, copy, Mirror, erase, trim, extend | 1 |
| 6 | Linear, Aligned, Radius, Angular, Arc length | 1 |
| 7 | Single line text, Multiline text, Insert blocks, Layer properties | 1 |
| 8 | Geometric, Dimensional, Manage | 1 |
| 9 | Isometric top, left, right, Isometric diagrams | 2 |
| 10 | Isometric diagrams exercise | 2 |
| 11 | Drawing units , Sheet settings | 2 |
| 12 | Save files, Export pdf. plot | 1 |
| 13 | Drawing Area Setup, Visual reference | 2 |
| 14 | Grid snap mode | 2 |
| 15 | Creating Fillets | 2 |
| 16 | Creating Chamfers | 2 |
| 17 | Editing Features of a Model | 2 |
| 18 | Editing by Double-Clicking | 2 |
| 19 | Plane of Sketches | 2 |
| 20 | Advanced Modelling Tools | 2 |
| 21 | Creating Rib Features | 2 |
| 22 | Creating Multi-Sections Solid Features | 2 |
| 23 | Sheet metal Component | 2 |
| 24 | Drawing partitions | 2 |
| 25 | Catia workspaces are sets of menus | 2 |

Prof. S.B.Bhajankar
Coordinator

HOD
Head
Dept. of Mechanical Engineering
Guru Nanak Institute of Technology
Nagpur

Principall
Principal
Guru Nanak Institute of Technology

# GURU NANAK INSTITUTE OF TECHNOLOGY

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF MECHANICAL ENGINEERRING**

*Session 2021-22*

Date: 16-07-2021

ADD-ON COURSE SCHEDULE

## "CATIA"

| Sr. No. | Sem. | Roll No. | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 3rd | 1-40 | B-1 | 02-08-21 | To | 30-09-21 | Min. 40 | Mon To Fri | 11:00 am -12.00 pm |
| 2 | | 41-80 | B-2 | | | | Min. 40 | | 01.00 pm - 02.00 pm |

Batch No. 1: Prof. S. B. Bhajankar / Prof. I. P. Lade

Batch No. 2: Prof. Satish Markad / Prof. A. R. Mankar

Prof. S. B. Bhajankar
Coordinator

HOD

Head
Dept. of Mechanical Engineering
Guru Nanak Institute of Technology
Nagpur

Principal

Principal
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NAAC ACCREDITED

Date:- 16/09/2021

To

The Head of the Department,
Department of Mechanical Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"SOLIDWORKS"** and appointment of faculty for course curriculum design for the academic year 2021-22 dated 15/09/2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - SOLIDWORKS.

2. Mr. Ishan Lade, Mechanical Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal

Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF MECHANICAL ENGINEERING

*Session 2021-22*

### Syllabus for SOLIDWORKS (Add-On Course)

**OBJECTIVES**:

The objective of this course is to teach students the basic commands and tools necessary for professional 3D drawing, design and drafting using **SOLIDWORKS**.

**Unit – I**

**INTRODUCTION TO SOLIDWORKS**: Introduces design concepts, SOLIDWORKS terminology, and provides an overview of help options.

**Unit – II**

**SKETCHING WITH SOLIDWORKS**: Demonstrates design methods, tools, and features commonly used to make parts..

**Unit – III**

**PART MODELING**: Part Modeling, Extrude and Cut extrude, Revolve and Sweep, View toolbar, Creating Reference geometries, Fillet and Chamfer, Hole wizard, Calculating weight/mass & other geometric properties, Export / Import of CAD files

**Unit – IV**

**ADVANCED MODELING TOOLS-II** Discusses drawing sheet formats, views, dimensions, annotations, and bills of materials.

**Unit V: ADVANCED PART MODELING**

Adding ribs and draft, Circular and rectangular pattern, Shell and Boss feature, Configuration and Design Tables, Material Library & Assigning Material, Library Features & Smart Fasteners Boolean operations

**COURSE OUTCOMES: The students shall be able to**

1. Learn basic drawing and modifying techniques for drafting and technical drawing, using SOLIDWORKS to create drawings that can be used to build and real objects both mechanical and architectural.
2. We'll cover basic methods of printing and plotting layouts and sheets, working between model space and paper space, and scaling drawings through viewports.
3. Learn techniques for inserting blocks, making text, dimensioning drawings, and working with layers and templates.

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**LESSON PLAN:**

| DAY | TOPICS | HOURS |
|---|---|---|
| 1 | Graphic User Interface | 1 |
| 2 | Parametric design | 1 |
| 3 | Basic part modelling | 1 |
| 4 | Feature based modelling | 1 |
| 5 | File Management | 1 |
| 6 | Managing Solid Works environment | 1 |
| 7 | 2D Sketching | 1 |
| 8 | Sketching entities and relations | 1 |
| 9 | 3D Sketching | 2 |
| 10 | Editing & its features | 2 |
| 11 | Dimensions | 2 |
| 12 | Sketch tool Mirror, Convert entity | 1 |
| 13 | Creating Reference geometries | 2 |
| 14 | Fillet and Chamfer | 2 |
| 15 | Hole wizard | 2 |
| 16 | Calculating weight/mass & other geometric properties | 2 |
| 17 | Export / Import of CAD files | 2 |
| 18 | Adding ribs and draft | 2 |
| 19 | Circular and rectangular pattern | 2 |
| 20 | Shell and Boss feature | 2 |
| 21 | Mirror, Convert entity | 2 |
| 23 | Material Library & Assigning Material | 2 |
| 24 | Library Features & Smart Fasteners | 2 |

Prof. I. P. Lade
Coordinator

HOD
Head
Dept. of Mechanical Engineering
Guru Nakak Institute of Technology
Nagpur

Principall
Principal
Guru Nanak Institute of Technology

# GURU NANAK INSTITUTE OF TECHNOLOGY

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF MECHANICAL ENGINEERRING**

*Session 2021-22*

Date: 17-09-2021

ADD-ON COURSE SCHEDULE

## "SOLIDWORKS""

| Sr. No. | Sem. | Roll No. | Batches | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 7th | 1-30 | B-1 | 01-10-21 | To | 30-11-21 | Min. 30 | Mon To Fri | 11:00 am -12.00 pm |
| 2 | | 31-60 | B-2 | | | | Min. 30 | | 01.00 pm - 02.00 pm |

Batch No. 1 & 3: Prof. S. B. Bhajankar / Prof. I. P. Lade

Batch No. 2: Prof. Satish Markad / Prof. A. R. Mankar

Prof. S. B. Bhajankar
Coordinator

HOD
Dept. of Mechanical Engineering
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NAAC ACCREDITED

Date:- 16/07/2021

To

The Head of the Department,
Department of Computer Science Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"Cloud Computing"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 15/07/2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **Cloud Computing**.

1. Prof. Manjusha Talmale, Computer Science and Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal
Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

*Session 2021-2022*

**Syllabus for Cloud Computing (Add-On Course)**

### COURSE OBJECTIVES:

Cloud computing is the latest buzzword in the IT sector. Today it has become a critical element in the business and it has changed the way IT solutions are delivered and consumed by the end-users. In our day to day life, we are using the services of cloud computing a lot. When you update your Facebook status, you are using cloud computing. When you use net banking, again you are into the cloud. Dropbox, Google Drive, Hubspot, and there are many more examples of cloud computing. The forecasted five-year compound annual growth rate (CAGR) from 2017 to 2022 is projected to be 22.5-percent to reach $370 billion. If we check out the market share of total cloud computing service and infrastructure then Amazon Web Services (AWS) currently leads and continues to grow.

### UNIT I:

**Introduction to Amazon Web Services (AWS) & the Cloud**

What Is Cloud Computing & Advantages of Cloud Computing, AWS Architecture and Terminology, AWS Regions and Availability Zones, Understanding How AWS is Physically Set Up, Understanding AWS, Understanding EC2 , Understanding Amazon Elastic Block Store (EBS) & Amazon Simple Storage Service (S3), Understanding VPCs, Understanding RDS, Selecting the appropriate AWS service based on compute, data, or security requirements, Cloud Service Models, Essential Characteristics & Cloud Computing Deployment Models.

**AWS Elastic Compute Cloud- AWS EC2**

Understanding EC2 Instance Types, The Lifecycle of Instances, Storage Options for EC2, Instances & Advanced EC2 Features

### UNIT II:

**AWS Storage Fundamentals**

High Level view of AWS Storage Solutions, Amazon Simple Storage Service (S3), Amazon, Glacier, Amazon Elastic Block Store (EBS), Amazon Cloudfront & AWS Storage Gateway, Managing Instance Volumes Using EBS, EBS Snapshots and Replication

**AWS Simple Storage Service (S3)**

AWS Simple Storage Service (S3) Essentials, S3 Bucket/Object Versioning And LifeCycle Policies, Moving Objects Into S3, Handling Bucket And Object Permissions, Accessing S3, Objects, Protecting Data in S3, AWS S3 Concepts & Advanced S3 Features, Hosting A Website in S3, Amazon Simple Storage Service (S3), Amazon Elastic Block Store (EBS) and Amazon CloudFront storage solutions

**UNIT III:**

**Amazon IAM (Identity And Access Management)**

Understand the security measures AWS provides and key concepts of AWS Identity and Access Management (IAM), IAM Best Practices For New Accounts, Building IAM Policies & Using IAM Roles with EC2, Active Directory Federation Role, Web Identity Federation Role

**UNIT IV:**

**Amazon VPC (Virtual Private Cloud)**

Introduction to VPC and AWS Networking, AWS Networking Architecture, Building Your Own Custom VPC Subnets, Route Tables, Internet Gateways, VPC Peering & VPC Flow Logs.

**AWS Security Fundamentals**

Understanding AWS Security Measures, AWS Shared Responsibility Model, AWS Compliance Program, AWS Global Infrastructure Security, Physical and Environmental Security, Layered Security, Security Groups & Network ACLs, AWS Reports, Certifications, and Third-Party Attestations, AWS Account Security Features, AWS Credentials, Passwords, Cloud Security Considerations & Security Best Practices for Clouds

**UNIT V:**

**Database Fundamentals for AWS**

Amazon RDS (Relational Database Service) Overview, Working With RDS, Relational Database Service (RDS): Structure, Understanding RDS Multi-AZ Failover, RDS Security Groups, Read Replicas with MySQL RDS Across Regions, DyamoDB and NoSQL, DynamoDB vs Amazon RDS Database

**Load Balancing with Elastic Load Balancing (ELB)**

Introduction to ELB, Basic ELB concepts, Internet-facing ELBs & VPC-facing ELBs, LAB-Elastic Load Balancer Configurations for high availability

**COURSE OUTCOMES: The students shall be able to**

- Understand the concepts, characteristics, delivery models and benefits of cloud computing
- Understand the key security and compliance challenges of cloud computing
- Understand the key technical and organizational challenges
- Understand the different characteristics of public, private and hybrid cloud deployment models.

## Topic Plan:

| DAY | TOPICS | HOURS |
|---|---|---|
| 1. | What Is Cloud Computing & Advantages of Cloud Computing AWS Architecture and Terminology | 1 |
| 2. | AWS Regions and Availability Zones | 1 |
| 3. | Understanding How AWS is Physically Set Up, Understanding AWS, Understanding EC2 | 1 |
| 4. | Understanding Amazon Elastic Block Store (EBS) & Amazon Simple Storage Service (S3), Understanding VPCs | 1 |
| 5. | Understanding RDS, Selecting the appropriate AWS service based on compute, data, or security requirements | 1 |
| 6. | Cloud Service Models, Essential Characteristics & Cloud Computing Deployment Models | 1 |

| | | |
|---|---|---|
| 7. | Understanding EC2 Instance Types, The Lifecycle of Instances | 1 |
| 8. | Storage Options for EC2, Instances & Advanced EC2 Features | 1 |
| 9. | High Level view of AWS Storage Solutions, Amazon Simple Storage Service (S3) | 1 |
| 10. | Amazon, Glacier, Amazon Elastic Block Store (EBS), Amazon Cloudfront & AWS Storage Gateway | 1 |
| 11. | Managing Instance Volumes Using EBS, EBS Snapshots and Replication | 1 |
| 12. | AWS Simple Storage Service (S3) Essentials, S3 Bucket/Object Versioning And LifeCycle Policies | 1 |
| 13. | Moving Objects Into S3, Handling Bucket And Object Permissions, Accessing S3, Objects | 1 |
| 14. | Protecting Data in S3, AWS S3 Concepts & Advanced S3 Features | 1 |
| 15. | Hosting A Website in S3, Amazon Simple Storage Service (S3) | 1 |
| 16. | Amazon Elastic Block Store (EBS) and Amazon CloudFront storage solutions | 1 |
| 17. | Understand the security measures AWS provides and key concepts of AWS Identity and Access Management (IAM) | 1 |
| 18. | IAM Best Practices For New Accounts | 1 |
| 19. | Building IAM Policies & Using IAM Roles with EC2 | 1 |
| 20. | Active Directory Federation Role, Web Identity Federation Role | 1 |
| 21. | Introduction to VPC and AWS Networking, AWS Networking Architecture | 1 |
| 22. | Building Your Own Custom VPC Subnets | 1 |
| 23. | Route Tables, Internet Gateways | 1 |
| 24. | VPC Peering & VPC Flow Logs | 1 |
| 25. | Understanding AWS Security Measures | 1 |
| 26. | AWS Shared Responsibility Model | 1 |
| 27. | AWS Compliance Program | 1 |
| 28. | AWS Global Infrastructure Security, Physical and Environmental Security | 1 |
| 29. | Layered Security, Security Groups & Network ACLs | 1 |
| 30. | AWS Reports, Certifications, and Third-Party Attestations | 1 |
| 31. | AWS Account Security Features, AWS Credentials, Passwords | 1 |
| 32. | Cloud Security Considerations & Security Best Practices for Clouds | 1 |
| 33. | Amazon RDS (Relational Database Service) Overview, | 1 |
| 34. | Working With RDS | 1 |
| 35. | Relational Database Service (RDS): Structure, Understanding RDS Multi-AZ Failover | 1 |
| 36. | RDS Security Groups, Read Replicas with MySQL | 1 |
| 37. | RDS Across Regions | 1 |
| 38. | DyamoDB and NoSQL, DynamoDB vs Amazon RDS Database | 1 |
| 39. | Introduction to ELB, Basic ELB concepts | 1 |
| 40. | Internet-facing ELBs & VPC-facing ELBs | 1 |

Coordinator

HOD

Head of the Department
Computer Sci & Engg
GNIT Nagpur

Principal

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# GURU NANAK INSTITUTE OF TECHNOLOGY

*NAAC ACCREDITED*

*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERRING**

*Session 2021-2022*

Date: 17-07-2021

ADD-ON COURSE SCHEDULE

## "Cloud Computing"

| Sr. No. | Roll No. | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|
| 1 | 01-25 | 01-08-21 | To | 30-09-21 | 25 | Monday to Friday | 11:00 am -12.00pm |
| 2 | 26-50 | | | | 25 | | 01:00 pm - 2.00pm |

Course Incharge: Prof. Manjusha Talmale

Coordinator

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Head of the Department
Computer Sci & Engg
GNIT Nagpur

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERRING**

*Session 2021-2022*

Date: 17-07-2021

ADD-ON COURSE SCHEDULE

## "Cloud Computing"

| Sr. No. | Roll No. | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|
| 1 | 01-25 | 01-08-21 | To | 30-09-21 | 25 | Monday to Friday | 11:00 am -12.00pm |
| 2 | 26-50 | | | | 25 | | 01:00 pm - 2.00pm |

Course Incharge: Prof. Manjusha Talmale

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Dahegaon, Opp. IOC Petrol pump, Kalmeshwar Road, Nagpur-441501 Ph.: 07118-661450
Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 15/02/2022

To

The Head of the Department,
Department of Computer Science Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"Data Science and Learning Analytics"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 14/02/2022.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **Data Science and Learning Analytics**.

1. Prof. Manjusha Talmale, Computer Science and Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal
Principal
Guru Nanak Institute of Technology

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

*Session 2021-2022*

**Syllabus for Data Science and Learning Analytics (Add-On Course)**

### COURSE OBJECTIVES:

- Students will study data science phenomena and how students work through a data science course. Blend of business acumen, machine learning techniques, algorithms and mathematics, Data Science helps to find out the hidden patterns from raw data.
- This skill becomes instrumental because this information will help the student make informed and big decisions relating to their application.
- Learning analytics is a method to collect, measure, analysis and reporting of data about learners and their interactions with a learning environment.
- Learning analytics is applying analytics on educational data to infer the student learning process and to provide support.
- Learning analytics is important course in the data era and it will help the learner to apply analytics on data from education domain and also in other relevant domain.

### Syllabus:

**Unit I:**

Introduction to Data Science, Understanding Exploratory Data Analysis, Machine Learning, Model selection and evaluation

**Unit II:**

Data Warehousing, Data Mining, Data Visualization, Cloud Computing, Business Intelligence Storytelling with Data Communication and Presentation

**Unit III:**

What is LA? Definition and how it relates to Academic Analytics and EDM Learning Analytics Big-Picture, How it is related to ML, EDM Four Levels of Learning Analytics Overview, Data Collection – How Big is Education data, Data Collection from Learning Environments, Pre-Processing Ethics in Learning Analytics, Student Privacy.

**Unit IV:**

Descriptive Analytics, Data Visualization, Example Dashboard Analytics, Predictive Analytics, Linear Regression, Analytics Tools, Demo of Weka/Rapidminer, Demo of Linear Regression using Weka.

**COURSE OUTCOMES: The students shall be able to**

- Demonstrate proficiency with statistical analysis of data.
- Develop the ability to build and assess data-based models.
- Execute statistical analyses with professional statistical software.
- Demonstrate skill in data management.
- Understand descriptive analytics, data collection.
- Understand working of Weka

## Topic Plan:

| DAY | TOPICS | HOURS |
|---|---|---|
| 1. | Introduction to Data Science | 1 |
| 2. | Understanding Exploratory Data Analysis | 1 |
| 3. | Machine Learning, Model selection and evaluation | 2 |
| 4. | Data Warehousing | 1 |
| 5. | Data Mining | 1 |
| 6. | Data Visualization | 1 |
| 7. | Cloud Computing | 1 |
| 8. | Business Intelligence | 1 |
| 9. | Storytelling with Data Communication and Presentation | 2 |
| 10. | What is LA? Definition and how it relates to Academic Analytics and EDM Learning Analytics | 2 |
| 11. | Big-Picture | 2 |
| 12. | How it is related to ML, EDM Four Levels of Learning Analytics Overview | 2 |
| 13. | Data Collection – How Big is Education data, Data Collection from Learning Environments | 2 |
| 14. | Pre-Processing Ethics in Learning Analytics, Student Privacy. | 2 |
| 15. | Descriptive Analytics | 2 |
| 16. | Data Visualization | 1 |
| 17. | Example Dashboard Analytics | 1 |
| 18. | Predictive Analytics | 1 |
| 19. | Linear Regression, Analytics Tools | 2 |
| 20. | Demo of Weka/Rapidminer | 2 |
| 21. | Demo of Linear Regression using Weka. | 1 |

Coordinator

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Computer Sci & Engg
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# GURU NANAK INSTITUTE OF TECHNOLOGY

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERRING

*Session 2021-2022*

Date: 16-02-2022

ADD-ON COURSE SCHEDULE

## "Data Science and Learning Analytics"

| Sr. No. | Roll No. | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|
| 1 | 01-25 | 01-03-22 | To | 30-04-22 | 25 | Monday to Friday | 11:00 am -12.00pm |
| 2 | 26-50 | | | | 25 | | 01:00 pm - 2.00pm |

Course Incharge: Prof. Manjusha Talmale

Coordinator

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Website : www.gninagpur.info E-mail : gni.principalgnit@gmail.com

NAAC ACCREDITED

Date:- 15/12/2021

To

The Head of the Department,
Department of Computer Science Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"AWS Solution Architect"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 14/12/2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **AWS Solution Architect**.

1. Ms. Firdous Sadaf, Computer Science and Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

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## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

*Session 2021-2022*

### Syllabus for AWS Solution Architect (Add-On Course)

**COURSE OBJECTIVES:**

By being an AWS Certified Solution Architect - Associate, should be able to evaluate the requirements of the organization or the businesses and make architectural recommendations for implementation and deployment of the application on AWS.

## Syllabus:

**Section 1: Fundamentals of Cloud Computing**

- Introduction to Cloud Computing
- Cloud Environment Architecture
- Cloud Computing Models

**Section 2: Infrastructure & Networking**

- Introduction to Amazon Web Services
- AWS Global Infrastructure
- Introduction to Network Switches & Virtual Private Cloud
- VPC & Subnets
- Internet Gateways, VPC Peering & NAT Gateways
- IP Addressing in AWS
- Understanding AWS Security Groups
- Launching our first EC2 instance
- EC2 instance types & Pricing Models

**Section 3: Storage**

- Introduction to Block & Object storage mechanism
- Introduction to Elastic Block Store – EBS
- EBS Snapshots
- EBS Volume Types
- Instance Store Volumes
- Introduction to Simple Storage Service (S3)
- Features of s3

**Section 4: Elastic Load Balancers -**

- Understanding High Availability Configuration
- ELB Configuration Elasticity
- Auto Scaling

**Section 5: Identity & Access Management**

- Understanding the IAM Policies
- IAM User, IAM Policy and IAM Role

**COURSE OUTCOMES: The students shall be able to**

- Launch different servers like Linux, Windows, Mac and Manage Storages for Servers and Backups
- Design the overall networking environment for servers
- Scaling Servers based on needs using Auto Scaling
- Deploy, Manage and Scale applications using container orchestration service
- Distributing traffic using Load Balancer
- Monitor Server Resources and Account activities
- Setup Database Engines and Secure Servers and Services
- Storing files securely using Object Storage method and Share Storage Disks among Servers via Network
- Data Migrations and Data Transfer
- Understand different encryption methods and Application level integration services
- Speed up hosted websites using Content Delivery Network

## Topic Plan:

| DAY | TOPICS | HOURS |
|---|---|---|
| 1. | Introduction to Cloud Computing | 1 |
| 2. | Cloud Environment Architecture | 1 |
| 3. | Cloud Computing Models | 1 |
| 4. | Introduction to Amazon Web Services | 1 |
| 5. | AWS Global Infrastructure | 1 |
| 6. | Introduction to Network Switches & Virtual Private Cloud | 1 |
| 7. | VPC & Subnets | 1 |
| 8. | Internet Gateways, VPC Peering & NAT Gateways | 1 |
| 9. | IP Addressing in AWS | 1 |
| 10. | Understanding AWS Security Groups | 1 |
| 11. | Launching our first EC2 instance | 2 |
| 12. | EC2 instance types & Pricing Models | 2 |
| 13. | Introduction to Block & Object storage mechanism | 2 |
| 14. | Introduction to Elastic Block Store – EBS | 2 |
| 15. | EBS Snapshots | 2 |
| 16. | EBS Volume Types | 2 |
| 17. | Instance Store Volumes | 2 |
| 18. | Introduction to Simple Storage Service (S3) | 2 |
| 19. | Features ofs3 | 2 |
| 20. | Understanding High Availability Configuration | 2 |
| 21. | ELB Configuration Elasticity | 2 |
| 22. | Auto Scaling | 2 |
| 23. | Understanding the I AM Policies | 2 |
| 24. | I AM User, I AM Policy and I AM Role | 2 |

Coordinator

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Computer Sci & Engg
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*NAAC ACCREDITED*

*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERRING**

*Session 2021-2022*

Date: 16-12-2021

ADD-ON COURSE SCHEDULE

**"AWS Solution Architect"**

| Sr. No. | Roll No. | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|
| 1 | 01-25 | 01-01-22 | to | 28-02-22 | 25 | Monday to Friday | 11:00 AM -12.00 PM |
| 2 | 26-50 | 01-02-22 | to | 16-04-22 | 25 | | 01.00 PM - 02.00 PM |

Course Incharge: Prof. Firdous Sadaf

Coordinator

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NAAC ACCREDITED

Date:- 16/09/2021

To

The Head of the Department,
Department of Computer Science Engineering,
Guru Nanak Institute of Technology,
Nagpur- 441501.

Sir,

Sub:- Assigning of the faculty for ADD-ON Course curriculum designing for the academic year 2021-22 –Reg.

Ref:- Letter of Requisition for the permission for ADD-ON Course **"Salesforce Admin"** and appointment of faculty for courses curriculum design for the academic year 2021-22 dated 15/09/2021.

The under sign appreciates the department proposing to conduct such kind of course. As per your recommendation and referring to the above subject, I am please to nominate the following faculty member for ADD-ON Course - **Salesforce Admin**.

1. Ms. Firdous Sadaf, Computer Science and Engineering.

The above mentioned faculty is hereby instructed to design the curriculum taking in to consideration the thrust areas of the respective fields and ensure it should enhance the employability opportunities for the students.

Principal

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## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

*Session 2021-2022*

### Syllabus for Salesforce Admin (Add-On Course)

## COURSE OBJECTIVES:

- Design and produce a Salesforce application for various business needs
- Create custom page layouts, fields, tabs and business processes
- Maintain and import clean data into Salesforce
- Create high-value reports and dashboards
- Create workflow automation
- Demonstrate an understanding of basic database concepts.

## Syllabus:

### Basics of Cloud Computing

- Basics of Cloud Computing & Salesforce.com
- Overview of Three Building Blocks in Cloud Computing
- SaaS (Salesforce.com)
- IaaS
- PaaS
- Different Cloud Service Providers

### Database Concepts

- Overview of database concepts
- Database structure
- Normal (Excel based) Database vs. Relational (Salesforce) Database
- Benefits & use of Relational Database

### Salesforce Architecture

- Create a free developer account
- Introduction of MVC Architecture

### Sales Cloud / Service Cloud

- Introduction of Force.com
- Understanding the basic of sales application with standard object
- Understanding service cloud

**Objects & fields**

- Building a simple app
- Becoming familiar with the force.com setup area
- Introduction of standard objects
- Introduction of custom objects
- Introduction of tabs, standard & custom fields, details page & related list
- Basics of external ID & Different types of field data type

**Relationships**

- Types of Relationship
- Understanding of each relationship lookup, Hierarchical, Master detail with a business use case
- Differentiation between one to many & many to many
- Introduction of primary keys & Foreign keys
- Roll – up summary field
- Formula & Cross object Formula field
- Guidance & hand on with date, text & number formulas

**Security & Sharing**

- Learn about factors of designing application
- Create profiles
- Understand what a profile control
- Customize profiles to manage the user experience
- Create & customize permission sets to manage the user experience
- Customize the user experience with record types & page layouts
- Control access to records
- Employ organization wide defaults ( OWD's)
- Sharing Rules & levels, Roles, public groups & manual share
- Apply profiles, OWD's, Role hierarchy & sharing to restrict access to sensitivedata
- Apply OWD's public groups & manual sharing to create conditional access todata
- Analyse suitability of field level security page layouts, types to satisfy business requirement's

**Validation & workflow**

- Business logic implementation
- Rules for automation
- Validation Rule
- Workflow
- Assignment Rule
- Auto – Response Rule
- Introduction & use of record type
- Introduction & use of different page – layouts using record type

**COURSE OUTCOMES: The students shall be able to**

- Navigate the Salesforce platform and its different building blocks
- Understand the Security Model and Controls
- Manage the data and workflow rules
- Enable and configure the Chatter feeds on groups
- Build an automated Business Process and models

## Topic Plan:

| DAY | TOPICS | HOURS |
|---|---|---|
| 1. | Basics of Cloud Computing & Salesforce.com | 1 |
| 2. | Overview of Three Building Blocks in Cloud Computing | 1 |
| 3. | SaaS (Salesforce.com) | 1 |
| 4. | IaaS, PaaS | 1 |
| 5. | Different Cloud Service Providers | 1 |
| 6. | Overview of database concepts, Database structure | 1 |
| 7. | Normal (Excel based) Database vs. Relational (Salesforce) Database | 1 |
| 8. | Benefits & use of Relational Database | 1 |
| 9. | Create a free developer account | 1 |
| 10. | Introduction of MVC Architecture | 1 |
| 11. | Introduction of Force.com | 1 |
| 12. | Understanding the basic of sales application with standard object | 1 |
| 13. | Understanding service cloud, Building a simple app | 1 |
| 14. | Becoming familiar with the force.com setup area | 1 |
| 15. | Introduction of standard objects | 1 |
| 16. | Introduction of custom objects | 1 |
| 17. | Introduction of tabs, standard & custom fields, details page & related list | 1 |
| 18. | Basics of external ID & Different types of field data type | 1 |
| 19. | Types of Relationship | 1 |
| 20. | Understanding of each relationship lookup, Hierarchical, Master detail with abusiness use case | 1 |
| 21. | Differentiation between one to many & many to many | 1 |
| 22. | Introduction of primary keys & Foreign keys | 1 |
| 23. | Roll – up summary field, Formula & Cross object Formula field | 1 |
| 24. | Guidance & hand on with date, text & number formulas | 1 |
| 25. | Learn about factors of designing application | 1 |
| 26. | Create profiles, Understand what a profile control | 1 |
| 27. | Customize profiles to manage the user experience | 1 |
| 28. | Create & customize permission sets to manage the user experience | 1 |
| 29. | Customize the user experience with record types & page layouts | 1 |
| 30. | Control access to records | 1 |

| | | |
|---|---|---|
| 31. | Employ organization wide defaults ( OWD's) | 1 |
| 32. | Sharing Rules & levels, Roles, public groups & manual share | 1 |
| 33. | Apply profiles, OWD's, Role hierarchy & sharing to restrict access to sensitivedata | 1 |
| 34. | Apply OWD's public groups & manual sharing to create conditional access todata | 1 |
| 35. | Analyse suitability of field level security page layouts, types to satisfy businessrequirement's | 1 |
| 36. | Business logic implementation, Rules for automation | 1 |
| 37. | Validation Rule, Workflow | 1 |
| 38. | Assignment Rule, Auto – Response Rule | 1 |
| 39. | Introduction & use of record type | 1 |
| 40. | Introduction & use of different page – layouts using record type | 1 |

Prof. Firdous Sadaf
Coordinator

HOD

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GNIT Nagpur

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*Dahegaon, Kalmeshwar Road, Nagpur 441501*

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERRING**

*Session 2021-2022*

Date: 17-09-2021

ADD-ON COURSE SCHEDULE

**"Salesforce Admin"**

| Sr. No. | Sem. | Roll No. | Course Duration | | | No. of Students | Day | Time |
|---|---|---|---|---|---|---|---|---|
| 1 | IIIrd | 01-25 | 01-10-21 | To | 30-11-21 | 25 | Monday to Friday | 11:00 am -12.00pm |
| 2 | | 26-50 | | | | 25 | | 01:00 pm - 02.00pm |

Course Incharge: Prof. Firdous Sadaf

Prof. Firdous Sadaf
Coordinator

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