EPSILON
EMPOWER YOUR CAREER
Training Institute

# DATA SCIENTIST

## 1) Learning Methodology

- Instructor-Led Classroom Training (ILT).

## 2) Prerequisites:

Basic skills with at least one programming language are desirable

## 3) Training Program Description:

- **Build expertise in data manipulation, visualization, predictive analytics, machine learning, and data science. With the skills you learn in a program, you can launch or advance a successful data career. Start acquiring valuable skills right away, create a project portfolio to demonstrate your abilities, and get support from mentors, peers, and experts in the field. We offer five unique programs to support your career goals in the data science field.**

- Gain real-world data science experience with projects designed by industry experts. Build your portfolio and advance your data science career.

- **The ultimate goal of the Data Scientist program is for you to learn the skills you need to perform well as a data scientist. As a graduate of this program, you will be able to:**
  - Use Python and SQL to access and analyze data from several different data sources.
  - Use principles of statistics and probability to design and execute A/B tests and recommendation
  - engines to assist businesses in making data-automated decisions.
  - Deploy a data science solution to a basic flask app.
  - Manipulate and analyze distributed datasets using Apache Spark.
  - Communicate results effectively to stakeholders.

- **Length of Program** : 150 Hrs.


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## 4) Projects

This program is comprised of many career-oriented projects. Each project you build will be an opportunity to demonstrate what you've learned in the lessons. Your completed projects will become part of a career portfolio that will demonstrate to potential employers that you have skills in data analysis and feature engineering, machine learning algorithms, and training and evaluating models.

One of our main goals at ETI is to help you create a job-ready portfolio of completed projects. Building a project is one of the best ways to test the skills you've acquired and to demonstrate your newfound abilities to future employers or colleagues. Throughout this program, you'll have the opportunity to prove your skills by building the following projects

Building a project is one of the best ways both to test the skills you've acquired and to demonstrate your newfound abilities to future employers. Throughout this program, you'll have the opportunity to prove your skills by building the following projects:

- **Project 1: Exploring the Titanic Survival Data**
- **Project 2: Predicting Housing Prices**
- **Project 3: Finding Donors for Charity**
- **Project 4: Creating Customer Segments Deep learning**
- **project 5: Dog Breed Recognition**
- **Project 6: Teach a Quad copter to Fly**
- **Project 7: Explore Weather Trends**
- **Project 8: Investigate a Dataset**
- **Project 9: Analyze Experiment Results**
- **Project 10: Wrangle and Analyze Data**
- **Project 11: Communicate Data Findings**
- **Project 12: Write a Data Science Blog Post**
- **Project 13: Build Pipelines to Classify Messages with Figure Eight**
- **Project 14: Design a Recommendation Engine**
- **Final Project: YOUR CHOICE**

**Capstone projects in many fields**

1- **Business**
2- **Trading**


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## 5) program outcomes:

- Use Python and SQL to access and analyze data from several different data sources.
- Build predictive models using a variety of unsupervised and supervised machine learning techniques.
- Perform feature engineering to improve the performance of machine learning models.
- Optimize, tune, and improve algorithms according to specific metrics like accuracy and speed.
- Compare the performances of learned models using suitable metrics.
- demonstrate critical thinking skills in the field of data analytics.
- ability to solve problems related to the program content.
- analyze, design and document a system component using appropriate data analytical techniques and models.
- demonstrate the ability to incorporate various data analytics elements.
- demonstrate an understanding of fundamental principles of data analytics systems and technologies.

## 6) Training Program Curriculum:

### I- INTRODUCTION TO SQL TOPICS

- BASIC SQL
- SQL JOINS
- SQL AGGREGATIONS
- ADVANCED SQL QUERIES

### II- PYTHON 3 TOPICS

- **INTRODUCTION**
  - SYNTAX
  - DATA TYPES AND OPERATIONS
  - I/O
  - OPERATORS AND BITWISE
  - LISTS
  - TUPLES


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- IF STATEMENTS
- FOR – WHILE LOOPS
- CONTROL FLOW
- FUNCTIONS
- SCRIPTING

- **OBJECT-ORIENTED PROGRAMMING (OOP)**
  - SPECIAL FUNCTIONS
  - STRINGS
  - CLASSES
  - INHERITANCE
  - REGULAR EXPRESSIONS
  - WORKING WITH FILES
  - PYTHON GENERATORS
  - PYTHON DECORATORS
  - EXCEPTIONS
  - REGULAR EXPRESSIONS
  - MULTITHREADING AND MULTIPROCESSING SOCKETS AND APIS
- **INTRODUCTION TO GUI**
  - GUI GRID
  - GUI EVENTS
  - GUI STYLES
- **INTRO TO DATA SCIENCE**
  - DATABASE WITH SQLITE
  - NUMPY AND MATRIX OPERATIONS
  - PANDAS
  - MATPLOTLIB
  - BUILDING YOUR OWN SERVER
  - DATA VISUALIZATION
  - GIT COMMAND LINE AND GUI BASED


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- WEB SCRAPING FOR DATA COLLECTING

- **INTRODUCTION TO VERSION CONTROL**
  - SHELL WORKSHOP
  - PURPOSE & TERMINOLOGY
  - CREATE A GIT REPO
  - REVIEW A REPO'S HISTORY
  - ADD COMMITS TO A REPO
  - TAGGING, BRANCHING, AND MERGING
  - UNDOING CHANGES

## III- DATA STRUCTURES & ALGORITHMS TOPICS

- **INTRODUCTION**
  - HOW TO SOLVE PROBLEMS
  - BIG O NOTATION
- **DATA STRUCTURES**
  - COLLECTION DATA STRUCTURES (LISTS, ARRAYS, LINKED LISTS, QUEUES, STACK)
  - RECURSION
  - TREES
  - MAPS AND HASHING
- **BASIC ALGORITHMS**
  - BINARY SEARCH
  - SORTING ALGORITHMS
  - DIVIDE & CONQUER ALGORITHMS
  - MAPS AND HASHING
  - PRACTICE PROBLEMS: RANDOMIZED BINARY SEARCH, K-SMALLEST ELEMENTS USING HEAPS, BUILD RED-BLACK TREE, BUBBLE SORT, MERGE SORT, QUICK SORT, SORTING STRINGS, LINEAR-TIME MEDIAN FINDING


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- **ADVANCED ALGORITHMS**
  - GREEDY ALGORITHMS
  - GRAPH ALGORITHMS
  - DYNAMIC PROGRAMMING
  - LINEAR PROGRAMMING
  - PRACTICE PROBLEMS: GRAPH TRAVERSALS, DIIJKSTRA'S ALGORITHM, SHORTEST HOPS, A* SEARCH, LONGEST PALINDROMIC SUBSEQUENCE, WEB CRAWLER

## IV- DATA ANALYST TOPICS

- **LINEAR ALGEBRA**
- **CALCULUS**
- **PRACTICAL STATISTICS**
  - SIMPSON'S PARADOX
  - PROBABILITY
  - BINOMIAL DISTRIBUTION
  - CONDITIONAL PROBABILITY
  - BAYES RULE
  - STANDARDIZING
  - SAMPLING DISTRIBUTIONS AND CENTRAL LIMIT THEOREM
  - CONFIDENCE INTERVALS
  - HYPOTHESIS TESTING
  - T-TESTS AND A/B TESTS
  - REGRESSION
  - MULTIPLE LINEAR REGRESSION
  - LOGISTIC REGRESSION
- **INTRODUCTION TO DATA ANALYSIS**
  - ANACONDA
  - JUPYTER NOTEBOOKS
  - DATA ANALYSIS PROCESS


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- PANDAS AND NUMPY: CASE STUDY 1
- PANDAS AND NUMPY: CASE STUDY 2
- PROGRAMMING WORKFLOW FOR DATA ANALYSIS

- **DATA PREPROCESSING**
  - IMPORTING LIBRARIES
  - DATA ACQUISITION
  - DATA CLEANING
  - HANDLING MISSING DATA
  - CATEGORICAL DATA
  - DATA SPLITTING
  - FEATURE SCALING
- **REGRESSION PROBLEM**
  - LINEAR REGRESSION
  - MULTI-LINEAR REGRESSION
  - POLYNOMIAL REGRESSION
  - K-NEAREST NEIGHBOUR REGRESSION
  - DECISION TREE REGRESSION
  - REGRESSION EVALUATION METRICS
- **CLASSIFICATION PROBLEM**
  - LOGISTIC REGRESSION
  - NAIVE BAYES
  - K-NEAREST NEIGHBOUR CLASSIFIER
  - SUPPORT VECTOR MACHINE (SVM)
  - DECISION TREE CLASSIFIER
  - ENSEMBLE LEARNING
  - CLASSIFICATION EVALUATION METRICS
- **CLUSTERING PROBLEMS**
  - DIMENSIONALITY REDUCTION
  - K-MEANS


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- DBSCAN
- HIERARCHICAL CLUSTERING
- ASSOCIATION RULES

- **REINFORCEMENT LEARNING**
  - UPPER CONFIDENCE BOND
  - THOMPSON SAMPLING
- **MODEL SELECTION AND EVALUATION**
  - LOSS FUNCTIONS
  - GRADIENT DESCENT
  - BIAS-VARIANCE TRADEOFF
  - CROSS-VALIDATION
  - HYPERPARAMETER TUNING
- **DATA WRANGLING**
  - INTRO TO DATA WRANGLING
  - GATHERING DATA
  - ASSESSING DATA
  - CLEANING DATA
- **DATA VISUALIZATION WITH PYTHON**
  - DATA VISUALIZATION IN DATA ANALYSIS
  - DESIGN OF VISUALIZATIONS
  - UNIVARIATE EXPLORATION OF DATA
  - BIVARIATE EXPLORATION OF DATA
  - MULTIVARIATE EXPLORATION OF DATA
  - EXPLANATORY VISUALIZATIONS
  - VISUALIZATION CASE STUDY

## V- DATA SCIENTIST TOPICS

- **Solving Problems with Data Science**
  - THE DATA SCIENCE PROCESS


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  - COMMUNICATING WITH STAKEHOLDERS
- **SOFTWARE ENGINEERING FOR DATA SCIENTISTS**
  - SOFTWARE ENGINEERING PRACTICES
  - OBJECT ORIENTED PROGRAMMING
  - WEB DEVELOPMENT
- **DATA ENGINEERING FOR DATA SCIENTISTS**
  - ETL PIPELINES
  - NATURAL LANGUAGE PROCESSING
  - MACHINE LEARNING PIPELINES
- **EXPERIMENT DESIGN**
  - EXPERIMENT DESIGN
  - STATISTICAL CONCERNS OF EXPERIMENTATION
  - A/B TESTING
- **RECOMMENDATIONS**
  - INTRODUCTION TO RECOMMENDATION ENGINES
  - MATRIX FACTORIZATION FOR RECOMMENDATIONS
- **Final Project**


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*Duration:*
*150 Hours*

*Location:*
*Elserag Shopping Mall, Residential Building 1, Entrance 1, Floor 11, Makram Ebeid, Nasr City, cairo, Egypt*

**Contact US**

**To get more details Regarding special discount for groups.**

**FOR MORE INFORMATION:**

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## CERTIFICATE

- Participants will be granted a completion certificate from Epsilon Training Institute, Delaware, USA if they attend a minimum of 80 percent of the direct contact hours of the Program and after fulfilling program requirements (passing both Final Exam and Project to obtain the Certificate)

## REGISTRATION PROCEDURES

- Confirmation of registration is based on receipt of a Purchase Order or Registration Form.
- Training Program registrations will not be confirmed until registration is complete and billing information is received in full

## PAYMENT TERMS AND METHODS

- Payment must be made prior to course commencement at Epsilon Training Center, Nasr City HQ
  - **In-Person**
    - In Cash to our address: Elserag shopping mall, Residential Building 1, Entrance 1, Floor 11
    - By cheque - Payable to: Epsilon Training center
  - **Bank transfer** to our ACC in:
    **QNB ALAHLI Acc /20318280579-69 EGP Branch code / 00078**
  - **Vodafone Cash** to 01011933233

## REFUND

- Any cancellation must be done three (3) weeks prior to course commencement in order to receive a full refund of paid registration fees
- A 50% Cancellation Fees will be imposed for any course cancellation received within two (2) weeks or on the date of course commencement.
    - Refund Prior 3 weeks of the training program start date, 100% Refund
    - Refund Prior 2 weeks of the training program start date, 50% Refund of training program fees
    - Refund Prior 1 week of the training program start date, No Refund
- Any refund request should be requested by a documented email or in writing.

## RECAP

- Recap is available for only 1 session with the available dates
- If you need to recap a session you attended already it will be paid for 200 LE per session with the available dates

## POSTPONING

- Postponing only could be before the start of the training program with minimum 10 days


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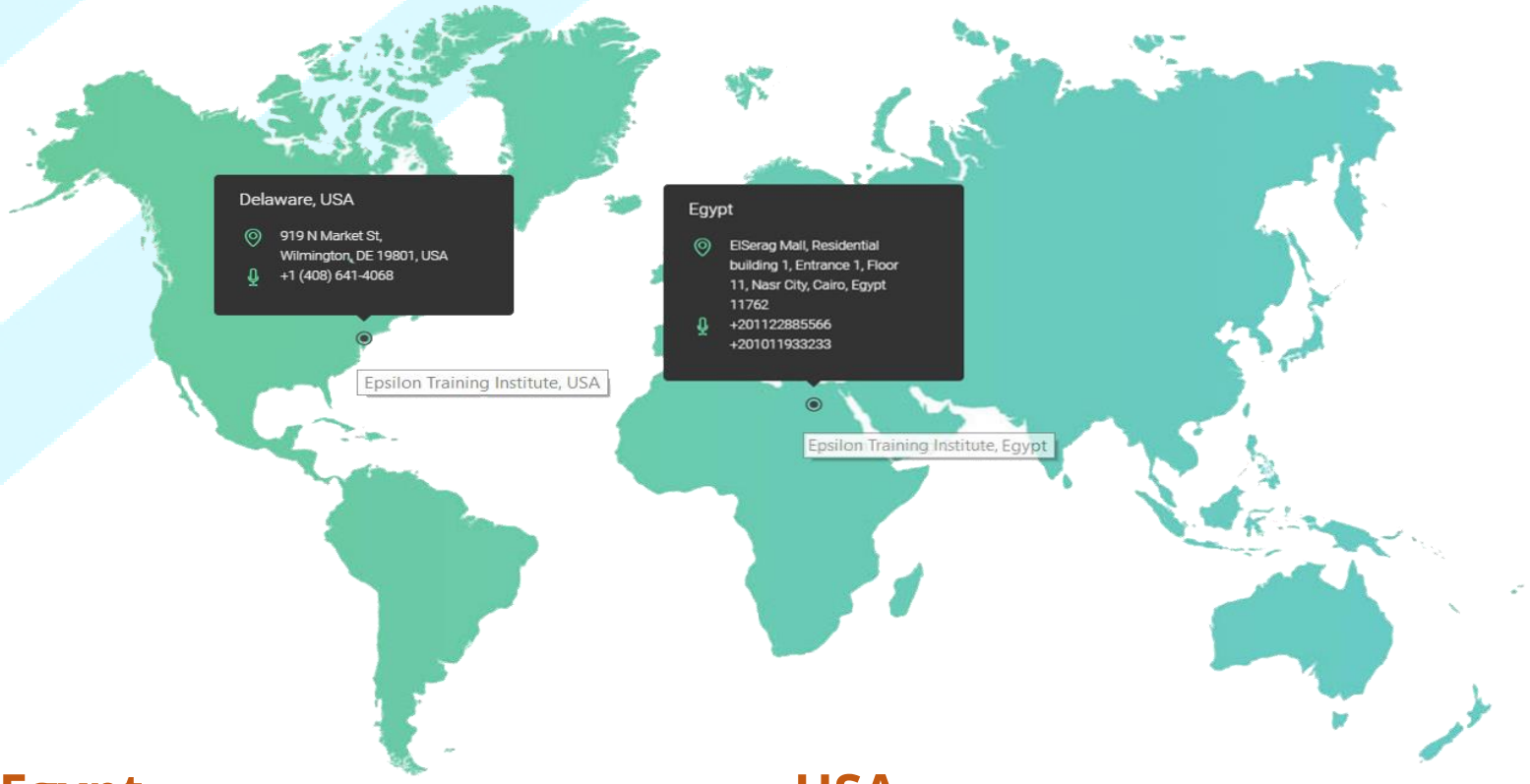
# Get in Touch




## Egypt

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## USA

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**Telephone:** +1 (408) 641-4068
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