**Program: Quality Analysis**

A software quality analyst is responsible for applying the principles and practices of software quality assurance throughout the software development life cycle. Though often referred to as "quality assurance", software testing is considered to be only one part of the larger process of reducing errors.

**Program Objective:** This program is designed for QA Analysts, Test Managers, and Validation Engineers. In this program, students will gain knowledge about essential Quality Assurance & Analysis (QA) concepts and tools and prepare for ISTQB certification. This extensive hands-on program encompasses both manual and automation testing areas. It includes courses on JAVA and Python programming, Service Oriented Architecture (SOA), AWS Cloud Technology, Web Services (SOAP, REST APIs), IDT, Selenium, UFT, Cucumber, BDD (Behavior Driven Development), Karate, SDLC, Business Analysis (BA), UML, Agile, Scrum, XP, Kanban, JIRA, ALM, Data Analysis, Databases and SQL scripting. The program includes ample labs, quizzes, group discussions/ exercises, project work and internal/ external internship opportunities.

**Admission Requirements:**

* GED Credit or high School credit or college Diploma
* Basic English Communication Skill
* Basic Computer Skills with prior Computer Experience
* Apply for the program enrollment before the enrollment date
* Provide application supporting data: Driver License, Transcript, Experience Letter, Recommendation Letter
* Pay the program cost or provide Training cost voucher

**Material:** Textbook, Instructor Notes, Source code for projects.

**Evaluation:**

* Evaluation of project completed in the classroom, 40%
* Home assignments 20%
* Project 40%

**Length of Program / Program Duration:** 36 Weeks/ 360 Hours (10 hrs. per week - Theory/Labs/Practice/ In-Class and Simulation Exam)

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| --- |
| **Institutional Calendar (Program Start and End Date):** |
| **Quarter** | **Dates** | **Events** |
| **Fall 2020** | Wednesday, September 30 | Fall Quarter Begins |
| Thursday, November 26 | Thanksgiving Break |
| Saturday, December 12 | Program Completion Celebration |
| Friday, December 11 | Fall Quarter Ends |
| Monday, December 14 – Saturday, December 26 | Program / Course Evaluations |
|   |   |   |
| **Winter 2020** | Monday, January 6 | Winter Quarter Begins - Program Orientation Day |
| Monday, January 20 | Martin Luther King, Jr. Day |
| Friday, March 20 | Winter Quarter Ends |
|   |   |   |
| **Spring 2020** | Monday, March 30 | Spring Quarter Begins |
| Monday, May 25 | Memorial Day |
| Saturday, June 06 | Program Completion Celebration |
| Friday, June 12 | Spring Quarter Ends |
| Monday, June 15 – | Program / Course Evaluations |
| Friday, June 19 |
|   |   |   |
| **Summer 2020** | Monday, June 22 | Summer Quarter Begins - Program Orientation Day |
| Saturday, July 4 | Independence Day Holiday |
| Friday, August 21 | Summer Quarter Ends |
|   |   |   |
| **Fall 2021** | Wednesday, September 30 | Fall Quarter Begins |
| Thursday, November 26 | Thanksgiving Break |
| Saturday, December 12 | Program Completion Celebration |
| Friday, December 11 | Fall Quarter Ends |
| Monday, December 14 – Saturday, December 26 | Program / Course Evaluations |

**Fees Structure:**

* Tuition – $8,000
* Books/Software/Supplies – $1200
* Certifications/Tests – $800 (ISTQB, PSM, and Oracle)

**REFUND / CANCELLATION POLICY**

1. A full refund against the tuition and fees or a credit in a comparable amount against future tuition and fees will be offered to students, who are called for active duty or active service. A full flexibility for re- enrollment and re-application will be offered to these students.
2. For students who cancel their classes from the institution maybe eligible for tuition and fee refund based on the following refund table below:

Student must make a written request for the withdrawal and request for the refund. If a student has attended the classes in person or on web or missed the classes prior to the formal request, then these weeks counts will be considered as student has taken the classes and these number of weeks will be used in determining the refund amount.



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If there is a billing balance or outstanding balance, the student may still be liable for unpaid institutional costs as well as any non-institutional costs. The school may deduct an administrative fee $100 from the amount of the total refund.

**NOTICE TO STUDENT**

* IT Expert System, Inc. is approved to operate by the Private Business and Vocational Schools Division of the Illinois Board of Higher Education.
* IT Expert System, Inc. is not accredited by a US Department of Education recognized accrediting body.
* The school does not guarantee transferability of credit and that in most cases, credits or coursework are not likely to transfer to another institution.
* COMPLAINTS IF ANY AGAINST THIS INSTITUTION MAY BE REGISTERED WITH THE BOARD OF HIGHER EDUCATION, 1 N Old State Capitol Plaza, Suite# 333, Springfield, IL 62701. The link to the IBHE is [www.ibhe.org](http://www.ibhe.org) and the complaints link is [www.complaints.ibhe.org](http://www.complaints.ibhe.org)

**STUDENT DATA:**

|  |  |  |
| --- | --- | --- |
| **Program** | **Particulars** | **Numbers** |
| Quality Analysis | Total students enrolled | 11 |
| New starts | 9 |
| Transferred out of program | 0 |
| Graduated/Completed | 8 |
| Placed in field of study | 6 |
| Placed in related field | 1 |
| Not available for placement due to personal reasons | 0 |
| Unemployed | 1 |
| Govt/Certification taken/passed | NA |
| Student not placed by IT Expert System | 0 |

**\*\*Approximate salary ranges from 60K – 110K**

**Module 1: Software Quality Assurance and Testing Basics**

**Overview:**This course is designed to teach Software Testing and Quality Assurance in a hands-on manner and prepare the participants for a career in this field. The course will provide instruction and hands-on training for the students to feel confident and begin working in the industry as junior tester or QA Analyst.

**Course Content:**

**QA Introduction**

* What is Software Quality Assurance (SQA), SQA vs. Software Testing
* The profession of SQA
* Knowledge and skill areas for SQA and Testing
* Prevention v/s Detection
* SDLC – Software Development Life Cycle
* Patterns or Approaches of SDLC

**Requirements Analysis and more about testing basics**

* What are software requirements?
* Types of software requirements
* Analysis Techniques
* Requirements Quality Analysis
* STLC – Software Testing Life Cycle
* Defect life cycle
* Types of testing, black box, white box, sanity testing, regression testing

**Test Planning & Documentation**

* Test plan
* Test case
* Traceability Matrix
* Test Reports

**Functional Testing**

* SQL Query Joins
* Front end testing
* UNIX testing and LINUX testing to validate servers and log files
* Quality Center | HP ALM – application life cycle management tool to cover requirements, test plan, Test case, defects and test lab, resources and dashboard module.
* Security Testing
* Web Service Testing using SOAPUI
* SoapUI Basics XML, SOAP, WSDL, Importing/Adding Projects

**Backend Testing, Security Testing & Mobile Testing**

* SQL queries to validate database
* Code review
* Log Files review
* Security Testing
* Mobile Testing

**Junit Maven & Report Generation**

* Introduction to JUnit
* Introduction to Maven
* Junit Maven Configuration
* pom.xml

**Load, Performance, Stress, Security, Mobile Testing**

* Analysis of load, performance and stress testing
* Deep issues of performance
* Performance testing tools using LoadRunner

**Module 2: Database (Oracle)**

**Overview:**The Oracle PL/SQL language is a flexible procedural extension to SQL and increases productivity, performance, scalability, portability and security. In this course, you will gain the practical knowledge to write PL/SQL programs. You will learn to build stored procedures, design and execute modular applications, and increase the efficiency of data movement.

**Course Content:**

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### PL/SQL fundamentals

* Declaring and anchoring variables to database definitions

## Flow control constructs

## DML commands: Select, Insert, Update, Delete

## DDL commands: Create, Alter Tables/Views/Sequence

## TCL commands: Grant, Revoke

## Joins

## Trigger

## Stored procedure

### Oracle 11g and 12c PL/SQL features

* PL/SQL in Oracle 11g
* Returning implicit cursor results from stored procedures in Oracle 12c

## Declaring local functions within SELECT statements in Oracle 12c

##

## Data Manipulation Techniques

### Maintaining data with DML statements

* Employing the RETURNING INTO clause

## Solving the fetch-across-commit problem

###

### Managing data retrieval with cursors

* Implications of explicit and implicit cursors
* Simplifying cursor processing with cursor FOR LOOPs

## Embedding cursor expressions in SELECT statements

###

### Cursor variables

* Strong vs. weak cursor variables
* Passing cursor variables to other programs

## Defining REF CURSORS in packages

## Developing Well-Structured and Error-Free Code

###

### Error handling using EXCEPTIONs

* Propagation and scope

## "Retrying" problem transactions with EXCEPTION processing

###

### Debugging PL/SQL blocks

* Simplifying testing and debugging with conditional compilation
* Interpreting compiler messages
* Applying structured testing techniques
* Building and applying a test bed

## Leveraging the debugging facilities in SQL Developer

## Achieving Maximum Reusability

###

### Writing stored procedures and functions

* Calling and invoking server-side logic
* Passing input and output parameters

## Implementing an autonomous transaction

###

### Coding user-written functions

* Calling PL/SQL functions from SQL

## Building table-valued functions

###

### Developing safe triggers

* Employing :OLD and :NEW variables
* Avoiding unreliable trigger constructs

## Exploiting schema and database triggers

##

## Exploiting Complex Data types

### Collection types

* PL/SQL tables, nested tables, VARRAYs

## Stepping through dense and nonconsecutive collections

###

### Bulk binding for high performance

* Moving data into and out of PL/SQL blocks
* BULK COLLECT INTO and FORALL
* BULK cursor attributes

## BULK EXCEPTION handling

## Invoking Native Dynamic SQL

###

### Finessing the compiler

* The EXECUTE IMMEDIATE statement

## The RETURNING INTO clause

###

### Types of dynamic SQL

* Building SQL statements during runtime

## Auto generating standard code

## Package Tips and Techniques

* Package structure: SPEC and BODY
* Eliminating dependency problems
* Overloading for polymorphic effects
* Evaluating application frameworks

### Declaring and using persistent global variables

**Module 3: Java Programming**

**Overview:**In this course, will cover both core and advanced Java concepts like Database connectivity, Threads, Exception Handling, Collections, JSP, Servlets, XML Handling etc. We will also learn various Java frameworks like Hibernate and spring.

**Course Content:**

**Basic Java Programming**

### Develop the code with various Java data types, conditions and loops.

### Implement arrays, functions and string handling techniques.

### Understand object oriented programming through Java using Classes, Objects and various Java concepts like Abstract, Final etc.

### Implement multi-threading and exception handling

### Use parse XML files using DOM and SAX in Java.

### Write a code in JDBC to communicate with Database.

### Write a code in JMS to communicate with Messaging Server.

### Develop web applications and JSP pages.

### Interact with the database using Hibernate framework.

### Write code with spring framework components like Dependency Injection and Auto Wiring.

**Module 4: PMP – PMI ACP (Agile Certified Practitioner)**

**Overview:**This three-day course provides participants with a solid foundation of the PMI-ACP® exam. During class, participants will be introduced to PMI Agile concepts and practices with banks of sample questions. Additionally, participants will apply agile principles directly to a real-world project taken directly from their industry. Participants will also engage in numerous discussion groups focusing on agile best practices. PMI-ACP is a registered trademark of the Project Management Institute, Inc.

**0- Agile Mindset**

* PMI-ACP® Exam New Topic - Agile Mindset

**1 - PMI-ACP Exam Preparation**

* PMI-ACP® Exam Particulars Overview
* PMI-ACP® Exam Particulars
* PMI-ACP® Candidate Requirements
* PMI-ACP® Candidate Fees
* PMI-ACP® Exam Application Process

**2 - Core Agile Concepts**

* Core Agile Concepts Overview
* Traditional Project Management Methodologies
* Drawbacks of Waterfall Methodologies
* Agile Approach
* Empirical Process Control
* Agile and Traditional Project Management
* Choice of Methodologies/Frameworks

**3 - The Agile Manifesto**

* The Agile Manifesto Overview
* Manifesto Contributors
* Manifesto Values
* Manifesto Principles

**4 - Common Agile Methodology Elements**

* Common Agile Methodology Elements Overview
* Project (Product; Release) Initiation
* Agile Planning
* Iteration Planning and Executing

**5 - Project Initiation**

* Project Initiation Overview
* Determine Project Justifications and Metrics
* Provide Value-Driven Delivery
* Write Project Vision Statement
* Create Project Charter
* Identify Stakeholders and Leader/Coach
* Form Project Team

**6 - Agile Teams and Team Space**

* Agile Teams and Team Space Overview
* Scrum Master/Coach
* Product Owner/Customer
* Team Members/Developers (XP)
* Trackers and Testers
* Other Roles
* Team Space
* Physical Space Recommendations

**7 - Agile Planning**

* Agile Planning Overview
* Develop Epics and Stories
* Create Stories
* Non-Customer Facing Stories
* Personas and Extreme Personas
* Story Maps
* Estimating Stories
* Prioritizing Stories
* Create Product Backlog
* Create Product Roadmap
* Conduct Release Planning
* Create Parking Lot

**8 - Iterations/Sprints**

* Iterations/Sprints Overview
* Velocity Determination
* Iteration Planning Meeting
* Iteration Planning Guidelines
* Development
* Testing
* Daily Standup Meetings
* Progress Tracking
* Velocity Tracking

**9 - Interpersonal Aspects of Agile**

* Interpersonal Aspects of Agile Overview
* Methodologies and Uncertainty
* Coach/Scrum Master
* Team Motivation
* Soft Skills
* Emotional Intelligence
* Collaboration
* Negotiations
* Active listening
* Conflict Resolution
* Speed Leas’ Model of Group Conflict
* Conducting Retrospectives
* Mindsets of Agile Coaches
* Leadership Stages
* Key Coaching Responsibilities

**10 - Agile Methodologies**

* Agile Methodologies Overview
* XP and Scrum Terms
* XP Terms and Concepts
* XP Primary Practices
* XP Corollary Practices
* Scrum
* Lean Software Development
* Seven Principles of Lean
* Seven Types of Muda
* Responsibilities
* Core Beliefs of Lean-Agile Software Development
* Other Principles of Lean-Agile Software Development
* Value Stream Mapping
* Lean-Agile Software Development Portfolio Management

**Module 5: Service Oriented Architecture**

**Course Content:**

* SOA overview
* SOA design principles
* Exercise: Case study overview
* SOA use of standards
* Exercise: Demonstration of Web services
* IBM SOA Foundation - product overview
* SOA Foundation - governance
* Exercise: Demonstration of governance
* SOA Foundation - model
* Exercise: Demonstration of service identification and specification
* SOA scenarios overview
* Exercise: Identifying and applying SOA scenarios to the case study
* SOA Foundation - assemble and deploy
* Exercise: Demonstration of service deployment and assembly using SCA
* Service management and security

**Module 6: Business Analyst**

**Overview:**This course is structured around a series of activities in which you gain practical modeling experience. In the context of a real-world case study, you apply best practices in business requirement gathering, documentation and stakeholder management to help you fulfill your crucial role as a business analyst.

## Course Content

**Introduction to business analysis**

* The rationale for business analysis
* The development of business analysis
* The scope of business analysis
* The responsibilities of a business analyst

## Competencies of the business analyst• The Business Analysis Maturity Model• The competencies of a business analyst

## Business strategy analysis•The strategic context•Strategic analysis techniques•SWOT analysis•Implementing strategy

## The Business Analysis Process Model• The lifecycle for business analysis• Creative problem-solving approach• Stages of the process model•Deliverables and techniques for each stage

## Investigation techniques• Interviewing and workshops• Observationapproaches• Scenariosandprototyping• Quantitativeinvestigationtechniques• Documenting the business situation

## Stakeholder analysis and management• Categorizing stakeholders• Analyzing stakeholders• Stakeholder management

## Modeling the business system• Soft systems methodology• Documenting business situations• Business perspectives• Business activity models• Business events and business rules• Performance measures• Gap analysis

## Modeling business processes• Organizational view of processes• Value chain and value propositions• Business process modeling techniques• Improving business processes

## Gathering the requirements• Requirements engineering framework• Actors in requirements engineering• Requirements elicitation• Requirements analysis• Requirements validation

## Documenting and managing requirements• The requirements document• The requirements catalogue• Types of requirement• Managing requirements

## Modeling requirements• Modeling functionality• Modeling data

## Delivering the requirements•Delivering the solution• Delivery lifecycles – waterfall, V model, incremental, iterative

## Making a business and financial case• The business case in the project lifecycle• Identifying options• Assessing feasibility• Structure of a business case• Investment appraisal techniques• Realizing the benefits

## Implementing business change

* The change management process
* The emotional impact of change

**Module 7: Selenium Web Automation**

**Course Description**

This course prepares learners for a career in software testing with web application test automation using Selenium. Students will learn selenium API and its components and use it to automate web applications.

**Course Content**

* Overview
* Selenium architecture
* API overview
* WebDriver Setup
* Using Locators
* Interacting with Web Elements
* Selenium RC
* Junit framework
* Maven Build
* Jenkins Integration
* TestNG framework
* Selenium Grid

**Module 8: UFT Test Automation**

**Course Description**

HP UFT is a very popular test automation tool that allows users to automate wide variety of test including GUI, Web and API application tests. Students will learn how to use this tool to automate tests. This course will help students to jump start their career in ever growing automation testing field.

**Course Content**

* Overview
* What is test automation
* Automation Test Life Cycle
* Different Application types
* Overview of Web Apps and HTML
* Automate Web Application test cases using GUI scripts
* Object Repositories
* Object Identification techniques
* Verification using Check Points
* Parameterizing data using data tables
* Introduction to programming using VBScript
* Overview of Web Services
* Types of Web services – SOAP and REST
* Overview of Data types – XML, JSON
* Automate Web Service test using API scripts