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TECHNOLOGY & LEARNING INSTITUTION LIMITED

Every Life, Every Moment, Every Day. A New Discovery...

IT TECHNOLOGIES COURSES

(SECTION 1)

TABLE OF CONTENTS - Section 1

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Every Life, Every Moment, Every Day. A New Discovery...

3D ANIMATION COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is 3D Animation?

3D Animation is the process of creating motion effects with 3 dimensional images and vectors. 3D Animation can be used to create 3D movies, films and frames in a digital environment known as 3D Software.

3D Softwares are the specialized desktop-based applications or environment that creates the illusion of animation or movement by carefully manipulating 3D models or objects in order to export a set of meaningful motion graphics and movies. There are various techniques and methods involved in making 3D Animations known as the Production Process.

The 3D Animation Production Process

The 3D Production Process is divided into three main parts.
1. The Modelling,
2. The Layout & Animation
3. Rendering.

The Modelling is a step that describes the process of creating a three-dimensional object in a particular scene.
The Layout and Animation step describes the object's location and animation processing for specific scenes.
The Rendering represents the final result or output of the final motion graphics.
3D Animation was evolved from 'Gumby' (in 1956) thus creating worlds most famous characters and stories. The history of 3D animation has the form of clay before the start of computer animation. The shape varies slightly for each shot. When you create hundreds or even thousands of photos at the same time, animations are created. This is called **Static Motion.** In this way, popular characters and plays were created, such as Wallace and Gromit, Sean Sheep and Robot Chicken - the artist who created the first true three-dimensional image of a human form used in Boeing's short films. Most people associate the term "Computer Graphics" with 3D Animation.
3D animation is modelled digitally and edited by those called Animators. **Animators** creates the three-dimensional grids that can be edited and released.

A 3D Artist or Animator Must Have Following Qualities

1. Patience
2. Details
3. Hard-work
4. Willingness
5. Creativity

Major Difference Between 2D And 3D Animation

1. **2D** is 2 Dimensional, cost effective but not too good for animation design.

2. **3D** is 3 Dimensional, though expensive but very good for animation design.

Overall Workflow For Creating 3D Animation

1. Concepting
2. Modeling
3. Texturing
4. Shading
5. Rigging
6. Animation
7. Cloth
8. Hair and Fur
9. Crowd
10. Lighting
11. Rendering

The Most Popular 3D Animation Software

Some of the most used 3D Animation Softwares include:
1. 3D Max
2. Maya
3. Cinema 4D
4. Soft Image
5. Mondo
6. Blender

Some of the Crowd Simulation 3D Softwares include:
1. Miarmy
2. Massive
3. Golaem crowd

and there are specialized software and plugins such as: Yet and Ornatrix.

Types of 3D Animation Lights

The different types of 3D Animation Lights include:
1. Omni light
2. Directional lights
3. Spots lights
4. Area lights

Why Study 3D Animation

An increasing number of companies are bringing up the need for 3D Animation professionals. If you are in the look for career opportunities that are available in this field, they are large, and some of them are listed below.

1. You get a lot of job opportunities in the creative industry if you study 3D Animation.

2. You can become a 3D Animation Specialist in an organization.

3. After taking this certification course of the 3D Animation module, you can become a multimedia or creative professional.

4. You can become a Creative Consultant.

5. You can become an Animation Consultant, either freelancing or in an organization.

6. You can become an Advisory Consultant.

7. You can become a Manager of a multimedia business, whether it's your personal business or an organization.

8. You can become a core 3D Animator,after finishing this module and getting certified.

9. You can become a 3D Animation Functional Consultant for an organization.

10. You can become a team leader in an organization and be responsible for managing 3D Animation development.

11. You can become a creative engineer and a 3D Animation Trainer.

12. You can become a senior 3D Animation engineer commanding high pay.

In the Full Course, you will be able to build 3D Animation Programs, whether short or long, ranging from basic and regular motions to advance motions using the software specified in the Full course with **Certificate** to showcase your knowledge and competence.

3D Animation Course Outline

3D Animation - Introduction/Overview
3D Animation - Getting to Know the Production Pipeline
3D Animation - Understanding Digital Imaging and Video
3D Animation - Exploring Animation, Story, and Pre-visualization
3D Animation - Understanding Modeling and Texturing
3D Animation - Rigging and Animation
3D Animation - Understanding Visual Effects, Lighting, and Rendering
3D Animation - Hardware and Software Tools of the Trade
3D Animation - Industry Trends
3D Animation - Summary
3D Animation - Practice Video
3D Animation - Exams and Certification

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AEROSPACE ENGINEERING COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Aerospace Engineering?

Aerospace Engineering is the designing and building of machines that are capable of flying. It is one of the most recent branches of engineering and it started in the 19th century with the first experiments in a powered flight.

As technology advances more, two specializations in Aerospace Engineering came to being, they are:

1. Aeronautical Engineering, which involves the designing of aircrafts such as a powered and lighter-than-air craft, gliders, airplanes that are have fixed-wing and jets, autogyros, and helicopters.

2. Astronautical Engineering, which focuses more on the design and development of spacecrafts.

Aeronautical Engineers are involved in the design and development of aircraft that fly within the atmosphere of the Earth, while astronautical engineers work with the science and technology of designing and developing spacecraft that fly outside the Earth's atmosphere.

Aerospace Engineers primarily work in professional office settings. They may once in a while visit manufacturing and testing facilities where a problem or a particular piece of equipment requires their personal attention, according to the BLS. Aerospace engineers work mostly in manufacturing industries and in the federal government industries for flying machines and equipment. Also, a few numbers of aerospace engineers are selected to work on the International Space Station.

Many employers, especially those that have engineering consulting services, also need the certification to be a professional engineer. Engineers need ongoing education and training to keep up to date with several advances in technology, materials, computer hardware, and computer software, and also with government regulations. Also, several aeronautical engineers belong to the American Institute of Aeronautics and Astronautics (AIAA).

An Aeronautical education is broadly respected. And this is because of the very wide and great recognition and reputation of the UK aerospace industry, several graduates in this field may find job opportunities to work as permanent or temporary employment home and abroad. Everyone can do this by taking certification courses, attending conferences and working within international partnerships and consortiums (and that is a combination of businesses working towards a joint venture) that are related to the field.

Features of Aerospace Engineering

Below is a few descriptions of what an Aerospace engineer does.

1. Assessing requirements of system designs.
2. Agreeing budgets, timescales and system and machine specifications with clients and managers.
3. Undertaking both theoretical and practical research.
4. Producing and bringing out the products of designs and test procedures.
5. Measuring and improving the operation and performance of aircraft, components, and systems.
6. Assembling the aircraft or fitting their components into them.
7. Testing, evaluating, editing and re-testing their products.
8. Writing reports, making manuals and keeping more concise and clear documentation.
9. Providing technical advice to the users.
10. Investigating the causes of plane crashes and system failures.
11. Analyzing and interpreting the data that is on the system.

Why Study Aerospace Engineering

Some of the benefits of studying Aerospace Engineering include:

1. You get to understand the internal and external workings of flying machines.
2. You get to work in a field with a competitive salary.
3. You gain more technical knowledge.
4. You gain knowledge of how to diagnose flying devices.
5. You get a lot of job opportunities and career advancement in the aviation industry.
6. Increase your earning potential as an engineer.

Aerospace Engineering Course Outline

Aerospace Engineering - Introduction
Aerospace Engineering - Aircraft
Aerospace Engineering - Spacecraft
Aerospace Engineering - Introductory Mathematical Concepts
Aerospace Engineering - Concepts
Aerospace Engineering - Flight Test Concept
Aerospace Engineering - Aerodynamics Introduction
Aerospace Engineering - Fundamental Physical Properties of a Fluid
Aerospace Engineering - Types of Aerodynamic Flows
Aerospace Engineering - Similarity Parameters
Aerospace Engineering - Review of Thermodynamics
Aerospace Engineering - Fundamental Equations of Fluid Motion
Aerospace Engineering - Aerodynamics Forces and Moments
Aerospace Engineering - Two-Dimensional Lifting Shapes: Airfoils
Aerospace Engineering - Three Dimensional Aerodynamics: Wings
Aerospace Engineering - Compressible, Subsonic and Transonic Flows
Aerospace Engineering - Supersonic Flow
Aerospace Engineering - Viscous Flow
Aerospace Engineering - Hypersonic Flow
Aerospace Engineering - Propulsion Introduction
Aerospace Engineering - Propulsive Flows with Heat Addition and Work
Aerospace Engineering - Derivation of the Thrust Equations
Aerospace Engineering - Thrust and Power Curves for Propeller-Driven and Jet Engines
Aerospace Engineering - Air-Breathing Propulsion
Aerospace Engineering - Rocket Propulsion
Aerospace Engineering - Types of Non-Air-Breathing Propultion
Aerospace Engineering - Types of Air-Breathing Propulsion
Aerospace Engineering - Performance Introduction
Aerospace Engineering - Performance Altitude
Aerospace Engineering - Physical Description of the Atmosphere
Aerospace Engineering - Equation of Fluid Statics: The Hydrostatic Equation
Aerospace Engineering - The Standard Atmosphere
Aerospace Engineering - Air Data System Measurements
Aerospace Engineering - The Equations of Motion for Unaccelerated Flight
Aerospace Engineering - Level Flight Performance
Aerospace Engineering - Climb Performance
Aerospace Engineering - Glide Performance
Aerospace Engineering - The Polar Diagram
Aerospace Engineering - Energy Concepts
Aerospace Engineering - Turn Performance

Aerospace Engineering - Takeoff and Landing Performance
Aerospace Engineering - Stability and Control Introduction
Aerospace Engineering - Aircraft Stability
Aerospace Engineering - Aircraft Control
Aerospace Engineering - Aircraft Body Axes, Sign Convention and Nomenclature
Aerospace Engineering - Longitudinal Static Stability
Aerospace Engineering - Longitudinal Control
Aerospace Engineering - Lateral-Directional Static Stability and Control
Aerospace Engineering - Summary of Static Stability and Control Derivatives
Aerospace Engineering - Dynamic Stability
Aerospace Engineering - Handling Qualities
Aerospace Engineering - Video Lectures
Aerospace Engineering - Exams and Certification

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AMPLIFIER COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Amplification?

An Amplifier or Amp is an electronic device that is built to increase the power and stability of a signal (a time-varying voltage or current).

Amplifiers consists of a two-port electronic circuit that uses electric power from a power supply to increase the amplitude of a signal applied to its input terminals, producing a proportionally greater amplitude signal at its output.

Amplifier is the generic term used to describe a circuit that produces an increased version of its input signal.

Amplification is the method of enhancing the signal strength of any electronic device.

Almost all electronic equipment have some means of amplifying their own signals. The use of amplifiers can be found almost every where; in medical devices, scientific equipment, automation, military instruments, communication instruments, industries and even in home machineries.

In History, The first practical device that could do the work of amplification was the Triode Vacuum Tube, which was invented in the year 1906 by Lee De Forest, and later led to the first amplifiers in the year 1912. At that time, Vacuum tubes were used in almost all amplifiers up till the 1970s and later replaced by transistors. Today, most amplifiers use transistors, but vacuum tubes still continue to be used in some applications.

How Does Amplifiers Work?

Amplifiers can be considered as a simple box or block that is consist of the amplifying device, such as a Bipolar Transistor, Field Effect Transistor or Operational Amplifier, which has two input terminals and two output terminals with the output signal which is much greater than that of the input signal as it has been "Amplified".

Amplifiers are used in various ways like in wireless communications and broadcasting, and in audio equipment of all kinds. They can be classified as weak-signal amplifiers and power amplifiers.

1. Weak-signal Amplifiers are used essentially in wireless receivers. They are also used in acoustic pickups, audiotape players, and compact disc players. A weak-signal amplifier is built to deal with exceedingly small input signals, in some cases measuring only a few nanovolts (until 10–9 volt).

2. Power Amplifiers are used in wireless transmitters, broadcast transmitters, and hi-fi audio equipment. The most frequently-used device for power amplification is the bipolar transistor.

The Main function of an Amplifier is to turn a small electric current into a larger one, and there are various different ways to achieve this depending on exactly what you're trying to do.

To boost a significant constant electric voltage, an electromagnetic device called **Transformer** can be used.

Transformers are used in our daily household appliances and small devices with low voltage.

Transformers are widely used to drive low-voltage appliances such as MP3 players and laptop computers from higher-voltage household power outlets.

Transformers are also used in electricity substations to convert very high-voltage electricity from power plants to the much lower voltages that homes and offices require.

Electromagnetic Relay can be used to amplify an input current with a brief pulse of electricity designed to switch something on or off, you can use an electromagnetic relay to amplify it. A relay uses electromagnets to combine two electric circuits together so that when a small current flows through one of the circuits, a much larger current flows through the other. Using a relay, a tiny electric current can power something that would normally need a much larger current to operate it.

In the amplification of power, the two important things to consider are power output and efficiency.
1. Power output is usually measured in watts or kilowatts.
2. Efficiency is the ratio of signal power output to the total power input (wattage demanded of the power supply or battery).

Classes of Amplifiers

The classification of an amplifier as either a voltage or a power amplifier is made by comparing the characteristics of the input and output signals by measuring the amount of time in relation to the input signal that the current flows in the output circuit.

Below are general and most common classes of amplifiers:

Class A Amplifier: Has a low efficiency of less than 40% however with good signal reproduction and linearity.

Class B Amplifier: This is twice as efficient as class A amplifiers with a maximum theoretical efficiency of about 70% because the amplifying device only conducts (and uses power) for half of the input signal.

Class AB Amplifier: Has an efficiency rating between that of Class A and Class B but poorer signal reproduction than Class A amplifiers.

Class C Amplifier: This is the most efficient amplifier class, however, the distortion is very high as only a small portion of the input signal is amplified therefore the output signal bears very little resemblance to the input signal. Class C amplifiers have the worst signal reproduction.

Major Categories of Amplifiers

There are 3 major categories of amplifiers:

1. Voltage Amplifier
2. Current Amplifier
3. Power Amplifier

Types of Amplifiers

The available types of Amplifiers are:

1. Audio Frequency Amplifiers (A.F. Amplifiers): A.F. Amplifiers are used to supply audio frequency power for the loudspeakers.

2. Intermediate Frequency Amplifiers (I.F. Amplifiers): I.F Amplifiers are used in TVs, radios and radar broadcast.

3. Radio Frequency Amplifiers (R.F. Amplifiers): R.F Amplifiers are used to drive the radio antenna of a transmitter.

4. Ultrasonic Amplifiers: Ultrasonic amplifiers are responsible for ultrasonic wave amplification.

5. Wideband Amplifiers: Wideband amplifiers are used to amplify a band of frequencies. They are used to amplify from DC to several tens of MHz.

6. Direct Coupled Amplifiers (DC Amplifiers): Direct-coupled or DC amplifiers are used to further amplify the very low-frequency signals.

7. Video Amplifiers: Video amplifiers are used to improve video signals in order to display it in high-quality resolution.

8. Buffer Amplifiers: Buffer amplifiers are used for electrical impedance transformation from one circuit to another.

9. Operational Amplifiers: Operational amplifiers are used to perform mathematical operations on voltages.

10. Transistor Amplifiers: Transistor amplifiers are used to amplify the voltage or current of the input signal.

In the Full course, you will learn everything you need to know about **Amplifiers** with **Certificate** to showcase your knowledge/skill gained.

Amplifiers Course Outline

Amplifiers - Introduction
Amplifiers - Materials
Amplifiers - Transistors Overview
Amplifiers - Transistor Configurations
Amplifiers - Transistor Regions of Operation
Amplifiers - Transistor Load Line Analysis
Amplifiers - Operating Point
Amplifiers - Transistor as an Amplifier
Amplifiers - Transistor Biasing
Amplifiers - Methods of Transistor Biasing
Amplifiers - Bias Compensation
Amplifiers - Basic Amplifier
Amplifiers - Classification of Amplifiers
Amplifiers - Based on Configurations
Amplifiers - Multi-Stage Transistor Amplifier
Amplifiers - RC Coupling Amplifier
Amplifiers - Transformer Coupled Amplifier
Amplifiers - Direct Coupled Amplifier
Amplifiers - Power Amplifiers
Amplifiers - Classification of Power Amplifiers
Amplifiers - Class A Power Amplifiers
Amplifiers - Transformer Coupled Class A Power Amplifier
Amplifiers - Push-Pull Class A Power Amplifier
Amplifiers - Class B Power Amplifier
Amplifiers - Class AB and C Power Amplifiers
Amplifiers - Tuned Amplifiers
Amplifiers - Types of Tuned Amplifiers
Amplifiers - Feedback Amplifiers
Amplifiers - Negative Feedback Amplifiers
Amplifiers - Emitter Follower & Darlington Amplifier
Amplifiers - Noise in Amplifiers
Amplifiers - Video Lectures
Amplifiers - Exams and Certification

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ADAPTIVE SOFTWARWE DEVELOPMENT COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Adaptive Software Development

Adaptive Software Development is a design principle for creating software systems in order to achieve rapid software creation, adaptivity, and evolution of software systems.

Adaptive Software Development centers around cooperation and learning as a procedure to fabricate complex frameworks. It is advanced from the accepted procedures of Rapid Application Development (RAD) and Evolutionary Life Cycles. Adaptive Software Development was then reached out to incorporate versatile methodologies for the administration, with hypothesis supplanting Planning.

Activities of Adaptive Software Development

The following are the activities of Adaptive Software Development:

1. Requirements Gathering – Requirements for a product to be created are accumulated. These necessities will be in a language that is comprehended by the client/client. Area explicit wording is prescribed

2. Analysis – The accumulated prerequisites are dissected from execution perspective and the product determinations are composed to cover both, the useful necessities and the non-practical necessities.

3. Design – This stage includes touching base at the product design and usage points of interest dependent on innovation picked for improvement.

4. Construction – In this stage, the code is created, unit tried, coordinated, reconciliation tried and the construct is delivered.

5. Testing – Functional testing of the fabricated programming is done in this stage. This likewise incorporates the testing of non-practical necessities.

Models of Adaptive Software Development

The Waterfall Model: The waterfall model is a great SDLC model that is broadly known, comprehended and regularly utilized. It was presented by Royce in 1970 is as yet being pursued as a typical methodology for programming advancement in different associations over the business.

Developmental Prototyping Model: In programming advancement utilizing the Evolutionary Prototyping model, the engineers assemble a model during the prerequisites stage. The end clients at that point assess the model and give criticism.

SDLC - Iterative Incremental Model: In an Iterative Incremental model, at first, a halfway usage of a complete framework is developed with the goal that it will be in a deliverable state. Expanded usefulness is included.

SDLC - Spiral Model: The winding model includes Risk Analysis and RAD prototyping to the Waterfall model. Each cycle includes an indistinguishable succession of ventures from the Waterfall model. The winding model has four quadrants.

The Prior SDLC Models: are increasingly situated to the acts of strength, consistency and diminishing returns.

Lifecycle Characteristics of Adaptive Software Development

Adaptive Software Development Lifecycle has six fundamental qualities:

1. Mission centered
2. Feature-based
3. Iterative
4. Time-boxed
5. Risk driven
6. Change tolerant

Career Opportunities in Adaptive Software Development

An increasing number of companies are bringing up the need for adaptive software development professionals. If you are in the look for career opportunities that are available in this field, they are large.

Some of them are listed below.

1. You get a lot of job opportunities with adaptive software development skills.
2. You can become an adaptive software development specialist in an organization.
3. After taking this certification course of the adaptive software development module, you can become a certified adaptive software developer.
4. You can become an adaptive software development trainer.
5. You can become a senior adaptive software engineer commanding high pay.

In the Full course, you will learn everything you need to know about **Adaptive Software Development** with a **Diploma Certificate** to showcase your knowledge skill/gained upon successful completion of the exams.

Adaptive Software Development Course Outline

Adaptive Software Development - Introduction
Adaptive Software Development - SDLC Models - Evolution
Adaptive Software Development - SDLC - Waterfall Model
Adaptive Software Development - SDLC - Iterative Incremental Model
Adaptive Software Development - Rapid Application Development
Adaptive Software Development - SDLC - Spiral Model
Adaptive Software Development - SDLC - Agile Methods
Adaptive Software Development - Evolution
Adaptive Software Development - Concepts
Adaptive Software Development - Lifecycle
Adaptive Software Development - Lifecycle Characteristics
Adaptive Software Development - Practices
Adaptive Software Development - Adaptive Management
Adaptive Software Development - Video Lectures
Adaptive Software Development - Exams and Certification

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AGILE METHODOLOGY COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Agile Methodology?

Agile Methodology which is now known as Agile Software Development illustrates a set of principles for software development whereby requirements and solutions develop through the joint effort of self-organizing cross-functional teams.

"Agile Development" is an umbrella term for several iterative and incremental software development methodologies. The term agile was made known by the Agile Manifest. This explains four principles for managers of software development projects. These principles defend the definition and continuing evolution of many software development methods.

Features and Benefits of Agile Methodology

1. Agile Methodology promotes adaptive planning.
2. Agile Methodology offers evolutionary development.
3. Agile Methodology offers early delivery and nonstop improvement.
4. Agile Methodology promotes fast and flexible response to change.
5. Agile Methodology offers releases and fixed-length iterations.
6. Agile Methodology delivers-working tested software.
7. Agile Methodology offers value-driven development.
8. Agile Methodology ensures continuous adaptive planning.
9. Agile Methodology offers multi-level planning.
10. Agile Methodology offers emergent feature discovery.
11. Agile Methodology offers continuous testing and continuous improvement.
12. Agile Methodology provides job opportunity.

The majority of agile-based software development frameworks laid emphasis on a short development iteration period which produces a stakeholder-visible change as regularly as every few weeks.

Two of the most well known Agile-based Software Development frameworks are:
1. Scrum and
2. Kanban.

Other known Agile Methodologies are:
+ Extreme Programming (XP),
+ Crystal,
+ Dynamic Systems Development Method (DSDM),
+ Lean Development, and
+ Feature-Driven Development (FDD).

Agile Development methodology offers chances to assess the direction of a project all the way through the development lifecycle. This is accomplished via regular rhythms of work, which is known as sprints or iterations, at the end of which teams must show a likely shippable product increase. Agile methodology is depicted as “iterative” and “incremental” by focusing on the repetition of abbreviated work cycles as well as the functional product they yield.

In the Full Course, you will learn everything you need to know about **Agile Methodology** with **Certification** to showcase your knowledge/skill gained.

Agile Methodology Course Outline

Agile Methodology - Introduction
Agile Methodology - Roles
Agile Methodology - Team Plans
Agile Methodology - User Story
Agile Methodology - Acceptance Criteria
Agile Methodology - Manifesto
Agile Methodology - Characteristics
Agile Methodology - The Daily Standup
Agile Methodology - Definition of Done
Agile Methodology - Release Planning
Agile Methodology - Agenda
Agile Methodology - Iteration Planning
Agile Methodology - Product Backlog
Agile Methodology - ABC of Agile
Agile Methodology - Video Lectures
Agile Methodology - Exams and Certification

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ANALOG COMMUNICATION COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Analog Communication

Analog Communication is the transfer or transmission of information sent via electric pulses with alternating amplitude.

In communication technology, the transmission is of two kinds: Digital and Analog transmission. While both transmission systems are somewhat similar in that communication signals are sent electrically, they vary greatly.

Components of Analog Communication

1. The sender: This is the initiator of the message, this person sends a message, through a transmitting station from where the signal is transmitted.

2. Channel: is the medium through which the message signals travel to reach the destination.

3. The receiver: is the person who receives the message through a receiving station where the transmitted signal is being received.

Types Of Signals include:
1. Analog Signal: An analog signal is any continuous signal for which the time-varying feature (variable) of the signal is a representation of some other time-varying quantity, i.e., analogous to another time-varying signal. The signal actually is electronic signals specifically (as opposed to traffic signals, albums by the ultimate power-trio, or a general means for communication). The signals we're talking about are time-varying "quantities" which convey some sort of information. In electrical engineering, the quantity that's time-varying is usually voltage (if not that, then usually current). So just think of them as a voltage that's changing over time. Signals are passed between devices in order to send and receive information, which might be video, audio, or some sort of encoded data. Usually, the signals are transmitted through wires, but they could also pass through the air via radio frequency (RF) waves. Audio signals, for example, might be transferred between your computer's audio card and speakers, while data signals might be passed through the air between a tablet and a WiFi router.

2. Digital Signal: Digital signals must have a finite set of possible values. The number of values in the set can be anywhere between two and large-number, not infinity. Most commonly digital signals will be one of two values -- like either 0V or 5V. Timing graphs of these signals look like square waves, Or a digital signal might be a discrete representation of an analog waveform.

Features and Benefits of Analog Communication

1. In Analog Transmission, information is sent via electric pulses with alternating amplitude. Whereas in digital transmission, information to be sent is first converted to binary code – one and zero –before being transmitted in bits. High amplitude is represented by 1 while the low amplitude is represented by zero. Analog and digital transmission are inter-convertible – one can be converted to the other. Conversion is achieved through the use of a device called the Modem.

2. For Analog communication to work, there have to be a media of transmission – a path through which the communication signals must follow. It could be via water, electrical cables, air or fiber. While each of these communication media can transmit a large amount of data, fiber transmits the most.

3. There are two major techniques for transmitting Analog communication signals:
a. Amplitude Modulation – or AM for short – and
b. Frequency Modulation, which we all know as FM.
The major difference between these transmission techniques is the distance they cover. AM signals can be transmitted to a longer distance than FM.

4. Analog communication is way cheaper than digital communication. The reason is that unlike digital communication which requires lots of multiplexing which costs money, Analog communication does not.

5. Analog transmission is relatively immune to impedance problems.

In the Full Course, you will learn everything you need to know about **Analog Communication** with **Certification** upon successful completion of the exams.

Analog Communication Course Outline

Analog Communication - Introduction
Analog Communication - Modulation
Analog Communication - Amplitude Modulation
Analog Communication - Numerical Problems 1
Analog Communication - AM Modulators
Analog Communication - AM Demodulators
Analog Communication - DSBSC Modulation
Analog Communication - DSBSC Modulators
Analog Communication - DSBSC Demodulators
Analog Communication - SSBSC Modulation
Analog Communication - SSBSC Modulators
Analog Communication - SSBSC Demodulator
Analog Communication - VSBSC Modulation
Analog Communication - Angle Modulation
Analog Communication - Numerical Problems 2
Analog Communication - FM Modulators
Analog Communication - FM Demodulators
Analog Communication - Multiplexing
Analog Communication - Noise
Analog Communication - SNR Calculations
Analog Communication - Transmitters
Analog Communication - Receivers
Analog Communication - Sampling
Analog Communication - Pulse Modulation
Analog Communication - Transducers
Analog Communication - Exams and Certification

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ANTENNA THEORY COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Antenna Theory?

Antenna Theory is the process of radiating energy from the current supplied by a radio transmitter or radio receiver to its terminal as an electromagnetic waves.

An Antenna is an electrical device used in the field of radio and electronics to convert electrical power into radio wave.

For the Antenna to generate currents at its terminals, it interprets the electromagnetic wave that is amplified by the receiver. Antennas are used to transmit and receive radio signal, and as such are vital in equipment that use radio technology.

Categories of Antennas

Antennas are of different types, and technological application, and generally fall into two categories, which are:

1. Omnidirectional Antennas also called Weak Directional Antennas, these antennas can radiate and receive in all direction, and are used in transmission which the position of the interacting station is not known, and

2. Directional Antenna or Beam Antennas, which are employed when radiating or receiving in a specific direction. An example of omnidirectional antenna is the whip antenna used on cars.

Types of Antennas

There are many types of Antennas, some of which are:

+ Dipole Antennas
+ Resonant Antennas
+ Isotropic Antennas
+ Monopole Antennas
+ Loop Antennas
+ Aperture Antennas
+ Traveling Wave Antennas

Advantages and Uses of Antenna

Some of the benefits of Antenna include:

1. Antennas are used in devices such as cell phones, computer wireless networks, satellite communication, TV and radio broadcasting.

2. Antennas can be used in a whole lot of other communication devices like two way radio, communication receiver and wireless microphones.

3. It is composed of metallic conductors, connected to a transmitter or a receiver for good power gain.

4. Antennas can function over a wide range of frequencies.

5. It offers wider bandwidth.

6. It offers higher directivity.

7. It provides higher power gain.

In the design and selection of an Antenna, some characteristics features that are used to measure performance are considered. Among these characteristics is the antenna's power gain or just gain. Power gain is the measure of degree of directivity of an antenna's pattern of radiation.

Antennas with a high power gain will radiate its power in a specific direction while Antennas with a low power gain will radiate their power at a wider angle. To increase the power of power gain its power is channelled in a horizontal direction. Some other characteristics are directional characteristics, efficiency of the antenna, frequency, the impedance of the antenna, polarization, and bandwidth.

In the Full course, you will learn everything you need to know about **Antenna Theory** with **Certification** upon successful completion of the exams.

Antenna Theory Course Outline

1. Antenna Theory Basic Terms
Antenna Theory - Fundamentals
Antenna Theory - Basic Parameters
Antenna Theory - Parameters
Antenna Theory - Near & Far Fields
Antenna Theory - Radiation Pattern
Antenna Theory - Isotropic Radiation
Antenna Theory - Beam & Polarization
Antenna Theory - Beam Width
Antenna Theory - Reciprocity
Antenna Theory - Poynting Vector

2. Types of Antennas
Antenna Theory - Types of Antennas
Antenna Theory - Wire
Antenna Theory - Half-Wave Dipole
Antenna Theory - Half-Wave Folded Dipole
Antenna Theory - Full-Wave Dipole
Antenna Theory - Short Dipole
Antenna Theory - Long Wire
Antenna Theory - V-Antennas
Antenna Theory - Inverted V-Antenna
Antenna Theory - Rhombic
Antenna Theory - Loop
Antenna Theory - Helical
Antenna Theory - Aperture
Antenna Theory - Horn
Antenna Theory - Slot
Antenna Theory - Micro Strip
Antenna Theory - Lens
Antenna Theory - Parabolic Reflector

3. Antenna Arrays
Antenna Theory - Antenna Arrays
Antenna Theory - Collinear Array
Antenna Theory - Broad-side Array
Antenna Theory - End-fire Array
Antenna Theory - Parasitic Array
Antenna Theory - Yagi-Uda Antenna Theory
Antenna Theory - Log-periodic Antenna Theory
Antenna Theory - Turnstile Antenna Theory

4. Wave Propagation
Antenna Theory - Spectrum & Transmission
Antenna Theory - Types of Propagation
Antenna Theory - Lonosphere & its Layers
Antenna Theory - Terms in Wave Propagation
Antenna Theory - Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

ARTIFICIAL INTELLIGENCE COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Artificial Intelligence?

Artificial Intelligence (AI) is the field of Computer Science that deals with application of programming and the process of human reasoning, learning and decision logic to machines operations in order to carry out specific advanced computing tasks, complex tasks and learn to take decisions with little or no human supervision.

Artificial Intelligence can also be defined as the combination of programming and human reasoning to take or assist in the role of humans to carry out advanced computing task or complex tasks, analyze problems and take decisions while learning in the process (especially in Artificial Neural Networks).

The main focus and purpose of Artificial Intelligence - AI is to bring advancement to computing functions and operations associated with human intelligence which includes reasoning, learning and problem solving in order to bring solution to complex computing problems.

Advantages of Artificial Intelligence

1. It makes handling of information and tasks very easy.
2. It helps to create useful and more powerful computer applications.
3. It makes tedious workload very simple and easy to handle.
4. It makes reasoning and problem solving very effortless.
5. It reduces cost of staffing and management.
6. It helps to reduce errors in humans.
7. It helps to save time and energy.
8. It increases productivity in workplaces.

Advantages of Studying Artificial Intelligence

1. Helps students get the understanding and philosophy behind the artificial intelligence invention.

2. Helps to understand the elements that constitutes or contributes to AI, including the knowledge of computer science, biology, psychology, linguistics, mathematics, logic and engineering.

3. Helps to know the various AI application areas which has huge impacts on many fields such as gaming, natural language processing, expert systems, vision systems, etc.

4. It helps to understand the cutting edge technology that is powering different industries.

5. Helps to acquire an in-demand skill sought after by companies globally.

6. Helps to understand how Artificial Intelligence is developed, its models and how it is applied.

7. Helps to know how Artificial Intelligence can be used to solve complex problems.

8. It serves as a way of generating income (a AI professional).

9. It creates employment opportunity.

Main Types of Artificial Intelligence

The main types of Artificial Intelligence:

1. Reactive Machines
2. Limited Memory
3. Theory of Mind
4. Self-Awareness

Reactive Machines: Reactive Machines are designed NOT to store 'memories' or use past experiences to determine future actions.

Limited Memory: Limited Memory Machines can retain data for a short period of time, such as self-driving cars etc.

Theory of Mind: This has to do with machines learning and understanding the human reasoning such as the understanding that people, creatures and objects in the world can have thoughts and emotions that affect their own behavior.

Self-Awareness: These machines has the ability to be aware of themselves such as knowing about their internal states and are able to predict feelings of others.

Types of Embedded Artificial Intelligence

Embedded AI is the advancement of A.I technologies to include software and small devices used by everyday people.

The Types of Embedded A.I include:
1. Natural Language Processing.
2. Expert Systems.
3. Robotics.
4. Artificial Neural Networks.

Natural Language Processing is the ability to translate natural human language to machine understandable form. Such that machines or systems are trained how to understand human language and also respond in same. Some examples of such application is Chatbots, Virtual Assistants (Google Virtual Assistant). They understand voice pitch, accent and texture, carry out actions or respond back in human readable or understandable format.

Expert Systems consists of systems that solve problems trained by Expert Engineers that could be operated by people or users who may not posses AI knowledge. This expert systems carry out actions based on standards taught or fed to them by the expert engineers.

Robotics is an aspect of Artificial Intelligence that deals with creating machines called robots that carry out activities humans otherwise would have done. These systems are designed to carry out this activities more efficiently than humans without errors and without getting tired. These robots combines Mechanical, Electrical, Computer science (Software and Computer Vision) to carry out operations. They are heavily used in Medicine, Manufacturing Factories, Production, Automation etc.

Artificial Neural Networks (ANN) is based on Human brain neurons. In other words, these networks are intelligent, takes action either based on past history or based on goals it is designed to achieve like Reinforced Learning. This aspect of AI produces Self Driving Cars, **Delivery Drones, Hig**h tracking and sensitive Military arsenals like Missiles etc.

ANN is powering several hyper intelligent systems. These systems are giving a set of policies or goals without predetermined tracks and must take decisions based on its current state to arrive at a desired goal.

In the Full course you will learn everything you need to know about **Artificial Intelligence** with **Certification** to document and showcase your knowledge.

Artificial Intelligence Course Outline

Artificial Intelligence - Introducing AI
Artificial Intelligence - Defining the Role of Data
Artificial Intelligence - Considering the Use of Algorithms
Artificial Intelligence - Pioneering Specialized Hardware
Artificial Intelligence - Considering the Uses of AI in Society
Artificial Intelligence - Seeing AI Uses in Computer Applications
Artificial Intelligence - Automating Common Processes
Artificial Intelligence - Using AI to Address Medical Needs
Artificial Intelligence - Relying on AI to Improve Human Interaction
Artificial Intelligence - Working with Software-Based AI Applications
Artificial Intelligence - Performing Data Analysis for AI
Artificial Intelligence - Employing Machine Learning in AI
Artificial Intelligence - Improving AI with Deep Learning
Artificial Intelligence - Working with AI in Hardware Applications
Artificial Intelligence - Developing Robots
Artificial Intelligence - Flying with Drones
Artificial Intelligence - Utilizing the AI-Driven Car
Artificial Intelligence - Considering the Future of AI
Artificial Intelligence - Understanding the Nonstarter Application
Artificial Intelligence - Seeing AI in Space
Artificial Intelligence - Adding New Human Occupations
Artificial Intelligence - The Part of Tens
Artificial Intelligence - Ten AI-Safe Occupations
Artificial Intelligence - Ten Substantial Contributions of AI to Society
Artificial Intelligence - Ten Ways in Which AI Has Failed
Artificial Intelligence - Video Lectures
Artificial Intelligence - Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

ARTIFICIAL NEURAL NETWORK COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What Is Artificial Neural Network?

Artificial Neural Network (ANN) in the system of hardware or software, patterned after the operations of neurons in the human brain. ANNs also known as simple neural networks are a group of **deep learning** technology, that also falls under the shade of artificial intelligence known as **AI.**

Artificial Neural Networks are one of the fundamental tools used in **machine learning.** As suggested by the 'neural' part of its name, they are systems that are designed to replicate the same way we humans learn. Neural Networks are made up of inputs and output layers, also in most cases it has a hidden layer that is made up of units that transform the inputs into something that the output layer can use. They are an awesome set of tools for finding patterns that are far too complex or much for a human programmer to download and use to teach the machine to recognize.

Human brains understand the concept of real-world situations in ways that a computer cannot understand. The neural network was first developed in the 1950s to solve this issue. An artificial neural network is an attempt to imitate the neurons that make up a human brain so that the computer can be able to learn and make decisions in a more humanly way.

ANN was created by programming our regular computers to behave as though they are brain cells joined together. An eCommerce site for example, learns from user searches to improve your shopping experience.

Features Of Artificial Neural Network

Below are some of the features of Artificial Neural Network:

1. Artificial Neural Network is a neurally implemented mathematical model.

2. It contains a huge number of processing elements that are interconnected, called neurons to perform all its operations.

3. Information saved in the neurons are just the weighted link of neurons

4. The input signals get to the processing elements through connections and connecting weights.

5. It has the ability to learn, understand, remember and generalize from the given data by suitable assignment and adjustment of weights.

6. The general characteristics of the neurons describes its computational power, and no single neuron carries specific information.

Benefits Of Artificial Neural Networks

Some of the benefits of Artificial Neural Networks includes:

1. Organic Learning: Neural networks are built to learn organically, that is to say, an artificial neural network is not completely limited by the inputs and results that are being fed to them initially from an expert system. Artificial neural network has the capability to generalize the input being given to them. this ability is very important for robotics and pattern recognition systems like our voice searching software.

2. Fault Tolerance: Artificial neural networks usually have the potential for high fault tolerance. When these networks are used across many machines and servers, they are able to navigate around missing data or servers that cant communicate.

3. Nonlinear Data Processing: Nonlinear systems have the ability to find an easier way to carry out solutions that are computationally expensive. these systems also link connections between data points, instead of waiting for the records in a data source to be explicitly linked. This nonlinear shortcut mechanism is fed into the artificial neural network, these make it valuable in the commercial big-data analysis.

4. Self Repair: Artificial Neural Networks can do more than just routing around parts of the network that is no longer working. If they are asked to find out a specific data that is no longer communicating, these artificial networks can help to recreate large amounts of data by inference and help in showing the data nodes that are no longer working. These characteristics are useful for networks that need to inform their users about the current state of the network and effectively results in a self agonizing and debugging network. Scientists are currently trying to understand capacities assumptions and the applicabilities of various approaches that can efficiently improve the performance of the artificial neural networking system.

In The Full Course, you will learn everything you need to know about **Artificial Neural Network** with **Certification of Completion** to showcase your knowledge and competence.

Artificial Neural Networks Course Outline

Artificial Neural Network - Basic Concepts
Artificial Neural Network - Building Blocks
Artificial Neural Network - Learning & Adaptation
Artificial Neural Network - Supervised Learning
Artificial Neural Network - Unsupervised Learning
Artificial Neural Network - Learning Vector Quantization
Artificial Neural Network - Adaptive Resonance Theory
Artificial Neural Network - Kohonen Self-Organizing Feature Maps
Artificial Neural Network - Associate Memory Network
Artificial Neural Network - Hopfield Networks
Artificial Neural Network - Boltzmann Machine
Artificial Neural Network - Brain-State-in-a-Box Network
Artificial Neural Network - Optimization Using Hopfield Network
Artificial Neural Network - Other Optimization Techniques
Artificial Neural Network - Genetic Algorithm
Artificial Neural Network - Applications of Neural Networks
Artificial Neural Network - Exams and Certification

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AUDIO ENGINEERING COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Audio Engineering?

Audio (Sound) Engineering is the art of mixing and reproducing sounds. While the word "audio" is a very broad term in the field of Engineering, **Audio** is the reproduction and transmission of sound and its frequency. An example of Audio transmission or reproduction is a stereo.

Audio or Sound Engineers are basically referred to as **Sound Technicians.**

Audio or Sound Engineers are individuals who take up Audio Engineering as a career. They are required to be very creative problem solvers with the power and ability to think outside the box and apply critical thinking skills to all aspects of the job. Audio Engineers must have very strong communication skills, good manual dexterity, creativity and the ability to operate on multiple machines simultaneously and also pay attention to details.

The Technical side of music recording involves setting up all required equipments to work together, for example: microphones, mixers, amplifiers etc. and making sure that they all work together without any distortion. This is the core job of an Audio Technician.

Audio Engineers work hand in hand with music producers to develop and create nice, clean and enhanced sounds. Graduates of Sound Engineering are also equipped with the skills to be able to handle audio projects and supervise a team of Sound Technicians. Audio Engineers mostly work in various music recording studios. With enough experience and good work experience, an Audio Engineer is capable of starting up their own music studio or a production company.

Elements of a Perfect Audio Mix

The following are elements of mixing music that engineers and producers follow that make up the mixing process.

1. Balance: This is the beginning of the Process. It is important to have balance in a mix. This is to say that everything appears to be at the same or appropriate level.

2. Frequency Range: This involves having all audible frequencies represented. It is a process that requires a keen ear and a thorough understanding of instruments and the way they should sound. EQing is the boosting and cutting of frequencies to achieve the desired sound.

3. Panorama: This is achieved by panning and creates a stereo mix. It is placing a musical element in the sound field.

4. Dimension: This involves adding ambiance to a musical element. It is where reverb, delay, and other effects are added. A Dry mix is a mix that is a raw recording without any other effects added, adding dimension can make the space you are hearing the music in Larger, smaller, more open or confined.

5. Dynamics: This involves controlling the volume envelope of an individual track or the entire mix. Dynamics is where Compression, Gating, and Limiting are added. What it does is keeps all of the sounds at a pleasant and appropriate level. In the instance of a compressor, it will act as autopilot on the volume control.

6. Interest: This makes the mix special, We add interest by manually controlling swells and volumes to create more of an emotional response, usually moving into key changes or choruses.

Characteristics of an Audio Engineer

1. Patience: Working with people is very hard, but working together with someone on something that is creative and personal to them is a whole lot harder. Working together is an act of balancing, it requires someone with a lot of patience and understanding. As an Audio Engineer or an Audio Producer, you're not always going to be happy what your client has to say, but it's how you react and handle the situation to make sure that everyone is happy and the product ends up the way you promised that makes you a great Audio Engineer.

2. Well Organized: Another major feature that will make you stand out as an Audio Engineer is that you have to be on time, Make sure that things are always set up on time, always make sure that everything that is needed for the recording session is ready to go and the studio is very clean, have the songs edited, label all tracks and sessions have amps out that you're going to need, etc. etc. It's the engineer's job to make sure the session is running smoothly and the only way this can get done is if things are organized.

3. Perceptive: As an Audio Engineer, you should always be aware of your environment. If a client is not enjoying or doesn't like the sound of something, make sure to pay attention to how everyone around you is acting and make sure you are giving them a room that allows them to best do their work and be creative.

4. Diligence: Another unique feature of an Audio Engineer is that they have to be attentive and persistent. Do your job with care.

5. Reliable: Show up and finish given projects on time, always give accurate very time frames for how long things will consume, answer all emails, phones calls and text messages in a considerable amount of time.

Why Study Audio (Sound) Engineering?

There are lots of benefits of learning Audio Engineering and some of them are:

1. In Audio Engineering, you have a very competitive pay because you will be working with music and movie professionals.

2. As an Audio Engineer, you have lots of options and opportunity in the entertainment and creative industry.

3. Audio Engineering helps you to develop problem-solving skills.

4. Audio (Sound) Engineers can work in any industry apart from music such as film, radio, television, computer games, theater, sporting events and corporate events.

5. Enrich Your CV and Increase Your Earning Potential.

6. Entrepreneurial Opportunities and Consultancy, this means you can start your own production or audio engineering company.

7. Job Opportunities and Career Advancement.

Audio Engineering Course Outline

Audio Engineering - Introduction
Audio Engineering - Audio Principles
Audio Engineering - Measurement
Audio Engineering - Acoustic Environment
Audio Engineering - Components
Audio Engineering - Power Supply Design
Audio Engineering - Introduction to Audio Amplification
Audio Engineering - Preamplifiers and Input Signals
Audio Engineering - Interfacing and Processing
Audio Engineering - Audio Amplifiers
Audio Engineering - Audio Amplifier Performance
Audio Engineering - Valve (Tube-Based) Amplifiers
Audio Engineering - Negative Feedbacks
Audio Engineering - Noise and Grounding
Audio Engineering - Digital Audio Fundamentals
Audio Engineering - Representation of Audio Signals
Audio Engineering - Compact Disc
Audio Engineering - Digital Audio Recording Basics
Audio Engineering - Digital Audio Interfaces
Audio Engineering - Data Compression
Audio Engineering - Digital Audio Production
Audio Engineering - Other Digital Audio Devices
Audio Engineering - Microphone Technology
Audio Engineering - Loudspeakers
Audio Engineering - LoudspeaEnclosures
Audio Engineering - Headphones
Audio Engineering - Tape Recording
Audio Engineering - Recording Consoles
Audio Engineering - Video Synchronization
Audio Engineering - Room Acoustics
Audio Engineering - Fundamentals and Instruments
Audio Engineering - Video Lectures
Audio Engineering - Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

AUTOCAD COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is AutoCAD?

AutoCAD is a commercial computer-aided design (CAD) architectural arts and drafting software application developed and founded by Autodesk. It was first launched in December 1982 as a desktop application running on micro-computers with the initial internal graphics controllers.

Before AutoCAD came to being, most computer-aided design (CAD) programs used to run on the initial mainframe computers or minicomputers, with assigned CAD operators (user) working at a separate graphics terminal. Since 2010, AutoCAD was released as both mobile and web app, marketed as AutoCAD 360.

Advantages of AutoCAD

There are many advantages of AutoCAD, some of which are:

1. AutoCAD software saves time and increases productivity.
2. It offers simple and user friendly interface.
3. It is easy to understand.
4. It offers powerful and quick design dimensions and exposures.
5. AutoCad comes with in-built industry standard STEP and IGES formats for the smooth exchange of data between different CAD systems.
6. It comes with drafting tools for generating standards Industry based geometric dimensions.
7. It can generate symbols such as; surface texture symbols, the mechanical symbols and the weld symbols.
8. AutoCad allows drawing in 2D or 3D and in rotated forms.
9. AutoCad offers flexibility in design changes including easy reuse or modification of the designs.
10. It provides more accuracy and precision than the contemporal manual design.
11. It is flexible and saves time.
12. It is the fastest way of drawing objects other than manual method which normally involves use of drawing board and T-square inclusing other drawing instruments.
13. Drawings generated through AUTOCAD is highly presentable than analogue made drawings.

Advantages of Studying AutoCAD

The advantages of studying AutoCAD includes:

1. It offers career advancement.
2. It provides self-employment opportunity.
3. It creates job opportunity globally.
4. It is easy to manipulate a design.
5. Less paper work is needed in construction.
6. Less time is required in design.
7. It provides background knowledge in computer based drawings which assist in learning and using other related software like Revit, ArchiCAD etc.

Main Features of AutoCAD

AutoCAD is very powerful and used across many fields and industries, i.e architects, graphic designers, engineers, project managers, town planners and many other professionals. It was supported and endorsed by 750 training centers worldwide as at 1994.

AutoCAD Software name was derived from a program that began in 1977, and then released in 1979 called Interact CAD, also referred to in early Autodesk documents as MicroCAD, which was later written prior to Autodesk's (then Marinchip Software Partners) formation by Autodesk cofounder Michael Riddle.

The first ever version by Autodesk was introduced in 1982 and released in December of the same year. By March 1986 AutoCAD software had become the most popular CAD program used worldwide. The new release in 2019 marked the 33rd major release of AutoCAD for Windows Operating System. The new release in 2014 marked the 4th consecutive year of AutoCAD for Mac Operating System.

AutoCAD native file format name is .dwg. And can be used interchangeably with format DXF. AutoCAD also support .dwf file format, developed and promoted by Autodesk for all CAD data publishing.

In the Full Course, you will learn everything you need to know about **AutoCAD** with **Certification** to showcase your knowledge/skill gained.

AutoCAD Course Outline

Cad Level 1 - Getting Started With Autocad

AutoCAD - Intro To Drawing / Modifying Commands
AutoCAD - Modifying Commands / Object Snaps (Trim Extend Offset)
AutoCAD - Accurate Input
AutoCAD - Selection Sets
AutoCAD - Modifying Commands (Move Copy Stretch Mirror)
AutoCAD - Modifying Commands (Rotate Fillet Chamfer Array)
AutoCAD - Layers Dimensions Text Scale
AutoCAD - Direct Distance Entry And Object Tracking
AutoCAD - Changing The Properties Of Objects
AutoCAD - Zooming And Panning Around A Drawing
AutoCAD - Orthographic Projection
AutoCAD - Section Views

Cad Level 2 - Intermediate Autocad

AutoCAD - Planning A Project - Office Floor Plan
AutoCAD - Introduction To Blocks -Creating And Inserting (Dynamic Blocks)
AutoCAD - Align And Rotate Commands
AutoCAD - Attributes - Non-Graphical Information
AutoCAD - Creating A Title Block With Attributes
AutoCAD - Hatching - Filling Areas
AutoCAD - Working With Text
AutoCAD - Polylines
AutoCAD - Layout Tabs - Plotting And Paper Space
AutoCAD - Parametric Constraints
AutoCAD - Elevation Drawings

Cad Level 3 - Introduction To 3D Drafting

AutoCAD - Introduction To 3-D (Terminology)
AutoCAD - Isometric Drawing
AutoCAD - Working In 3 Dimensions (X,Y,Z Axes, 3d Rotation)
AutoCAD - Viewing 3-D Objects (Perspective Views, 3d Orbit, Dview)

AutoCAD - Basic Wireframe Models
AutoCAD - Line Thickness
AutoCAD - Regions And 3-D Faces And Extruding
AutoCAD - Extruding & Lofting
AutoCAD - Revolved Objects - Revsurf And Revolve
AutoCAD - Adding Materials
AutoCAD - Primitive Solids
AutoCAD - Boolean Operations And 3DEditing
AutoCAD - Changing From The Wcs To The Ucs
AutoCAD - Mapping Materials
AutoCAD - Creating New Materials
AutoCAD - Extra Projects And A Tutorial
AutoCAD - Putting It All Together - Model A Building
AutoCAD - Introduction To Rendering And Lighting
AutoCAD - Creating Animations

Cad Level 4 - Advanced Cad
AutoCAD - Template Files
AutoCAD - Using Osnaps
AutoCAD - Linetypes And Linetype Scale
AutoCAD - File Formats
AutoCAD - Grip Editing / Divide Command
AutoCAD - Inquiry Tools
AutoCAD - Xref's (External References)
AutoCAD - System Variables
AutoCAD - Tables
AutoCAD - Creating And Publishing Set Sheets
AutoCAD - Modifying And Creating Dimensions
AutoCAD - Different Types Of Dimensions
AutoCAD - Customizing in Autocad
AutoCAD - Exams And Certification

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AUTOMATA THEORY COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What Is Automata Theory?

Automata Theory is a branch of computer science that deals with designing abstract computing devices and automata, as well as computational problems that can be solved using them, so that all follow a predetermined sequence of operations automatically.

With Automata Theory, computer scientists are able to understand how machines compute functions and solve problems and more importantly, what it means for a function to be defined as computable or for a question to be described as decidable.

What is Automaton?

Automatons are abstract models of machines that perform computations on input by moving through a series of states or configurations. It's simply a limited representation of a formal language that may be an infinite set and they are often grouped by the class of formal languages they can recognize.

An Automaton with a finite number of states is called a Finite Automaton, while an infinite number of states is called Automaton.

Automaton Families

There are four major families of automaton and can be interpreted in a hierarchal form, where the finite-state machine is the simplest automata and the Turing machine is the most complex.

Finite-state Machine: An automaton in which the state set Q contains only a finite number of elements is called a finite-state machine (FSM). These are abstract machines, consisting of a set of states (set Q), set of input events (set I), a set of output events (set Z) and a state transition function. They are mostly used in designing of lexical analysis of a compiler

Pushdown Automata: Pushdown Automata is a finite automata with extra memory called stack which helps Pushdown automata to recognize Context-Free Languages. They are used in designing the parsing phase of a compiler, implementation of stack applications, evaluating the arithmetic expressions and solving the Tower of Hanoi Problem.

Linear-bounded Automata: A linear bounded automata is basically a multi-track non-deterministic Turing machine with a tape of some bounded finite length. The computation is restricted to the constant bounded area. They are basically used for the implementation of genetic programming, constructing syntactic parse trees for semantic analysis of the compiler.

Turing Machine: Turing machine is a finite automaton or control unit equipped with infinite storage (memory). Its "memory" consists of an infinite number of a one-dimensional array of cells. Turing's machine is basically an abstract model of modern-day computer execution and storage, developed in order to provide a precise mathematical definition of an algorithm or mechanical procedure. A Turing machine consists of a tape of infinite length on which read and writes operation can be performed. The tape consists of infinite cells on which each cell either contains an input symbol or a special symbol called blank.

Benefits of Automata Theory

There is are so many benefits in learning about Automata Theory:

1. Automata applications are endless, basically, Automata Theory helps you understand what computation means, from the basics of elementary models of computations all the way up to the Turing machine and its applications.

2. Studying Automata Theory makes you understand and shows you how to solve certain problems with these computational models, for example; learning about the fundamentals of compilers.

3. Automata Theory allows computer scientists to learn how machines compute functions and solve problems.

4. It also helps them to understand what it means for a function to be defined as computable or for a question to be described as decidable.

5. Benefits of learning about automata theory also include understanding the underlying principles between Web Search which is on the theory of pattern matching, Sequential Circuit which is on the theory of automata, Cryptography which is on the theory of computational complexity, Data Compression which is on the theory of information and a whole lot more. As a computer scientist, you can't do without Automata Theory.

6. It interprets the state of movement of machines using discrete graphs.

7. It analyzes the logic behind the computations of computer programs.

8. It explains the abstraction behind the movement of machines.

9. It is highly applicable in engineering fields such as mechanical engineering, electrical engineering and computer artificial intelligence (AI).

10. It is applicable in writing the logic for the production and research of new mechanical and electrical devices.

Features of Automata Theory

The features of Automata Theory includes the following but not limited to:

1. Deterministic Finite Automation:
In Deterministic Finite Automation, for each symbol you enter, one can find out the state to which the machine will move. Hence, it is called Deterministic Automaton. Seeing that it has a finite number of states, the machine is called Deterministic Finite Machine or Deterministic Finite Automaton. Deterministic here refers to the uniqueness of the computation.
A Deterministic Finite Automaton is defined as an abstract mathematical concept but is use cases are often seen in hardware and software for solving various specific problems. For example, a Deterministic finite model can model software that decides whether or not online user inputs such as email addresses are valid.
Finite (DFA) can be seen as a special kind of NFA, in which for each state and alphabet, the transition function has exactly one state.

2. Non-deterministic Finite Automaton:
In Non-deterministic Finite Automation, for a particular input symbol, the machine can move to any combination of the states in the machine. In other words, the exact state to which the machine moves cannot be determined. Hence, it is called Automaton. As it has of states, the machine is called Non-deterministic Finite Machine or Non-deterministic Finite Automaton.
A Non-Deterministic Finite Automaton (NFA), or Non-Deterministic Finite State Machine, does not need to obey these restrictions. In particular, every DFA is also an NFA. Sometimes the term NFA is used in a narrower sense, referring to an NFA that is not a deterministic Finite Automaton.

Automata Theory Study

Some of the things you will learn in this course include:

You will learn about Automaton Theories and how they operate. The Automaton is a self-propelled device that satisfies every condition of the Automata Theory.

The concept of Finite state machines, you will understand how they work. The Finite state machines are devices that tend to change their state when input is been made into the machine. An example is the Turnstile machine.

You will understand how the schematic of a Finite state machine is being obtained from a table of languages or strings and how possible it will be for the schematic to change its state if an input defined within the schematic is made.

You will understand DFA also known as the Deterministic Finite Automaton and non-DFA. The languages and grammar, how to write a string of codes that serve as algorithms for the automatic computational process of a mass.

Turing machines and their types such as:
Non-Deterministic Turing Machines, Semi Infinite Tape, Turine Machines, Multi Tape and Multi-Track Turing Machines.

Decidability such as:
The Decidable languages and The unDecidable languages. You will also understand the Fundamentals of Automata Theory and a lot more.

In the Full Course, you will learn everything you need to know about Automata Theory withCertificate to showcase your knowledge and competence.

Automata Theory Course Outline

Automata Theory - Introduction
Automata Theory - Deterministic Finite Automaton
Automata Theory - Non-deterministic Finite Automaton
Automata Theory - NDFA to DFA Conversion
Automata Theory - DFA Minimization
Automata Theory - Moore & Mealy Machines
Automata Theory - Introduction to Grammars
Automata Theory - Classification of Grammars
Automata Theory - Language Generated by Grammars
Automata Theory - Chomsky Grammar Classification
Automata Theory - Regular Grammar
Automata Theory - Regular Expressions
Automata Theory - Regular Sets
Automata Theory - Arden's Theorem
Automata Theory - Constructing FA from RE
Automata Theory - Pumping Lemma for Regular Grammar
Automata Theory - DFA Complement
Automata Theory - Context-Free Grammar
Automata Theory - Ambiguity in Grammar
Automata Theory - CFL Closure Properties
Automata Theory - CFG Simplification
Automata Theory - Chomsky Normal Form
Automata Theory - Greibach Normal Form
Automata Theory - Pumping Lemma for CFG
Automata Theory - Pushdown Automata
Automata Theory - Pushdown Automata Acceptance
Automata Theory - PDA & Context-Free Grammar
Automata Theory - PDA & Parsing
Automata Theory - Turing Machine
Automata Theory - Accepted & Decided Language
Automata Theory - Multi-tape Turing Machine
Automata Theory - Multi-Track Turing Machine
Automata Theory - Non-Deterministic Turing Machine
Automata Theory - Semi-Infinite Tape Turing Machine
Automata Theory - Linear Bounded Automata
Automata Theory - Decidability
Automata Theory - Language Decidability
Automata Theory - Undecidable Language
Automata Theory - Turing Machine Halting Problem
Automata Theory - Rice Theorem
Automata Theory - Post Correspondence Problem
Automata Theory - Exams and Certification

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AVIATION MANAGEMENT COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Aviation Management?

Aviation Management can be defined as the process of managing the overall workflow of airlines, airports and other businesses connected to aviation.

What is Aviation?

Aviation is the overall activities associated with the flying of aircraft. The Aviation word originated from a Latin word Avis which means bird. The name was coined by Guillaume Joseph Gabriel de La Landelle - a French pioneer in 1863.

What is Airline?

Airline: Airline is a company or organisation that owns an aircraft, operates and carry passengers and cargo to different places in the world.

Types of Aviation Carriers

In Aviation, There are Two types of carriers:

1. Low Cost Carrier: This is also referred to as a low cost airline, an airline is considered low cost if it's emphasis is on minimizing operational cost by lowering fares and comfort, they may sometimes charge passengers for extras like food, seat-allocation, priority boarding, baggage etc.

2. Full Service Carrier: Also referred to as a full service airline, it offers passengers in flight entertainment, checked baggage, meals, beverages and comforts such as blankets and pillows in the ticket price. The seats generally have more recline than a low cost carrier as well as more leg room.

Aviation Softwares

There are softwares used in aviation industry, such as:

1. Aircraft Maintenance Software,
2. Network and Route Performance Management Software,
3. Catering Procurement Software,
4. Fuel Management Software,
5. Catering Production software,
6. Flight Information Display System and
7. Departure Control System.
8. Flight Software for Aircrafts

Features of Aviation

1. The Aviation Terminologies: Some of The Common Terms Used in Aviation are as follows:

ANSP: Air Navigation Service Provider,
AIRPORT: This is where aircraft takes off and lands
AEROSPACE: The total surrounding of the Airport
AIRLINER: An aircraft for transporting passengers and air cargo
RUNWAY: A land area prepared for the landing and takeoff of aircraft
TERMINAL: It is where passengers are able to get on and off aircraft.
AIRSPACE: The portion of the atmosphere controlled by a country above its territory.
TARMAC: The tarmac is the area from which planes take off at an airport.
APRON: This is the area of an airport where aircraft are parked, unloaded or loaded, refueled, or boarded.
PROHIBITED AREA: An area which flight of aircraft is not allowed.
AIR SIDE,
LAND SIDE,
AIRCRAFT CABIN: This is a confined section in the aircraft for passengers or for Cargo.

2. The Organisational Structure of an Airline: This is the cockpit positions in Flight which explain the various personnel that operate in the flight deck, and they include:
The Pilot,
The First and Second Pilot,
The Flight Engineer and
Airborne Sensor Operator.

3. Aviation Safety Management: This has to do with the processes involved in the management and the reduction of harm to passengers, staff and equipment.

4. Aviation Disaster Manangement: This is the prevention and the process of managing accident or incident.

5. International Law: This is the law that regulates Aviation activity internationally.

6. Emerging Trends In Aviation: This is the various activities that collaborate to bring effective aviation performances, such as Airport management, Aircraft manufacturers, Travel Agent, Banking partners etc.

In the Full course, you will learn everything you need to know about **Aviation Management** with **Certificate** to showcase your knowledge.

Benefits of Aviation Management

1. Flexibility in Staffing: Accessing the right cabin crew when you need it can be a daunting task. Likewise, expert maintenance staff aren't always around when you need them. Aviation management, gives you access to the firm's range of contacts in crew, pilots, and maintenance.

2. Immediate Expertise: Outsourcing aviation management means drawing from a larger talent pool, offering a broader set of capabilities in staffing. Where in-house staff need to be trained in competencies and certifications (often at the expense of the business), outsourced talent pools can offer immediate expertise across multiple niches.

3. Reduced Maintenance Costs: It's well known that outsourcing can save you considerable costs on maintenance.

4. Cutting Edge Aviation Technology: Few industries benefit from improvements in technology like aviation. Aviation management gives you better fuel efficiency, smoother, faster flights, and access to modern conveniences while at 40,000 feet are only achievable by staying up to date with the latest in air flight technology.

5. Better Finance: Using a professional aviation manager increases your odds of getting finance on your next purchase. Most avaiation finance companies looking to financing prospective clients that have a manager.

6. Safety: Your safety is paramount. When it comes to aircraft management leave nothing to chance, go with an outsourced name you can trust. Having an aviation manager gives you peace of mind and you can gain from their wealth of experience.

Why Study Aviation Management?

1. Stand Out: Studying aviation management sets you apart from the competition and gives an additional boost to degrees.

2. Climb the Management Ladder: Aviation management prepares you to take up roles in administration or operations where you may handle topics in human resources, airport planning, budgeting, scheduling, airline management, flight operations, airport management, project management, etc.

3. Be Equiped: You may need a course in aviation management if you want to boost your portfolio combined with degrees in other areas in the industry.

4. Increase your Earning Potential: A diploma aviation management gives you an opportunity to earn more, because most people don't usually take this route, making the few people in the field receive high earnings.

5. Job Opportunities and Career Advancement.

Aviation Management Course Outline

Aviation Management - Introduction
Aviation Management - IT
Aviation Management - Terms Used in Aviation
Aviation Management - Airline Management
Aviation Management - Airline Financial Management
Aviation Management - Airline Route Planning
Aviation Management - Airline Marketing
Aviation Management - Airport Management
Aviation Management - Airport General Layout
Aviation Management - Airport Planning and Development
Aviation Management - Airport Financial Management
Aviation Management - Aviation Safety Management
Aviation Management - Aviation Disaster Management
Aviation Management - International Air Law
Aviation Management - Concerns in Aviation
Aviation Management - Careers in Aviation
Aviation Management - Emerging Trends in Aviation
Aviation Management - Video Lectures
Aviation Management - Exams and Certification

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BASIC COMPUTER SKILLS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Basic Computer Skills?

A Computer is simply an electronic device that can store, retrieve and process data.

Basic Computer Skills is the study of the fundamental components and uses of a Computer (PC).

A Computer is divided into:
Hardware, which is the physical structure such as Monitor, Keyboard, Mouse, Computer Case, Motherboard; and
Software, which are set of instructions which tell the hardware what to do and how to do it; like the web browsers, word processors, games and file explorers.

Types of Computer

There are many different types of computers which include:

Desktop Computers: These types of computers have the computer case, monitor, keyboard, and mouse.

Laptop Computers: is another type of computer which is bettery-powered computer and can be carried along because of its portability and can be used anywhere.

Tablets Computers: which can be handled and are more portable than laptops and use a touch sensitive screen for navigation and typing, e.g. iPad.

Server Computers: We also have server computers that serves up information to other computers on a network.

Features of Computer

It should be noted that Personal Computers come in two styles: PC and Mac, with different look. However, PC is the most commonly used computer and has Microsoft Windows Operating System. Mac (Macintosh) computer on the other hand use the Mac OS X Operatin System and are produced by Apple Company.

A PC Computer has some parts which include the Computer Case, Monitor, Keyboard, Mouse, and Power Cord, all of which play a very important roles. However, Laptop Computers may not necessarily have all these parts separately because thay are built in. For instance, while Desktop Computer has mouse that lets you point to objects on the screen, Laptop uses Touchpad which is touch sensitive pad that lets you control the pointer by making drawing motion with your finger.

When one looks inside the computer case, some of the things you find include Motherboard, Central Processing Unit CPU(Processor), Random Access Memory RAM, Hard Drive as well as Power Supply Unit. However, most computes have expansion slots on the Motherboard that allow you to add various other types of expansion cards.

It should also be noted that the computer hardware and software job rely on Operating System OS, which makes different programs to run at the same time. There are three most commonly used Operating Systems which are **Microsoft Windows, Mac OS X** and **Linux.**

Computer uses applications for its operations, which are softwares that allow you to do some tasks. Example of computer apps that are popular include **Word Processors, Web Browsers, Media Players, Games** to mention but few. There are many other applications which can be installed on the computer, or uninstall if you don't want to use them anymore.

In the Full Course, you will learn everything you need to know about **Basic Computer Skills** with **Certification** to showcase knowledge/skill gained.

Basic Computer Skills Course Outline

Basic Computer Skills - What is a Computer
Basic Computer Skills - Hardware Basics
Basic Computer Skills - Basic Parts of a Computer
Basic Computer Skills - Buttons and Ports on a Computer
Basic Computer Skills - Inside a Computer
Basic Computer Skills - Laptop Computers
Basic Computer Skills - Mobile Devices
Basic Computer Skills - Software Basics
Basic Computer Skills - Understanding Operating Systems
Basic Computer Skills - Understanding Applications
Basic Computer Skills - Using a Computer
Basic Computer Skills - Setting Up a Computer print
Basic Computer Skills - Getting Started with Your First Computer
Basic Computer Skills - Getting to Know the OS
Basic Computer Skills - Using the Internet
Basic Computer Skills - Connecting to the Internet
Basic Computer Skills - Getting Started with the Internet
Basic Computer Skills - Understanding the Cloud
Basic Computer Skills - Safety and Maintenance
Basic Computer Skills - Keeping Your Computer Clean
Basic Computer Skills - Protecting Your Computer
Basic Computer Skills - Creating a Safe Workspace
Basic Computer Skills - Basic Troubleshooting Techniques
Basic Computer Skills - How to Use Your Computer's Built-in Help
Basic Computer Skills - Learning a New Program
Basic Computer Skills - Bringing Your Files with You
Basic Computer Skills - Using Accessibility Features
Basic Computer Skills - Exams and Certification

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BASICS OF COMPUTER SCIENCE COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Basics of Computer Science?

A Computer is a programmable device that is capable of performing arithmetic and logical operations both automatically, simulteanously and sequentially in a given or instructed direction. It is also known as multi-data processor such that it can process, store and retrieve data of various kinds as directed by the user.

Basics of Computer Science is the study of computers and computing systems. Computer scientists deal mostly with software and software systems; such as the computing theories, design, development and application.

The earliest discovery of computer science was based on calculations. Calculating fixed numerical tasks with Abacus, aiding in computations such as large multiplication and division. Wilhelm Schickard designed and developed the first standard mechanical calculator in 1623. And In 1673, Gottfried Leibniz developed a digital version of the mechanical calculator, called the Stepped Reckoner.

Charles Babbage started the design of the first automatic mechanical calculator, called Difference Engine, in 1822, which eventually gave him the ideaof the first standard programmable mechanical calculator, called Analytical Engine machine in 1834.

The early computers was based on calculations and has evolved into Modern Computers with many functions and uses.

Major Components of Modern Computers

The major components of modern computers are:
1. Hardware,
2. Software,
3. Human ware,
4. Bridgeware and
5. Firmware.

Hardware is regarded as the physical components of the computer system that can be seen and touched through which the user communicate with the computer.
Examples are:
1. CPU,
2. Keyboard,
3. Monitor among others.

Software is regarded as the soft untouchable components which controls the activities or functions of the computer. Such as:
1. System Software,
2. Application Software and
3. E-Accessory software

Advantages and Functions of Computer Science

1. Independency
2. Ease of Operations
3. Ease of Data sharing
4. Speed
5. Enhances the security system
6. It accept commands as input as given by the user.
7. It processes data as instructions.
8. It follows instruction and store data given by the user.
9. Automation
10. Reliability
11. Storage
12. Diligence
13. Vast memory
14. Accessibility
15. Ease to use
16. Interaction with other media
17. Low cost
18. Security
19. Solves large and complex Calculations
20. Ease of Communication

Basics of Computer Science Study

In the Full course you will learn everything you need to know about Computer Science Basics. You will fully understand the many components such as Hardware, Software, Networking, Multimedia, The Networking which is seen as the interconnection of Computer systems for the purpose of sharing resources and Types of Networking which includes LAN, WAN, and MAN.

Computer Security and Viruses are also part of the elements of this course. Multimedia components such as audio, video graphics, text, animation and many more. At the end of the program you will be awarded **certificate in Basics of Computer Science** upon successful completion of the exams.

Duration: Study At Your Own Pace.
Certification of Completetion

Basics of Computer Science Course Outline

Basics of Computer Science - Fundamental Concepts
Basics of Computer Science - Role of Computer in Todays World
Basics of Computer Science - Computer System
Basics of Computer Science - Programming Languages
Basics of Computer Science - Hardware and Software
Basics of Computer Science - Analog and Digital
Basics of Computer Science - Operating System
Basics of Computer Science - Internet
Basics of Computer Science - Types of Computer
Basics of Computer Science - Computer Networking Terminology
Basics of Computer Science - Computer Applications
Basics of Computer Science - Generations of Computer
Basics of Computer Science - Data Processing
Basics of Computer Science - Computer Networking
Basics of Computer Science - Computer Related Jobs
Basics of Computer Science - Electronic Commerce
Basics of Computer Science - Software Programming
Basics of Computer Science - Algorithm Flowchart
Basics of Computer Science - Extranet
Basics of Computer Science - Mobile Computer
Basics of Computer Science - Windows Desktop Elements
Basics of Computer Science - Computer Multimedia
Basics of Computer Science - Computer Security
Basics of Computer Science - Computer Threat
Basics of Computer Science - Computer Virus
Basics of Computer Science - Short-Cut Keys
Basics of Computer Science - Exams and Certification

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BASIC ELECTRONICS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Basic Electronics?

Basic Electronics is the fundamental electronic components that makes up the part of any electronic equipment.

What is Electronics

Electronics is the branch of physics and technology that is concerned with the design of circuits using transistors, microchips and other elect-elect components.

Components of Basic Electronics

The basic electronic components we have includes:

1. Resistors
2. Transistors
3. Capacitors
4. Diodes
5. Inductors
6. Transformers

Resistors

Resistors: Resistors are circuit element designed to resist the flow of electrons called current. The Types of Current we have are **AC** and **DC,** and the difference between AC and DC is: AC is **Alternative Current** while DC is **Direct Current.** We can get AC on the wall while we can get DC on batteries, phones, laptops, chargers etc. The types of Resistors we have are:

1. Circuit Connections in Resistors
2. Non-linear Resistors
3. Linear Resistors
4. Fixed Resistors

Transistors

Transistors: Transistors allows current to flow in more than one direction. The types of transistors we have are:

1. Bipolar Junction Transistor - BJT
2. Field Effect Transistor - FET

Capacitors

Capacitors: Capacitors are circuit elements designed to represent the opposite of resistors: They usually store our electrical power. The types of transistors we have are:

1. Ceramic capacitors
2. Film capacitors
3. Power film capacitors
4. Electrolytic capacitors
5. Super capacitors
6. Class X and Class Y capacitors
7. Miscellaneous capacitors
8. Variable capacitors

Diodes

Diodes: The diodes are circuit element that allows current to flow only in one direction. The types of diodes we have are:

1. Backward Diode,
2. BARITT Diode,
3. Gunn Diode,
4. Laser Diode,
5. Light emitting diodes,
6. Photo diode,
7. PIN diode,
8. PN Junction,
9. Schottky diodes,
10. Step recovery diode,
11. Tunnel diode,
12. Varactor diode,
13. Zener diode

Inductors

Inductors: Inductors are also known as coil, reactor or choke. They are the electronic components that stores energy in form of a magnetic field. The types of diodes we have are:

1. Air Core Inductor
2. Iron Core Inductor
3. Ferrite Core Inductor
4. Iron Powder Inductor
5. Laminated Core Inductor
6. Bobbin based inductor
7. Toroidal Inductor
8. Multi-layer Ceramic Inductors
9. Film Inductor
10. Variable Inductor
11. Coupled Inductors

Transformers

Transformers: Transformers comprises of both a primary coil to which input is given and a secondary coil from which the output is collected. The types are:

1. Air-core Transformer
2. Iron Core Transformers
3. Auto Transformer
4. Power Transformers
5. Measurement Transformers
6. Distribution Transformers

In the Full course, you will learn everything you need to know about **Basic Electronics** with **Certification** to showcase your knowledge.

Basic Electronics Course Outline

Basic Electronics - Introduction
Basic Electronics - Materials
Basic Electronics - Energy Bands
Basic Electronics - Semiconductors
Basic Electronics - Hall Effect
Basic Electronics - Resistors
Basic Electronics - Circuit Connections in Resistors
Basic Electronics - Non-linear Resistors
Basic Electronics - Linear Resistors
Basic Electronics - Fixed Resistors
Basic Electronics - Capacitors
Basic Electronics - Circuit Connections in Capacitors
Basic Electronics - Variable Capacitors
Basic Electronics - Fixed Capacitors
Basic Electronics - Polarized Capacitors
Basic Electronics - Inductors
Basic Electronics - Inductance
Basic Electronics - Circuit Connections in Inductors
Basic Electronics - Types of Inductors
Basic Electronics - RF Inductors
Basic Electronics - Transformers
Basic Electronics - Types of Transformers
Basic Electronics - Transformers based on Usage
Basic Electronics - Transformer Efficiency
Basic Electronics - Diodes
Basic Electronics - Junction Diodes
Basic Electronics - Special Purpose Diodes
Basic Electronics - Optoelectronic Diodes
Basic Electronics - Transistors
Basic Electronics - Transistor Configurations
Basic Electronics - Transistor Regions of Operation
Basic Electronics - Transistor Load Line Analysis
Basic Electronics - Types of Transistors
Basic Electronics - JFET
Basic Electronics - MOSFET

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BASIC ELECTRICALS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Basic Electricals

Basic Electricals are the fundamental components of any electrical system and the method with which electrical devices are engineered to work.Basic Electrical

Components include: Electricity, Electric Voltage, Electric Current, Resistance, Inductors, Capacitors, Power etc.

What is Electricity?

Electricity is the movement of electric charge which is considered by convention to be from positive to negative.

Electricity is Everywhere; it lights our homes, streets, roads, cooks our food and something we use everyday - in our day to day activities. So where does it come from and how does it work? In its simplest terms discussed below.

How Electricity is Generated

There are three basic ways by which we generally produce electricity.

1. Electromechanical Process: In this process, a conductor moves in a magnetic field and the conductor cuts the field flux lines electricity is produced in the conductor. All electrical generators such as DC generators, alternators, and all kinds of dynamos work based on this principle.

2. Electrochemical Process: In this process, chemical energy gets converted to electrical energy. Battery electricity is produced due to chemical reactions.

3. Solid State Electric Generation: This is the most modern process of electricity generation. This is when free electrons and holes are generated at a PN junction and distribution of charge carriers gets imbalanced across the PN junction when the junction is exposed in the light. These free electrons and holes and their imbalanced distribution across the junction cause electricity in an external circuit. On this principle, PV solar cells work.

Basic Electricals Concept

The Concept behind Basic Electricals include:

1. Electric Charge
2. Electric Conductors
3. Semi-Conductors
4. Insulators
5. Current
6. Power

Electric Charge: The concept of electricity arises from an observation of nature. We observe a force between objects, that, like gravity, acts at a distance. The source of this force has been given the name Electric Charge.
A very noticeable thing about electric force is that it is large, far greater than the force of gravity. Unlike gravity, however, there are two types of electric charge. Opposite types of charge attracts, and the like types of charge repels. Gravity has only one type which only attracts, never repels.

Conductors: Conductors are any material or substances which allows electricity to flow through them. They also allow the transmission of heat or light from one source to another. Conductors are made of atoms whose outer or valence electrons have relatively weak bonds to their nuclei. When a bunch of metal atoms is together, they gladly share their outer electrons with each other, creating a "swarm" of electrons not associated with a particular nucleus. A very small electric force can make the electron swarm move. Copper, gold, silver, and aluminum are good conductors.

Insulators: Insulators are materials whose outer electrons are tightly bound to their nuclei. Modest electric forces are not able to pull these electrons free. When an electric force is applied, the electron clouds around the atom stretch and deform in response to the force, but the electrons do not depart. Glass, plastic, stone, and air are insulators.

Semi-Conductors: materials fall between insulators and conductors. They usually act like insulators, but we can make them act like conductors under certain circumstances. The atomic-level details of how semiconductor devices work are governed by the theories of quantum mechanics.

Current: Current is the flow of charge. This flow of electrical charge is referred to as electric current. Current is reported as the number of charges per unit time passing through a boundary. Since electrons are free to move about in metals, moving electrons are what makes up the current in metals.

Power: Power is the rate of energy (U) that is transformed or transferred over time. Electric power is the rate of energy consumption in an electrical circuit. We measure power in units of joules/second, also known as watts. An electric circuit is capable of transferring power. Current is the rate of flow of charge, and voltage measures the energy transferred per unit of charge.

Advantages of Studying Basic Electricals

1. It helps to understand how electrical devices work.
2. It helps to make simple and accurate electrical calculations and decisions.
3. It helps to be aware of some basic electrical connections for safety.
4. It helps to be aware of the basic concepts of electricals.
5. It creates job employment for electricians.
6. It creates a self-employment opportunity.

Components of Basic Electricals

1. Electricity
2. Electric Resistance
3. Electric Voltage
4. Electric Power
5. Electric Current
6. Electric Efficiency
7. Resistor
8. Inductor
9. Capacitor
10. Electromagnetism
11. Electrostatic

Electricity is the set of physical bodies linked with the presence and motion of matter that has a property of electric charge.

Electric Resistance is an electrical quantity that measures how the devices reduces the current flowing through it. Resistance R =pxi/A or R=V/i.

Electric Voltage is the electric potential difference between two points of an electric field. e.g. V which is the voltage is equal to Q2 - Q1 which is the electric potential difference at two different points.

Electric Power is the rate at which energy is consumed in an electric circuit. it is usually measured in watts: P=E/t.

Electric Current is the rate at which electric charge flows past a point or region. This means that an electric current exists when there is a flow of electric charge through a region.

Electric Efficiency is the ratio of output/input power.

Resistor is an electrical component that carries out the electrical resistance function to reduce current flow, adjust signal levels, divide voltages, and terminate transmission lines where necessary.

Inductor is also known as a Coil, Choke, or Reactor. An inductor is an electrical component that stores energy in a magnetic field when electric current flows through it.

Capacitor is an electrical component that is responsible for storing electrical energy in an electric field. The effect of a capacitor is termed as Capacitance. The Capacitor was originally termed as a Condenser or Condensator.

Electromagnetism is a branch of physics involving the study of both electric fields and magnetic fields which are responsible for the electromagnetic force.

Electrostatics is a branch of physics that studies stationary electric charges or fields electric charges as opposed to electric currents.

In the Full Course, you will learn everything you need to know about **Basic Electricals** with **Certificate** award upon successful completion of the exams.

Basic Electrical Course Outline

Basic Electrical - Introduction
Basic Electrical - DC Circuits
Basic Electrical - Electromagnetic Induction
Basic Electrical - A.C Circuits
Basic Electrical - Network Theory
Basic Electrical - Three Phase Supply
Basic Electrical - Basic Instruments
Basic Electrical - Transformer
Basic Electrical - D.C Machines
Basic Electrical - Three-Phase Synchronous Machines
Basic Electrical - Three-Phase Induction Motors
Basic Electrical - Single Phase Induction Motors
Basic Electrical - Power System
Basic Electrical - Domestic Wiring
Basic Electrical - Video Lectures
Basic Electrical - Exams and Certification

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BASIC LABORATORY SKILLS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Basic Laboratory Skills?

Basic Laboratory Skills is the combination of methods, techniques and procedures required to carry out technological and scientific research, experiments and measurements in the laboratory.

A Laboratory can be defined as a building, special room or facility that offers precisely regulated conditions in which technological, scientific research, scientific experiments and measurement can be carried out. Laboratory services are implemented in a variety of settings such as in a physician's office, hospitals, clinics and regional or national referral centers.

Laboratories that are used for scientific research take various forms because of the varying conditions of specialists in the various fields and areas of science and engineering. A physics laboratory, for example, might contain a vacuum chamber or a particle accelerator, whereas a metallurgy laboratory might only have equipment for casting or refining metals or for testing the strength of metals.

A biologist or chemist might use a wet laboratory, while a psychologist's lab might be a room with one-way mirrors and lots of hidden cameras in which they use to observe client's behaviors. In some laboratories, such as those that are usually used by computer scientists, computers (in some cases, supercomputers) are used for either for the purpose of simulation or for data analysis. Scientists in other fields will still use other types of laboratories. Engineers as well make use of laboratories to design, build, and test various technological devices.

Despite the pre-defined notion of a lab as a confined space mainly for experts, the term "laboratory" is also frequently applied to areas of workshop such as Fab Labs, Living Labs, or Hackerspaces with computers, in which people meet to work together on societal problems or to make prototypes, for collaborations to share resources. This development is majorly inspired by new, and participatory approaches to science and various innovations and it relies on user-centered design methods and concepts such as Open innovation or User innovation.

Scientific Laboratories can be used as a room for both research, experiment and learning spaces in various schools and universities, industry, government, or even in military facilities and even on top ships and spacecraft.

Laboratory Skills and Techniques are the set of procedures and methods that are used on natural sciences such as chemistry, biology, physics to carry out an experiment, most of them follow a predefined scientific method; while some of them require the use of complex laboratory equipment from laboratory glassware to electrical devices, and others require more specific or very expensive supplies.

Features of Basic Laboratory Skills

1. Laboratory Safety
2. Chemical Storage
3. Acid / Base Safety
4. Risk Assessment & COSHH
5. Sample Handling and Storage
6. Housekeeping
7. Assessment
8. Measurement of errors
9. Accuracy and Precision
10. Statistical Measures
11. Volumetric Lab Equipment
12. Containers and Substances
13. Balance Specification
14. Assessment
15. Measuring pH
16. Titrations
17. How to Carry Out a Titration
18. End Point Polarization
19. Calibration, Maintenance, and Troubleshooting of Karl Fischer Autotitrators
20. UV-visible Spectroscopy
21. Choice of Solvent, Effect of Solvent, Concentration, pH, and Temperature on UV-visible Spectroscopy
22. Troubleshooting UV-visible Spectroscopy
23. Proper Handling of Lab Equipments.

Benefits of Basic Laboratory Skills

There are lots of Benefits and Advantages of gaining Basic Laboratory Skills and some of them are:

1. Required Tasks: Understanding the required steps, you would be able to carry out necessary tasks in the laboratory, such as providing right information for patient diagnosis and treatment by performing tests in chemistry, toxicology, hematology, immunology and microbiology laboratories, receiving, typing, testing and recording blood bank inventories.

2. Risk Assessment: This is the identification of hazards and risk factors that can cause harm (hazard identification). Analyzing and evaluating the associated risk with that hazard (risk analysis and risk evaluation).

3. Accuracy and Precision: Accuracy and Precision is very important skill to achieve accurate and precise reading, such as determining blood count level.

4. Assessment of Lab Procedures: This is the assessment of Laboratory techniques and procedures performed on patient specimens to detect biomarkers and diagnose diseases, such as blood samples, urine, semen or tissue samples can be analysed using biochemical, microbiological and cytological procedures.

5. Laboratory Safety: This refers to the prevention of laboratory accidents through great care and vigilance.

Why Study Basic Laboratory Skills

1. First to Detect Clues: Medical laboratory science provides clues that are key in the diagnosis and treatment of disease or injury, and laboratory professionals are the detectives of the healthcare world. They provide clues that are key in the diagnosis and treatment of disease or injury and assist in the maintenance of healthy lifestyles. Clues to solving the mysteries of diseases are found in our own bodies. Laboratory tests monitor the composition of our blood, urine, and other body fluids and tissues for early warning signs of disease.

2. Perform Tests: This is carrying out test that are crucial to our health and well-being. Lab professionals play a critical role in collecting the information needed to give the best care to an ill or injured patient. They find great satisfaction in their work, knowing that they are helping others and are saving lives.

3. Diagnose Patient's History: Lab professionals and scientists measures blood cholesterol and blood sugar, tests for anemia, checks the urine for protein, identifies strep throat bacteria, prepares blood for transfusion, and even determines if a hit and run driver was under the influence of alcohol or not.

4. Versatile Skills: Medical laboratory professionals work in many settings: hospitals, doctor's offices, clinics, research facilities, public health centers, the Armed Forces, veterinary offices, colleges, business, and industry. Academic achievements and technical ability set the level for responsibility one reaches in medical laboratory science.

5. Problem Solving and Critical Thinking: Enhance your problem solving skills and also gain exposure to reactions, materials, and equipment in a lab setting.

6. Job Opportunities and Career Advancement: An increasing number of companies are bringing up the need for Lab specialists and professionals. If you are in the look for career opportunities that are available in this field, they are large.

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Every Life, Every Moment, Every Day. A New Discovery...

BEHAVIOUR DRIVEN DEVELOPMENT (BDD) COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Behavior Driven Development (BDD)?

Behavior Driven Development (BDD) is an Agile Software Development process that enhances collaboration among developers, QA and or business participants in a software project.

BDD uses examples to illustrate the behavior of the system that is written in a readable and understandable language for everyone involved in the development.

At its core, Behavior Driven Development is a software development methodology that joins best practices gotten from development (TDD) and design (DDD) to simplify development through the use of a common language (DSL) to understand natural language sentences and convert them into executable tests, an example is the testing framework on ruby on rails.

Use Cases of Behaviour Driven Development

BDD is a way for software teams to close the gap between business people and technology. BDD has so many use cases and the following is a list:

1. Encouraging collaboration across roles to build a shared understanding of the problem to be solved.
2. Working in rapid, small iterations to increase feedback and the flow of value.
3. Producing system documentation that is automatically checked against the system's behavior.
4. Deals with below conducting behavior-specific tests or functional specifications that outline executable scenarios for the application.
5. Identifying a single outcome for every behavior.
6. Translating each scenario into a domain-specific language (DSL) to ensure accurate communication.
7. Gathering all behaviors into one set of documentation so it is accessible for all developers, testers, and stakeholders.

Behavioral Specifications: Defining behaviors within BDD is achieved through user stories. User stories are written-out scenarios that hold some sort of baseline title that summarizes the intent, a narrative section that describes the who and what that should be involved in achieving this story requirement, and the scenarios section that describes a series of specific scenarios via if-then-style conditions.

Ubiquitous Language: BDD heavily indicates the influence of a ubiquitous language, which known as domain-specific language or DSL. DSL should be plainly outlined and agreed upon early by all team members in the development life cycle. DSL paves way for easy communication about the domain of the project and should be both simple and robust enough to support discussion between all types of personnel, from developers and team leaders to customers and business executives.

Using Specialized Tools: Behavior-driven development is massively supported by specialized tools that help in the creation and execution of testing suites. Just like automated testing tools used in test-driven development, BDD tools will similarly perform automated tests in an aim to streamline the development process.

Benefits of Behaviour Driven Development

The benefits of developments are countless, some of which are:

1. The user needs are achieved through software development.
2. BDD improves code quality thereby reducing the cost of maintaining the project.
3. BDD makes sure that the software is designed based on the client's business principle.
4. Teams using BDD are more confident in their code.
5. High visibility.
6. Strong collaboration.
7. It's a ubiquitous language.
8. BDD focus on user needs.
9. Better communication between developers, testers and product owners.
10. Because BDD is explained using simple language, the learning curve will be much shorter.
11. Being non-technical in nature, it can reach a wider audience.
12. The behavioral approach defines acceptance criteria prior to development.
13. You are no longer defining 'test', but are defining 'behavior'.
14. BDD lets us develop, test and think about the code from the view of the business owner.

Features of Behaviour Driven Development

Below are some of the features of a few Behaviour Driven Development tools:
CUCUMBER: Cucumber is a test framework that supports BDD, and some of its features are:
1. Integration with all the most popular testing libraries.
2. Specifying the behavior looking at the system from the outside.
3. Defining executable specifications in different ways like lists, prose and tabular data.
4. The plain text files can be stored in any version control system.
5. Collaboration and coming up with a good and clear set of Acceptance Criteria.

JBEHAVE: is a similar alternative to Cucumber, and some of its features are:
1. Pure Java implementation, which plays well with or when interfacing any environment that exposes a Java API.
2. Users can choose and run text-based user stories, "out-in" development.
3. User stories can be written in JBehave syntax Gherkin syntax.
4. User stories can be documented via generic user-defined meta information that allows easy story filtering and into story maps.
5. Dependency Injection support allowing both configuration and Steps instances composed via your container (Guice, Needle, PicoContainer, Spring, Weld).
6. Localization of user stories, allowing them to be written in any language.
7. Groovy scripting supported for writing configuration and Steps instances
8. Pluggable step strategy. Strategies bundled in include: by priority field and by Levenshtein Distance.
9. Auto-generation of pending steps so the build is not broken missing step, but has to configure breaking build.
10. IDE integration: stories can be run as JUnit tests or unit test frameworks, providing easy integration IDE.
11. Ant integration: allows stories to be run via Ant task
12. Annotation-based binding of textual steps to Java methods, with auto-conversion of string arguments to any parameter type (including generic types) via custom parameter converters.
13. Story report format in JSON and XML, consumable by external applications.

Behavior Driven Development (BDD) Course Outline

Behavior Driven Development - Introduction
Behavior Driven Development - Development
Behavior Driven Development - TDD in a BDD Way
Behavior Driven Development - Specifications by Example
Behavior Driven Development - Tools
Behavior Driven Development - Cucumber
Behavior Driven Development - Gherkin
Behavior Driven Development - SpecFlow
Behavior Driven Development - Video Lectures
Behavior Driven Development - Exams and Certification

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BIOMETRICS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Biometrics?

Biometrics is a technology that identifies, analyzes and measures the unique physical and behavioral characteristics of an individual. It is mainly used for identification and access control, or for identifying individuals who are under surveillance. Among the features measured are the face, fingerprints, hand geometry, handwriting, iris, retinal, vein and voice.

Biometrics is an information technology branch that seeks to create a private trait-based identity. The term "Biometrics" consists of two phrases: "Bio" (Greek word for life) and "Metrics."

Biometrics is currently a buzzword in the information security domain as it offers a high degree of precision in an individual's identification.

Types of Biometrics

The major types of biometric identifiers are based on either physiological characteristics or behavioral characteristics.

Facial Recognition: The analysis of facial features or patterns for the authentication or recognition of an individual's identity. It is a category of biometric software that maps an individual's facial features mathematically and stores the data as a faceprint. Most face recognition systems either use eigenfaces or local feature analysis.

Fingerprints: It is the process of electronically obtaining and storing human fingerprints. The use of the ridges and valleys (minutiae) found on the surface tips of a human finger to identify an individual. It involves the automated capture, analysis, and comparison of a specific characteristic of the human body. There are several different ways in which an instrument can bring out the details in the pattern of raised areas (called ridges) and branches (called bifurcations) in a human finger image.

Finger Geometry: This is the use of 3D geometry of the finger to determine individual identity. It involves the process of extracting information provided by the 3D structure of the hand, and more specifically the fingers, as captured by a 3D sensor.

Iris Recognition: This involves the use of unique information found in the iris to identify an individual.

Vein Recognition: This is also known as vascular biometrics, which refers to technology that measures parts of a subject's circulatory system which is as unique to her as a fingerprint. It uses optical scanning technology to capture vein images in your palm, finger, or eyeball to identify and individual.

Retina Recognition: This is the use of patterns of veins in the back of the eye or retinal blood vessel to identify and recognize an individual. Retina scanners are in use in many military bases, nuclear reactors, and other high-security locations due to their strength as a security measure.

Voice Recognition: This is a type of individual identification that uses voiceprint biometrics technology. This heavily relies on the vocal characteristics of an individual.

DNA Matching: This is the identification of an individual using the analysis of segments from DNA. A DNA "picture" features columns of dark-colored parallel bands and is equivalent to a fingerprint lifted from a smooth surface. To identify the owner of a DNA sample, the DNA "fingerprint," or profile, must be matched, to a DNA profile stored in a database.

Gait Recognition: This is the use of individuals walking style or gait to determine identity. This simply refers to automated vision methods that use video of human gait to recognize or to identify a person.

Hand Geometry Recognition: This is the use of the geometric features of the hand such as the lengths of fingers and the width of the hand to identify an individual. The human hand is more distinctive than human eyes can perceive. This distinctiveness can be measured with computer-based imaging and measurement techniques and identity of an individual can be associated with the distinctiveness of his/her hand.

Typing Recognition: The use of the unique characteristics of a person typing for establishing his/her identity.

Signature Recognition: This is a biometric technology that stores and compares the behavioral patterns which are integral to the process of generating a signature. Signature recognition is a behavioral biometric. It can be operated in two different ways:

a. Static: In static mode, users write their signatures directly on paper, then digitize it through an optical scanner or a camera, and the biometric system recognizes the signature by analyzing its shape and attributes.

b. Dynamic: In dynamic mode, users write their signatures in a digitizing tablet, which acquires the signature in real time. Dynamic recognition is also known as "on-line". Dynamic information usually consists of the following information:

- Spatial coordinate x(t)
- Spatial coordinate y(t)
- Pressure p(t)
- Azimuth az(t)
- Inclination in(t)
- Pen up/down

How Biometrics Recognition Works?

Biometrics uses physical characteristics, like your face, fingerprints, irises or veins, or behavioral characteristics like your voice, handwriting or typing rhythm.

Biometric Recognition systems usually seem complicated, however, they work in three simple processes:

1. Enrollment: The first time you use a biometric system, it records basic information about you, like your name or an identification number. It then captures an image or recording of your specific trait.

2. Storage: Contrary to what you may see in movies, most systems don't store the complete image or recording. They instead analyze your trait and translate it into a code or graph. Some systems also record this data onto a smart card that you carry with you.

3. Comparison: The next time you use the system, it compares the trait you present to the information on file. Then, it either accepts or rejects that you are who you claim to be.

In Biometric Recognition, there are three major components needed to accomplish the whole process and they are:

1. Sensor: This detects the characteristic being used for identification
2. Computer: This reads and stores the information captured from the sensor.
3. Biometric Software: This analyzes the characteristics in the stored information, translates it into a graph or code and performs the actual comparisons.

Advantages of Biometrics

Some of the numerous advantages include:

1. It is difficult to fake or steals, unlike passwords.
2. It offers convenience and efficiency.
3. It helps to save costs.
4. Are non-transferable.
5. Templates have less storage to take up.
6. It offers a higher return on investment.
7. It offers privacy and more reliable.

Features of Biometrics

Accurate Accountability and Identification: Biometric systems make your identity more precise, reducing your likelihood of unwanted breaches. Access is given with this sort of security system not by passwords or smart cards, but by biological features such as iris scans or fingerprints that are hard to duplicate or forge.

Reliability: is a psychological word which is the capacity to rely on someone or something. It improves the reliability of human identification when it comes to biometrics technology because of its unforgettable, non-transferable and robust safety characteristics.

Scalability: Modern technology of biometrics is extremely scalable. Various dimensions and settings have a solution. This technology advancement promotes the scale of its use in all industries and also makes it accessible for personal use.

Efficiency: by making its workforce more precise, reliable, productive and timely, biometric technology improves organizational effectiveness.

Productivity: Biometrics technology improves accountability by accurately tracking the motion and operations of the the staff. It makes the worker give his greatest effort knowing that all his / her contribution counts, which improves the organization's general productivity.

In the Full Course, you will learn everything you need to know about **Biometrics** with **Certification** upon successful completion of the exams.

Biometrics Course Outline

Biometrics - Introduction/Overview
Biometrics - Modalities
Biometrics - Physiological Modalities
Biometrics - Behavioral Modalities
Biometrics - Voice Recognition
Biometrics - Multimodal Biometric Systems
Biometrics - Modality Selection
Biometrics - System Performance
Biometrics - Pattern Recognition & Biometrics
Biometrics - Signal Processing & Biometrics
Biometrics - Image Processing
Biometrics - System Security
Biometrics - Video Lectures
Biometrics - Exams and Certification

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BIOTECHNOLOGY COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is BioTechnology?

BioTechnology is defined as the controlled use of biological agents and materials such as cells or cellular materials and components for advantageous use. BioTechnology is also viewed as the process of making cell and molecular biology a commercial product.

BioTechnology is also seen as a technology that is based on biology. Biotechnology fully harnesses both cellular and biomolecular processes to come up with various advanced technologies and products that help to improve our lives and the health of our planet.

Modern Biotechnology advancements came up with breakthrough products and technologies that are used to fight debilitating and rare diseases, reduce our footprint on the environment, feed the hungry, make use of lesser and much cleaner energy, and have a cleaner, safer, and more efficient industrial manufacturing processes.

Presently, there are over 250 Biotechnology health care vaccines and products that are available to patients, many for producing solutions and cures to diseases that were previously untreatable. More than 13.3 million farmers worldwide make use of various agricultural Biotechnology solutions to further increase yields of farm produce, prevent damage from pests and insects and reduce the impact of farming on the environment. Also, over 50 Biorefineries are currently being developed across North America to be used to refine and test the various technologies and to produce biofuels and chemicals which are produced from renewable biomass, that can help reduce greenhouse gas emissions.

Types of BioTechnology

1. Medical Biotechnology: This is the use of living cells and other cell materials for the purpose of improving the health of humans. It involves the science of using tools and research findings for efficient ways to maintain health, understanding pathogens and human biology. This field usually leads to the development of drugs and treatments, such as:

Vaccines: These are chemicals that stimulate the body's immune system to better fight pathogens when they attack the body, by inserting attenuated (weakened) versions of the disease into the body's bloodstream.

Antibiotics: Huge strides have been made in the development of antibiotics that combat pathogens for humans.

2. Agricultural Biotechnology: This focuses on developing genetically modified plants for the purpose of increasing crop yields or introducing characteristics to those plants that provide them with an advantage growing in regions that place some kind of stress factor on the plant namely weather and pests.

Features of Biotechnology

There are many features of Biotechnology and some of them are:

1. With Biotechnology, you would produce better tasting vegetables and fruits.

2. With Biotechnology, you would produce fruits and vegetables that retain their flavor and texture over a long period of time.

3. The study of Biotechnology helps to produce fruits, vegetables, grains or oils which further enhance health and wellbeing.

4. Biotechnology is used to grow plants with their own built-in pest resistance traits, so very few numbers of pesticides would be applied to fields.

5. Plants better able to tolerate stressful conditions such as high or low temperatures, drought and high salts in soil or water

6. Biotechnology is used to develop vaccines for animals to protect them against diseases that are in the past, not controllable.

7. Biotechnology is also used to produce pharmaceutical products, such as human insulin for diabetic patients and medicine to treat a lot of diseases.

Applications of BioTechnology

1. Nutrient Supplementation: One of the biggest uses of biotechnology is the infusion of nutrients into food in situations such as aid. Therefore, it provides food with heavy nutrients that are necessary for such situations.

2. Abiotic Stress Resistance: There is actually very little land on earth that is arable with some estimates place it at around 20 percent. With an increase in the world's population, there is a need for the food sources available to be as effective as possible to produce as much food in as little space as possible. There is also a need to have the crops grown to be able to make use of the less arable regions of the world.

3. Industrial Biotechnology: The industrial applications of biotechnology range from the production of cellular structures to the production of biological elements for numerous uses.

Benefits of BioTechnology

There are many benefits of Biotechnology, and some of them are;

1. The study of Biotechnology helps to reduce the rate of infectious disease in the world.

2. The Study of Biotechnology helps in saving the lives of millions of children.

3. The study of Biotechnology helps in changing the odds of very serious, and life-threatening conditions that are affecting millions of people around the world.

4. Biotechnology helps in tailoring treatments to individuals to minimize health hazards and side effects of regular drugs.

5. The knowledge of Biotechnology helps in creating tools that are more precise for the detection of diseases.

6. Biotechnology applications help with combating very serious illnesses, ailments and everyday threats that the developing world is suffering from.

Why Study BioTechnology?

1. Career Prospects: Biotechnology encompasses the pharmaceutical industry, including innovations in drug and vaccine design and regenerative medicine, as well as the biofuels industry and work in carbon sequestration and next-generation fuel production.

2. Emerging Discipline: With the world population booming, and the subsequent demand for food and fuel, intelligent agriculture and a cleaner, greener environment are some of the global challenges facing us today.

3. Increase in Earning Potential

4. Job Opportunities and Career Advancement

BioTechnology Course Outline

BioTech - Overview/Introduction
BioTech - Fundamentals of Biochemical Engineering
BioTech - Biotechnology and Society
BioTech - Building Blocks of Biomolecules—Structure and Dynamics
BioTech - Structure, and Function of Macromolecules
BioTech - Biochemical Techniques
BioTech - The Basic Unit of Life
BioTech - Cell Growth and Development
BioTech - Cellular Techniques
BioTech - The Principles of Genetics
BioTech - Genome Function
BioTech - Gene Expression
BioTech - Genetic Techniques
BioTech - Protein Structure and Engineering
BioTech - Recombinant DNA Technology
BioTech - Genomics
BioTech - Bioinformatics
BioTech - Microbial Culture and Applications
BioTech - Plant Cell Culture and Applications
BioTech - Animal-cell Culture and Applications
BioTech - Applications of Biotechnology
BioTech - Exams and Certification

BioTechnology Course Duration

1 - 2 Weeks or Study At Your Own Pace

BioTechnology Exams

30 - 40 Questions (Objectives)
2 - 3 Questions (Essay/Theoretical - optional)

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BIG DATA ANALYTICS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Big Data Analytics?

Big Data Analytics is the complex method of examining large and diverse data sets to reveal relevant information including hidden patterns, unknown correlations, market trends and client preferences that can assist organizations to make informed business decisions.

Big Data Analytics includes mainly gathering data from various sources, munging it in such a manner that it becomes accessible to analysts and users to consume.

Use Cases of Big Data Analytics

Improve customer integrations: Big Data Analytics can be used to improve customer interactions and integrations. You can aggregate structured, semi- and unstructured data from touchpoints your customer has with your company to gain a 360-degree view of your customer's behavior and motivations for improved tailored marketing. Data sources can include social media, sensors, mobile devices, sentiment and call log data.

Detect and mitigate fraud: You can monitor transactions in real-time, proactively recognizing those abnormal patterns and behaviors indicating fraudulent activity. Using the power of big data along with predictive/prescriptive analytics and comparison of historical and transactional data helps companies predict and mitigate fraud.

Drive supply chain efficiencies: Gather and analyze big data to determine how products are reaching their destination, identifying inefficiencies and where costs and time can be saved. Sensors, logs, and transactional data can help track critical information from the warehouse to the destination.

Advantages of Big Data Analytics

The benefits of Big Data Analytics include:

Data Procurement: A data analyst can gather and store enormous amounts of information from different sources such as webpages, directories, etc. In order to use these data in a snap as at when needed, a well-guided system must be in place. Big Data Analytics helps in data procurement.

Data Segmentation: There are times when a real estate agent wishes to distribute her information on the basis of various parameters such as Gender, Age, Income Group, Location, Budget, segment customers, market segmentation, product segmentation, etc. Big Data Analytics helps in proper data segmentation.

Checks Variability: Data flows may be extremely incompatible with regular peaks in relation to growing information speeds and data variants. So Big Data Analytics helps to check this variability.

Checks Complexity: The information today comes from various sources, making it hard to connect, match, clean and convert information across systems. However, relationships, hierarchies, and various information linkages need to be connected and correlated or your information can spiral out of control rapidly. Big Data Analytics helps in checking data complexity.

Business Intelligence: This is a technology-based process for analyzing data and presenting actionable information to help executives and managers, including corporate end-users, make informed business decisions.

Identify New Opportunities: It helps the organization to harness their data and use it to identify new opportunities.

Decision Making: It helps the organization to make better, informed and faster decisions.

Market Predictions: It helps organizations to be able to predict market outcomes and how it will affect organizational goals and objectives.

Competitive Edge: It gives the organization a competitive edge over others.

Accurate Measurement: It offers accurate measurement of data.

Data Visualization: It allows the researchers to be able to visualize data.

Saves Cost/Time: It helps to save cost and time.

Market Conditions: It helps to understand market conditions and directions in order to plan ahead.

Main Features of Big Data Analytics

Predictive Applications-Identity Management: (or Identity and Access Management) is the method of managing organizations that have access to your information.

Real-time Reporting: collects information minute by minute, typically in an intuitive dashboard format, and relays it to you.

Security Features: It is essential for a successful company to keep your system secure.

Analytics Features: The provision of tools for users with a multitude of analytics packages and modules.

Data Processing Features: This involves collecting and organizing raw information in order to generate significance.

Technologies Support: It supports a variety of technologies and tasks that may be useful to you.

Types of Big Data Analytics

Types of Big Data Analytics include:

1. Descriptive Analytics (past): These tell what happened. They create simple reports and visualizations that show what occurred at a particular point in time or over a period of time. These are the least advanced analytics tools.

2. Predictive Analytics (future): Predictive analytics tools use highly advanced algorithms to forecast what might happen next. They make use of artificial intelligence and machine learning technology to predict events.

3. Prescriptive Analytics (environmental Analytics): A step above predictive analytics, prescriptive analytics tell organizations what they should do in order to achieve the desired result.

4. Diagnostic Analytics (failure and success rate of an event): These explain why something happened. More advanced than descriptive reporting tools, allow analysts to dive deep into the data and determine root causes for a given situation.

Big Data Analytics Tools

The Tools used in Big Data Analytics are:

1. Hadoop: Data Processing and Storage.
2. Kafka: Data Warehousing.
3. Apache H – Base: No – SQL Database.
4. Splunk's: Log Analytics Platform.
5. Talend: Software Integration.
6. Apache Spark: Real-time Processing.

Big Data Analytics Skillset

Big Data Analytics Skillset includes:

1. Basic Programming
2. Data Visualization
3. Statistical and Quantitative Analysis
4. Specific Business Knowledge
5. Computational Frameworks e.g. Hadoop.
6. Data Warehousing e.g SQL and NO SQL.

In the Full Course, you will learn everything you need to know about **Big Data Analytics** with **Certification** upon successful completion of exams.

Big Data Analytics Course Outline

Big Data Analytics - Introduction/Overview
Big Data Analytics - Data Life Cycle
Big Data Analytics - Methodology
Big Data Analytics - Core Deliverables
Big Data Analytics - Key Stakeholders
Big Data Analytics - Data Analyst
Big Data Analytics - Data Scientist
Big Data Analytics - Problem Definition
Big Data Analytics - Data Collection
Big Data Analytics - Cleansing data
Big Data Analytics - Summarizing
Big Data Analytics - Data Exploration
Big Data Analytics - Data Visualization
Big Data Analytics - Introduction to R
Big Data Analytics - Introduction to SQL
Big Data Analytics - Charts & Graphs
Big Data Analytics - Data Tools
Big Data Analytics - Statistical Methods
Big Data Analytics - Machine Learning for Data Analytics
Big Data Analytics - Naive Bayes Classifier
Big Data Analytics - K-Means Clustering
Big Data Analytics - Association Rules
Big Data Analytics - Decision Trees
Big Data Analytics - Logistic Regression
Big Data Analytics - Time Series
Big Data Analytics - Text Analytics
Big Data Analytics - Online Learning
Big Data Analytics - Video Lectures
Big Data Analytics - Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

BITCOIN COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Bitcoin?

Bitcoin is an electronic money, digital money or cryptocurrency that allows money storage, trading and exchange in a digital form.

Bitcoin is also known as electronic bank usually described as a cryptocurrency, a digital currency or a virtual currency. It's like an online cash. People can send Bitcoins to your digital wallet, and you can send Bitcoins to other people, transaction can occur swiftly between you and your client.

Bitcoin is a currency that is completely digital. It was created in 2009 and it uses peer to peer technology for quick facilitatation of payments.

How does Bitcoin work?

This is a question that has been asked severally and often surrounded by confusion, with many different answers, so here's a quick explanation.

This is basic for a new user
As a new user, you can get kick started with Bitcoin without the technical understanding details. Once you have a Bitcoin wallet online via your computer or mobile phone, it will automatically generate your first Bitcoin address and you can create more bitcoin addresses whenever you need one. You can share your addresses to your friends or clients so that they can pay you or vice versa. In fact, this is process is very similar to how email works, with exception that Bitcoin addresses can only be used just once in most cases.

Balances - block chain
The block chain is a distributed public ledger on which the entire Bitcoin network depends. All transactions that are confirmed are included in the block chain. It gives Bitcoin wallets the ability to calculate their spendable balance so that current transactions can be verified thereby making sure they're actually owned by the people that spends it. The integrity and the chronological sequence of the block chain are enforced with cryptography.

Transactions - private keys
A transaction is an exchange of value that occurs between Bitcoin wallets that gets included in the block chain.
Bitcoin wallets entails a secret piece of data it keeps, called a **seed or a private key,** and this private key is used to sign transactions, providing a mathematical proof or an authentic assurance that they have come from the owner of the wallet.
The signature or identification of the owner also prevents the transaction from being hacked or altered by anybody once it has been issued to you. All transactions made are usually broadcastd to the network and usually begin to be confirmed within space of 10-20 minutes, through a process called mining.

Features and Benefits of Bitcoin

1. A digital currency implies any means of payment that is done in an electronic form.

2. It's not handible like a yen or pounds or dollar note or a coin.

3. The payment that is being made can be accounted for and transferred using computers.

4. Digital money can be exchanged using series of technologies like credit cards, smart-phones, and online cryptocurrency exchanges with the computer.

5. It can also be transferred in some cases into physical cash and can be handible, for instance by withdrawing cash from an ATM.

6. Greater Liquidity Relative to Other Cryptocurrencies.

7. Increasingly Wide Acceptance as a Payment Method.

8. International Transactions Easier Than Regular Currencies.

9. Generally Lower Transaction Fees.

10. Anonymity and Privacy Relative to Traditional Currencies.

Why Study Bitcoin?

1. Understand the workings and operations of Bitcoin and Blockchain Technology
2. Become a cryptocurrency professional
3. Become a cryptocurrency trader or miner
4. Become a cryptocurrency exchanger
5. Enrich your CV and increase your earning potential
6. Job opportunities and career advancement in Fintech industry.

Bitcoin Course Outline

Bitcoin - Introduction
Bitcoin - Environmental Setup
Bitcoin - Blockchain Technology
Bitcoin - Cryptocurrencies
Bitcoin - Features
Bitcoin - How do they work
Bitcoin - Wallet
Bitcoin - Mining
Bitcoin - Exchanges
Bitcoin - Trading
Bitcoin - Glossary
Bitcoin - Applications
Bitcoin - Future
Bitcoin - Video Lectures
Bitcoin - Exams and Certification

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BLOCKCHAIN TECHNOLOGY COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Blockchain Technology?

Blockchain Technology is the combination of softwares, hardwares and algorithm that powers all blockchain operations.

Blockchain is a growing list of records known as blocks, that are linked together by means of cryptography. Each block of records is made up of a cryptographic hash record of the previous block, transaction data and a timestamp.

A Block is like a page or record book that records some or all of the most recent transactions that have not yet entered any prior blocks.

Blockchain Technology has become a trending topic these days, this is mostly because it is the foundation of the world's most famous cryptocurrency known as Bitcoin. Many governments owned and leading international banks have decided to bring up many of their conventional transactions based on the concept of Blockchain.

The Blockchain applications and potential of its technology are very huge and are generally considered to be changing the means by which financial transactions are carried out in various fields.

In present times, there is a lot of activities on Blockchain Technologies. Most People have described blockchain as the most disruptive technology in the past 15 years. Especially here that the financial markets are the one that is mostly affected.

The applications of Blockchain Technology are now being adopted into many sectors like healthcare, medicines, smart Properties, insurances, automobiles, and even in government areas.

Components of Blockchain Technology

1. Decentralization: Decentralization is one of the most critical components of Blockchain Technology which is the cause of all the benefits like trustlessness, censorship resistance, and immutability. Due to the decentralized nature of blockchains, no central database can be taken down by a government or terrorist outfit for personal gain. At its core, Blockchains have enabled people to come up with systems that do not rely on a centralized third party to keep money safe.

2. Immutability: One of the central tenets of cryptocurrency is to prevent double-spending. This requires that none of the previous entries in the ledger could be modified in any way. Blockchains are especially useful in a scenario such as this because changing previous ledger entries requires an attacker to have more computing power than the entire network of miners protecting the network, which is referred to as a 51% attack.

3: Trustless: The decentralized peer to peer network of miners protects the network by what's called Proof of Work, thereby eliminating the need to trust any middlemen. The entire Blockchain code is open source, thus removing any possibilities of backdoors being built into the system. This ensures that individuals could become their own banks and have a say in how their money is used as opposed to trusting a bank to keep their money safe.

4. Faster and Cheaper Borderless Transactions: Blockchains are one of the fastest ways to transfer value across the globe. This is in large part due to the fact there is no intermediary to settle disputes in the case of Bitcoin, Ethereum. All transactions on the blockchain are final and irreversible.

Types of Blockchain Technology

There are two main types of Blockchain Technology, such as:

1. Public Blockchain: This is a non-restrictive, permission-less distributed ledger system. Anyone who has access to the internet can sign in on a blockchain platform to become an authorized node and be part of the blockchain network. Examples of these are Bitcoin, Ethereum, and Litecoin.

2. Private Blockchain: This is a restrictive or permission blockchain operative only in a closed network, and is only used in organizations and enterprises where selected members are participants of a blockchain network.

The Other Variations of Blockchains that exist are:

1. Consortium Blockchain: This is a semi-decentralized type where more than one organization manages a blockchain network.

2. Hybrid Blockchain: This is a combination of private and public blockchain.

Features of Blockchain Technology

There are many features of Blockchain Technology and some of them are:

1. Blockchain as a data structure: A Blockchain is defined as a growing record of data, that is stored as virtual blocks. In Bitcoin's implementation of Blockchain, for example, the data that is being recorded here is Bitcoin transactions. The structure of Blockchain starts with a single block that is known as the genesis block. As the amount of data that is recorded on the system start increasing, more blocks keep getting added to the chain.

2. Immutability and tamper detection in blockchain: Data that is being stored in the Blockchain Node is made very secure and immutable by means of cryptography. Every block is directly referenced by a unique string of characters that is generated by a cryptographic hash function. This function can take in any amount of data as its inputs and then generate a fixed-length string as its output.

3. Data protection in blockchain: Instead of employing a physical or an online account that has to be maintained and managed by a third party (such as a bank), every unit of the cryptocurrency is stored on the Blockchain itself. Users can securely access their cryptocurrency by using their private and public keys together.

4. Relative user anonymity: Basically, only the digital addresses with its corresponding units are seen on the Blockchain network, while keeping the users' identities private. The use of public-key cryptography lets the various Blockchain Technology to be distributed across the world while making sure that the user's anonymity is enforced.

Benefits of Blockchain Technology

Some of the benefits include:

1. Blockchain technology provides a means for user verification without having to depend on third-parties like banks.

2. Blockchain Technology uses protected cryptography to secure the various data ledgers. Also, the present data ledger depends on its adjacent completed block to complete the process of cryptography.

3. All the transactions and data are directly attached to the block after the various process of maximum trust verification.

4. The transactions in Blockchain technology are stored in chronological order. Hence, all the data blocks in the Blockchain are time-stamped accordingly.

5. The ledger is spread across every single node in the blockchain who are the participants in it. So, it is distributed.

6. The transactions stored in the data blocks are held in millions of computers that are participating in the chain. Therefore Blockchain Technology is a decentralized network.

Blockchain Technology Course Outline

What is Blockchain?
What Blockchain is NOT!
Blockchain Architecture
How Blockchain Transaction Works?
Why Do We Need Blockchain?
Blockchain Versions
Blockchain Variants
Blockchain Use Cases
Important Real-Life Use Cases of Blockchain
Bitcoin Cryptocurrency: Most Popular Application of Blockchain
Blockchain vs. Shared Database
Myths About Blockchain
Limitations of Blockchain Technology
Blockchain Video Lectures
Blockchain Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

BLOG BASICS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Blog Basics?

Blog Basics is the study of the fundamental activities involved in blogging, ranging from article writing to publishing and management.

A Blog is a discussion or informational website released on the World Wide Web with discrete, often casual text entries in the style of a diary. Typically, posts in blogs are presented in reverse chronological order, so that the latest post appears at the top of the web page first.

Blog is the shortened word for Weblog. A Weblog is a website that operates like a diary. Most people can create a blog and then write on that blog or get authors to write on it. **Bloggers** which is a word for people who write on blogs often write about their opinions and thoughts.

A Blog containing video material is called a Video Blog or Video Log, usually shortened to **Vlog.** Most blogs contain short informal articles known as blog posts which includes videos, pictures, texts and other media.

Benefits of Blogs

There are many reasons and benefits of owning or starting a blog and here are just a few reasons why you should consider a personal blog or starting one for your business:

1. Blogging can be a lucrative business that anyone including beginners with limited or zero experience can start. A student, for example can own a personal blog which he or she can use to write about articles of his personal interest, or voice out his opinion, latest trends in school and in turn, earn from the blog by either monetizing the blog with display of ads from ad networks like Google Adsense, referral links, or offer paid services in his blog.

2. A Blog is a mini website that is updated regularly with new contents. People blog about their personal life, entertainment, lifestyle, cooking and so many other things of their interest. A blogger can either make their blog about their personal life experiences or other things.

3. For Business Owners, you will need to rank your website higher in Google Search engine result pages (SERPs) to increase your business visibility to potential customers, and you can easily do so by having a blog section on your website where you write articles around the products you sell, linking the articles to your products.

4. Asides advertising your products with blogging, you can also monetize your blog with Paid Adverts, Pop-up Ads, Promotional Posts, Sponsored Posts, Media Mentions etc.

5. The more frequent and useful your blog articles are, the higher and better the chances for your website to be discovered and frequented by your target audience. Which means, a blog is an effective lead generation tool of which can convert your website organic traffic to quality leads.

6. You can create posts with deep links from your blog to relevant content on your website, for example, we can blog about Microsoft Word tutorials then add links to our Microsoft Course here to let visitors who search about the keyword on search engines see a better learning path.

Advantages of Studying Blog Basics

1. Studying blog basics helps you to gain updated blogging skills and know what blogging is all about.

2. Studying blogging makes you know the do's and don'ts of blogging.

3. Studying blogging helps you gain necessary skills for monetizing your blog.

4. Blogging creates job opportunity and self-employment opportunity.

5. Studying blogging helps people to know what to blog and how to blog, including the type of information to put and how a blog should look like.

6. Studying blogging helps to gain necessary skills for increasing your company visibility online.

Features of Blogs

There are many features of a blog, here is a list of the most popular features most blogs share in common.

1. Blog Entries: Blog entries are posted in reverse-chronological order, with post running from the most recent at the top of a page and older ones at the bottom.

2. Blog Posts: Blog posts usually have a title with bold font that describes or is related to the content of the post.

3. Create Posts: Since the purpose of having a blog is to be able to post new text or information to the site frequently, every blog have a create post feature, an easy way is to install the popular Content Management System Wordpress to create and manage post.

4. Publish RSS Feeds: RSS allows more tech-savvy users to subscribe to your blog and get headlines via any RSS reader of their choice.

5. Upload or Embed pictures and multimedia: All blogs have a way to upload or embed pictures and video files to it.

6. Templating: Every blog has a way to upload and edit a template to customize the blog's look and feel to look more presentable to users.

7. Site-Structure: Most blogs have the same structure from the header with navigation to the main content area, sidebars, down to the footer.

8. Comment System: Blogs usually have a comment system, and its sole purpose is to allow discussion about the post and to allow the reader to give constructivefeedback to the author.

9. Content Sharing: Blogs have a way to share posts either directly from the site or copying the URL to friends or on social media platforms.

Some of the things you will study in this course include:

How to be a professional blogger, the different types of blogs and different types of bloggers including why people blog. You will learn that anybody of any age can be a blogger depending on what you want to blog about.

Microblog platforms like Twitter and Facebook and how you can add links and short words so that other people can know about your blog. You will learn how you can make money from blogging.

You will learn that people blog about what they have Interest in and what they find interesting, and that blogs should contain words that people can read and understand. How you can create your blogging goals, how to get people to subscribe to your blog and how to make your blogs interesting for users to come back.

You will learn how to create a blog name, topic and the title of blog posts, such that it should not be too long or too bulky including blog designs, templates and how to professionally write a blog post. How much time to commit to your blog and also the type of information you want to share.

You will learn about licensing and copywriting, fair use and the implications of illegal copying of other people's work. You will also learn positioning your blog for visibility on search engines using various tactics and techniques etc.

In the Full Course, you will learn everything you need to know about **Blogging Basics** with Participant **Certificate** to showcase your knowledge and competence.

Blog Basics Course Outline

Blog Basics - Introduction
Blog Basics - Subscribing to Blogs
Blog Basics - Developing Your Blog
Blog Basics - Choosing a Blog Service
Blog Basics - Writing and Promoting Your Blog
Blog Basics - Copyright and Fair Use
Blog Basics - Practical Blogging for Beginners and Pros
Blog Basics - Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

BROADBAND NETWORKS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Broadband Network?

Broadband Network refers to a wider bandwidth data transmission technology that is responsible for transmitting multiple signals with high speed.

Broadband is simply a type of high-speed internet connection that is developed to surpass dial-up connections as the standard way to connect to the internet.

Types of Broadband Networks

The Types of Broadband Connections include:
1. Digital Subscriber Line (DSL)
2. Cable Modem
3. Fiber
4. Wireless
5. Satellite
6. Broadband over Powerlines (BPL)

1. Digital Subscriber Line (DSL): DSL transmits data faster over traditional copper telephone lines already available in our homes or offices. There are two types of DSL Transmission Technology:
a) Asymmetrical Digital Subscriber Line (ADSL): – ADSL provides faster downstream data transmission over the same line used for voice service without obstructing regular calls on the line.
b) Symmetrical Digital Subscriber Line (SDSL):– SDSL is used by businesses that offer services such as video conferencing etc.

2. Cable Modem: Cable Modem is the type of technology that provides cable operators with broadband connection using the same coaxial cables that deliver pictures and sound to TV sets.

3. Fiber: Fiber Optic is the type of transmission technology that converts electrical signals with data to light and then sends the light through transparent fiber-like glasses.

4. Wireless: Wireless broadband connects to the internet with a radio link between the end-users location and the service provider's base station facility.

5. Satellite: Satellite broadband uses satellite installation orbiting the earth in space to provide internet services for end-users in remote places and sparsely populated areas.

6. Broadband over Powerlines BPL:BPL is the type of technology that delivers broadband connections over the existing low- and medium-voltage electric power distribution network.

Benefits of Broadband Networks

1. Convenience: A good broadband connection to your home means there's a greater capacity to send and receive data. It means that data be received and sent far more quickly to and from your computer. This allows you to access the Internet, browse the web more effectively, download files faster and send and receive emails quicker. Broadband comes at a fixed price, you can budget effectively. You can also share your broadband connection amongst several PCs or other devices in your home. Most Broadband routers have wireless connectivity; you can use this for computers, mobile phones, Tablet PC's and many game consoles.

2. Promotes Remote Work: More and more companies are now embracing the flexibility of allowing staff to work from home. High-speed connectivity allows links to internal computer and telephone networks giving you all the office facilities at home. With increasing fuel costs and companies aware of their Carbon Footprint, this is an attractive alternative. If you run your own business, faster broadband may enable you to run this from home. This could allow you to reduce your overheads by not renting expensive office premises and not having to commute to work. The use of web sites as the gateway to your company allows you to sell online and compete on a much more even playing field with larger competitors.

3. Online Education: For many school children, college and university students' fast broadband allows access to a broad range of educational and research material in a variety of formats. Most educational establishments have Virtual Learning Environments such as Moodle and Blackboard. It is now possible to undertake an enormous range of vocational and recreational courses in the comfort of your own home over the Internet. Interestingly web sites such as YouTube are now becoming some of the most used informal help sites when trying to find out how to do everyday things.

4. Online TVs, Radio, Music, Games: From catching up on missed TV programs via the many online channels, faster broadband allows a huge range of entertainment possibilities. The radio stations, TVs, Games, etc can be streamed online.

5. Online Shopping: With access to doorstep delivery services, online shopping is now the new trend. Broadband enables one to simply shop from anywhere at any time.

6. Online banking: Make online payments, receive money online, all possible because of broadband.

In the Full Course, you will learn everything you need to know about **Broadband Networks** with **Certificate** to showcase your knowledge.

Broadband Networks Course Outline

1Broadband Networks - Introduction
Broadband Networks - Qos in Packet Switching and ATM
Broadband Networks - ATM Networks
Broadband Networks - Effective Bandwidth - I
Broadband Networks - Effective Bandwidth - II
Broadband Networks - Traffic Descriptor in ATM
Broadband Networks - Calculus for QOS - I
Broadband Networks - Calculus for QOS - II
Broadband Networks - Packet Scheduling Algorithm
Broadband Networks - Fluid Fair Queueing and Weighted Fair Queueing
Broadband Networks - Virtual Time In Scheduling
Broadband Networks - Fairness of WFO and SCFO Scheduling Algorithms
Broadband Networks - Rate Proportional Servers
Broadband Networks - Latency Rate Servers - I
Broadband Networks - Latency Rate Servers - II and Delay Bounds
Broadband Networks - QOS In Best Effort Internet
Broadband Networks - TCP Congestion Control
Broadband Networks - Analysis of TCP
Broadband Networks - TCP Throughput
Broadband Networks - Buffer Management
Broadband Networks - IP Addressing Scheme
Broadband Networks - IP Addressing Lookup And Packet Classification
Broadband Networks - IP Over ATM
Broadband Networks - Differentiated Services Internet
Broadband Networks - Voice over IP
Broadband Networks - RTP
Broadband Networks - Metro Ethernet Access Networks - I
Broadband Networks - Metro Ethernet Access Networks - II
Broadband Networks - Video Lectures
Broadband Networks - Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

BUSINESS ANALYTICS COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

Analytics?

Business Analytics is the combination of skills, technologies, tools, applications and processes used by organizations to gain insight into their operations based on data and statistics to drive business planning and growth.

In today's globally competitive environment, there is an ever-increasing need for advanced information and decision support systems. The profitability and the overall business can be managed better with access to predictive tools to predict, even approximately, the market prices of raw materials used in production, for instance. Business Analytics involves among others, quantitative techniques, statistics, data and analysis tools and econometric models.

Business Analytics is a mixture of Data Analytics, Business Intelligence and Computer Programming. It is the science of analyzing data to find out patterns that will be helpful in developing strategies. Its usage can be found in almost every industry.

Types of Business Analytics

There are four types of business analytics and these analytics types are usually implemented in stages, starting with the simplest.

Types of Business Analytics include:

Descriptive Analytics: This tracks key performance indicators (KPIs) to understand the present state of the business. This is the simplest form of analytics and uses data aggregation and mining techniques. It describes or summarizes a business's existing data to get a picture of what has happened in the past or is happening currently. It helps identify strengths and weaknesses and provide insight into customer behavior

Predictive Analytics: This analyzes trend data to assess the likelihood of future outcomes. It forecasts the possibility of future events using statistical models and machine learning techniques. Predictive analytics builds on descriptive analytics results to create models that can predict the likelihood of selected outcomes. A common use of predictive analytics is sentiment analysis. For example, existing text data collected from social media can be used to provide a comprehensive picture of opinions held by a specific user.

Prescriptive Analytics: This uses past performance to generate suggestions on how to handle related situations in the future. It goes a step beyond predictive analytics, providing real-time suggestions for next best actions, thereby allowing potential manipulation of events to drive better outcomes. Prescriptive analytics is not only capable of suggesting all favorable outcomes according to a specified course of action, but also recommending specific actions to deliver the most desired result.

Diagnostic Analytics: This moves away from the "what" of past and current events to "how" and "why," key points. It focuses on past performance to determine which factors best have an impact on trends. It employs techniques such as drill-down, data discovery, data mining, and correlations to uncover the root causes of events. It uses probabilities, likelihoods, the distribution of outcomes to learn why events may occur and employ techniques including attribute importance, sensitivity analysis, and training algorithms for classification and regression.

Benefits of Business Analytics

There are a lot of benefits businesses gain from business analytics, here are some of them:

Analytics Encourages Smart Decision-Making: Accessibility to useful and meaningful data gives companies the power to make accurate decisions that could leverage businesses. Not only that business analytics provide useful data, but it also allows companies to make decisions faster and more efficiently than ever before. companies can increase the use of analytics when they share the discussion with as many employees as needed.

Analytics Helps Companies Avoid Being Left Behind: Business analytics can help companies to remain in the game and not get left behind. Using analytics allows businesses to create rolling forecasts of the business and of the market. These create valuable knowledge and analysis into what's happening both internally and externally. Staying updated on the latest new forecasts can spark innovative ideas, bringing more reaches to a company's brand. Improving processes paves the way of releasing innovative new products, services, and information. And that can help a company charge ahead of its competition.

Analytics Provides Clearer Insights Through Data Visualization: Recent analytics tools care about how you present your data to your company analytics team. really detailed charts and graphs can be used to make sure that decision-making is more interesting. Through visual representations of extracted data, relevant and useful insights can be extracted in a much clearer way. With analytics data visualization tools, information that you need about your market is there on your table, Shown to you in a visually enticing and organized manner.

Analytics Offer Efficiency: Business efficiency has been improving a lot since the rise of business analytics, with the power to gather a large amount of data at a fast rate and present it in a compelling way, businesses can now make accurate decisions to help achieve set goals, Business Analytics also promote teamwork where staffs are able to express their thoughts and ideas in the decision-making process.

Increased Performance: Business Analytics can positively push business performance beyond executive experience or plain intuition.

Efficient Tracking: Business Analytics makes tracking and monitoring business processes extremely efficient and seamless, thereby allowing companies to handle even the most complex of business operations with ease.

Features of Business Analytics

There are a lot of features of Business Analytics, below are 6 features that an analytics tool for business analytics must have:

1. Easy to use interface: It should allow the user to carry out analytical operations on an easy to use and understand interface without the use of coding or programming.

2. Ready to Consume Insights: In today's fast-paced business environment when a delay of seconds can dispel your customers, the tool should be able to deliver ready to consume business intelligence.

3. Ready To Use Insights: In today's fast-moving business environment, a delay of seconds can make your customer to leave, the tool should be able to deliver ready to use business insights.

4. Easy to Share: It should have easy and controllable sharing capabilities to deliver insights over the network in a large user environment.

5. Extensible Analytics: It should be extensible to enable customized analytics and new modules development for the changing business needs.

6. Accommodate Support: It should Accommodate integration to other analytics or data visualization tools so as to enable seamless movement and compatibility of data to and fro.

Business Analytics Software

There are hundreds of Analytics Tools or Softwares available in the market, the popular ones are listed below:

SAS
QlikView
Microsoft Excel
Microsoft BI
Power BI
Tableau
IBM SPSS
Splunk
Hadoop
Board
Cloudera
Domo
Babelfish
Hortonworks
looker
Cognos
SAP Business Objects
Sisense etc.

Business Analytics Study

In the Full Course, you will learn everything you need to know about **Business Analytics** with **Diploma Certificate** to showcase your knowledge and competence.

Duration: Study At Your Own Pace.
Format: Web and Video Lectures.
Certification: Diploma.

Business Analytics Course Outline

Business Analytics - Introduction
Business Analytics - Model
Business Analytics - Strategic Level
Business Analytics - Functional Level
Business Analytics - Analytical Level
Business Analytics - Data Warehouse Level
Business Analytics - Company's Collection of Source Data
Business Analytics - Structuring of a Business Intelligence Competency Center
Business Analytics - Assessment and Prioritization of BA Projects
Business Analytics - Using MS Excel for Business Analytics
Business Analytics - Using QlikView for Business Analytics
Business Analytics - Using Tableau for Business Analytics
Business Analytics - Video Lectures
Business Analytics - Exams and Certification

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Every Life, Every Moment, Every Day. A New Discovery...

BUSINESS INTELLIGENCE COURSE

DURATION: 2 WEEKS
FORMAT: WEB/PDF PLUS VIDEO LECTURERS

CERTIFICATE OF COMPLETION

What is Business Intelligence?

Business Intelligence (BI) are the strategies, technologies, applications and practices used for the collection, integration, analysis and presentation of business information. The main purpose of Business Intelligence is to support better business decision making.

Essentially, Business Intelligence systems are Data-driven Decision Support Systems (DSS). Business Intelligence is sometimes used conversely with briefing books, reports, query tools, and executive information systems.

Business intelligence refers to a broad category of applications and technologies for gathering, storing, analyzing, sharing and providing access to data to help enterprise users make better business decisions.

Overall, the job of Business Intelligence is to improve all parts of a company by improving access to the firm's data and then using that data to increase profitability.

Companies that employ BI practices can translate their collected data insights into their business processes. The insights can then be used to create strategic business decisions that improve productivity, increase revenue and accelerate growth.

How Business Intelligence Works

Business Intelligence systems provide companies with the information they need to make more informed business decisions. Business intelligence is often employed as a foundation for strategic decision-making eliminating as much of the guesswork from the decision-making process as possible.

Business intelligence applications help companies combine diverse data sources into a single unified view providing real-time reporting, dashboards, and analysis.

Business Intelligence can be implemented in the below steps:
1. Data Extraction: The Raw Data from the company's or organization's databases or dumps is being extracted using various tools and methods. The data could be spread across multiple systems and cloud.
2. Data Cleaning: The data is then cleaned and transformed into the data warehouse. The table can be linked, and data cubes are formed.
3. Data Analysis: Using the BI system the user can ask queries, request ad-hoc reports or conduct any other analysis.

Features of Business Intelligence

The most important business intelligence features include the following:

Interactive Reports: Interactive reports allow users to condense the large amounts of retrieved data into a wide variety of possible views. Users can take advantage of features like statistical analysis to identify trends, anomalies, and outliers in the data.

Operational Reports: At the end of each day, business intelligence features like these can provide your organization's executives with a very detailed summary of the daily events, giving them the information they need to make critical decisions.

Executive Dashboards: Executive dashboards give your organization's leaders a real-time overview of your business in the form of graphs, charts, summaries, and other information reports. They allow your company's executives to make smarter, faster and better decisions.

What-If Analysis: If you're curious about how a future decision will affect your business, you can run a "what-if" analysis using past data to predict the potential impacts. Tools for what-if analyses give you an objective view of the risks and rewards involved in each potential decision and allow you to plan better for the future.

Geospatial Mapping: Business Intelligence Applications making use of location intelligence can take your information and transform it into graphical representations, simplifying your geographical data. At a glance, knowing which regions are performing better than others and which ones need particular attention becomes much easier.

Benefits of Business Intelligence

There are quite a number of benefits of business intelligence, below are some:

Companies Get Valuable Insights into their Business: Business intelligence software Regularly collect and analyze business data in order to deliver valuable and useful insights into the business.

Establish Benchmarking: Business intelligence gives you an in-depth researched analysis into your business keeping you up to date.

Improves Sales and Negotiations: Companies using a business intelligence software have access to up-to-the-minute-report that identify sales trends, product improvement, current customer preferenced and unexplored market, which is a valuable backup to sales and negotiations.

Identifies Opportunities: Business intelligence can help a company its abilities and capabilities, compare its strengths and weaknesses against its competitors, find out the latest market trends and the present market conditions and quickly respond to change all to gain a competitive advantage.

Eliminates Waste: Business intelligence points out areas of loss or waste that previously have gone unnoticed in a large organization thereby making it easy for the company to identify and eliminate waste.

Fact-Based Decisions: Business intelligence brings about fact-based decisions because it is able to analyze the current data on all aspects of the business's financial, production and customer data hence enabling the company to make decisions such as which product to concentrate on and which to discontinue.

Uses of Business Intelligence

Business Intelligence can be employed and used in so many ways, below are major uses of BI Systems:

1. BI systems can help in measurement and creation of KPI (Key Performance Indicators) based on historic data

2. Help identify and set benchmarks for varied processes.

3. With BI systems organizations can classify market trends and spot business problems that need to be fixed.

4. BI helps on data visualization that improves the data quality and thereby the quality of decision making.

5. BI systems can be used by SME (Small and Medium Enterprises) for a high quality of business operations.

Advantages of Business Intelligence

1. It helps to identify ways to increase profit
2. Analyzes customer behaviors
3. Compare data with competitors
4. Track business operations performance
5. Optimize business operations
6. Predict business operations success
7. Spot market trends fast
8. Discover issues or problems
9. It allows for easy business analytics

In the Full Course, you will learn everything you need to know about **Business Intelligence** with **Certificate** to showcase your knowledge and competence.

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Business Intelligence Course Outline

Business Intelligence - Introduction
Business Intelligence - Modelling
Business Intelligence - Data Provisioning
Business Intelligence - Data Description and Visualization
Business Intelligence - Data Mining for Cross-Sectional Data
Business Intelligence - Data Mining for Temporal Data
Business Intelligence - Process Analysis
Business Intelligence - Analysis Of Multiple Business Perspectives
Business Intelligence - Tools
Business Intelligence - Microsoft BI
Business Intelligence - Microsoft BI Architecture
Business Intelligence - Tools & Utilities of Microsoft BI
Business Intelligence - Self-service Analytics with Power BI for Office 365
Business Intelligence - End-to-end Corporate BI with SQL Server
Business Intelligence - Big Data Solutions with Windows Azure HDInsight
Business Intelligence - Using MSBI for Business Intelligence
Business Intelligence - Using MS Excel for Business Intelligence
Business Intelligence - Using PowerBI for Business Intelligence
Business Intelligence - Using Tableau for Business Intelligence
Business Intelligence - Video Lectures
Business Intelligence - Exams and Certification