PIAIC Course Catalog

Version 1.1.0

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March 17, 2020

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PIAIC Philosophy

1. Classes should be held during evening or weekends so that everyone can participate.
2. The fee should be low so that everyone can afford to attend classes.
3. Onsite classes should be supplemented with online video content. (Onsite classes will be transformed into interactive live online classes in case if it is not possible to conduct onsite classes)
4. For those who cannot come to attend onsite classes, online classes should also be made available.
5. Admissions should be given only on the basis of entry test checking candidate's Math and English capabilities. (If entry tests cannot be conducted in that case admissions will be given on first come first serve basis)
6. All students will be required to choose at least one of the following technical tracks with a duration of 12 to 18 months:
    a. Artificial Intelligence (AI)
    b. Cloud Native and Mobile Web
    c. Blockchain
    d. Internet of Things (IoT)
    e. Quantum Computing
    f. 5G, Network Programmability and Automation, and SDN
    g. Computational Genomics (Under Development)
    h. 3D Printing (Under Development)
7. It will be compulsory for all the students to take the innovation track covering the following subjects:
    a. Design Thinking
    b. Lean Startup
    c. Agile
    d. DevOps (Linux, Docker, Kubernetes, Terraform, Jenkins, and Prometheus)
8. We will follow the syllabus of international certifications where available and will prepare the students for these international exams. We will also encourage the students to appear in these international exams if they can afford it. The objective of the program is to get the students ready for the global market.
9. Every track will focus on teaching extensively one or more of the following open source programming languages:
    a. Python
    b. JavaScript/TypeScript
    c. Rust
    d. Web Assembly
10. All tracks will teach students to develop end-to-end applications in addition to the specialized track course.
11. We will focus on open source technologies as much as possible.
12. Every student will continuously be evaluated by appearing in exams.
13. All faculty selection is based on the skills being taught and ability to communicate.
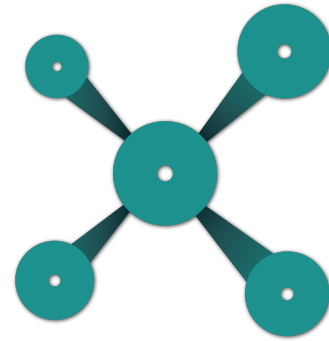
Technical Training Programs

There are currently six operational technical training programs at the PIAIC:
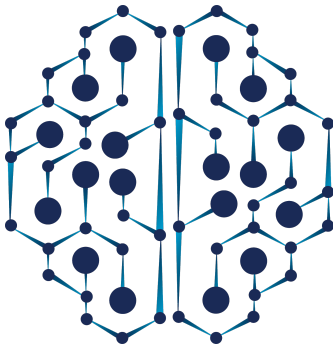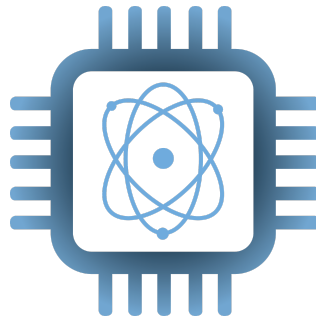
Artificial Intelligence

Cloud Native Computing

Artificial Intelligence of Things

Blockchain

Quantum Computing

5G, Network Programmability, and Software Defined Networking (SDN / NFV/ Orchestration)

In addition, there are two programs that are currently under development:

1. Computational Genomics
2. 3D Printing

Additional programs will continue to be added into the PIAIC program as they are researched and developed for the mass training of Pakistani youth.

Artificial Intelligence (AI)

A one year AI program designed for absolute beginners to get Pakistan ready for the new era of computing enabled by the rise of AI.

Objective: To develop AI based end-to-end applications
Core Programming Language: Python
Secondary Programming Language: JavaScript/TypeScript
Code Versioning: Git and GitHub
Primary Libraries and Frameworks: TensorFlow, NumPy, Pandas, Flask, and React
Secondary Libraries and Frameworks: Kubernetes, and Kubeflow

The Artificial Intelligence Program covers the following international certifications:

      a. [Microsoft's Introduction to Programming Using Python](#)

      b. [Google's TensorFlow Developer Certification](#)

Detailed Syllabus:

    [Quarter I: AI-101 AI for Everyone and Fundamentals of Programming using Python](#)

    [Quarter II: AI-201 Data Analysis and Introduction to Deep Learning](#)

    [Quarter III: AI-301 Deep Learning in Practice and Microservices in Python](#)

    Note: Detailed syllabi for remaining quarters are currently undergoing testing and review.

Cloud Native and Mobile Web

A one year cloud computing program designed for absolute beginners to get Pakistan ready for the new era of microservices and multi-cloud native computing.

Objective: To develop highly scalable, cloud native, end-to-end mobile web applications
Core Programming Language: JavaScript/TypeScript
Code Versioning: Git and GitHub
Primary Cloud Tools: Kubernetes and AWS
Primary Libraries and Frameworks: Docker, React, Gatsby.js, QraphQL, Node.js, and MongoDB

The Cloud Native and Mobile Web Program covers the following international certifications:

     a. [Certified Kubernetes Application Developer (CKAD) Program](#)

     b. [AWS Certified Developer - Associate](#)

Detailed Syllabus:

[Quarter I: CN-301 Fundamentals of Cloud Native Computing](#)

[Quarter II: Mobile-Web-201 Fundamentals of JAMstack Development](#)

[Quarter III: Mobile-Web-301 Advanced JAMstack Development](#)
[Quarter III: Mobile-Web-301 Advanced JAMstack Development (Karachi)](#)

Note: Detailed syllabi for remaining quarters are currently undergoing testing and review.

Artificial Intelligence of Things

A fifteen month Internet of Things (IoT) and Artificial Intelligence (AI) program designed for absolute beginners to get Pakistan ready for the new era of IoT and AI.

Objective: Develop cloud, edge, and embedded end-to-end intelligent IoT applications
Core Programming Languages: Rust and Web Assembly
Code Versioning: Git and GitHub
Embedded Programming: Embedded Rust
Main Cloud Framework: Kubernetes
Main Edge Framework: KubeEdge
Conversational voice user interfaces: Amazon Alexa
Main Libraries and Frameworks: Asynchronous Rust, Hyper, MongoDB, Yew, TensorFlow, and eWasm.

The Artificial Intelligence of Things Program covers the following international certifications:

      a.   [AWS Certified Alexa Skill Builder](#)

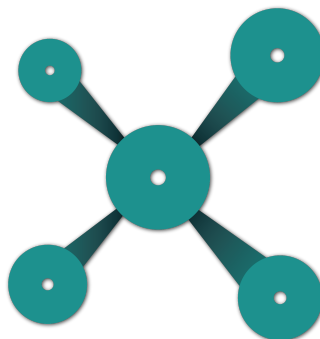   b.   [Certified Kubernetes Application Developer (CKAD) Program](#)

Detailed Syllabus:

[Quarter I: IoT-101 Intro to IoT and Fundamentals of Programming using Rust](#)

[Quarter II: IoT-201 Embedded Programming in Rust](#)

[Quarter III: IoT-301 Cloud Native and Edge Computing for IoT](#)

Note: Detailed syllabi for remaining quarters are currently undergoing testing and review.

Blockchain

A one year blockchain program designed for absolute beginners to get Pakistan ready for the new era of blockchain, fintech, and smart contracts.

Objective: To develop smart contracts and end-to-end Dapps (Decentralized Applications).
Core Programming Language: JavaScript/TypeScript and Solidity
Code Versioning: Git and GitHub
Blockchains: Ethereum and Hyperledger
Primary Libraries and Frameworks: Smart Contracts, Web3.js, React, Node.js, and MongoDB

The Blockchain Program covers the following international certifications:

     a.   [Certified Blockchain Business Foundations (CBBF)](#)

     b.   [Certified Blockchain Developer - Ethereum (CBDE)](#)

Detailed Syllabus:

     [Quarter I: BC-301 Blockchain Business Foundations](#)

     [Quarter II: BC-401 Blockchain Development – Ethereum](#)

     [Quarter III: BC-450 Advanced Dapp Development](#)

     Note: Detailed syllabi for remaining quarters are currently undergoing testing and review.

Quantum Computing

A one-year quantum computing program designed for absolute beginners to get Pakistan ready for the era of quantum supremacy.

Objective: Programming Quantum Computers
Core Programming Languages: Python and Qiskit
**Code Versioning:** Git and GitHub
Applications: Finance, AI, Chemistry, and Gaming

There are no international certifications for Quantum Computing at the time of writing this document. As soon as international certifications become available, they will be integrated into this program.

Detailed Syllabus:

Quarter I: QC-301 Fundamentals of Programming a QPU

Note: Detailed syllabi for remaining quarters are currently undergoing testing and review.
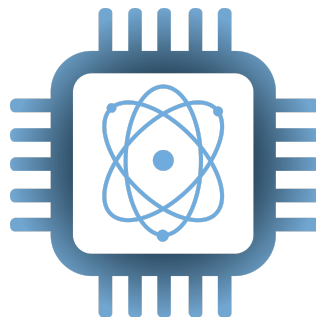
5G, Network Programmability, and Software Defined Networking (SDN / NFV / Orchestration)

A one-year program designed for absolute beginners to prepare the next generation of Pakistani network engineers.

Objective: Train next generation of Network Engineers
Core Programming Language: Python
Code Versioning: Git and GitHub
Tools, Libraries and Frameworks: 5G, Kubernetes, ONAP, Network Programmability and Automation

The 5G, Network Programmability, and Software Defined Networking Technical Track covers the following international certifications:

      a. [New Cisco CCNA (200-301) Certification](#)

      b. [Cisco Certified DevNet Specialist - Enterprise Automation and Programmability (300-435 ENAUTO)](#)

      c. [Certified Kubernetes Application Developer (CKAD) Program](#)

Detailed Syllabus:

    [Quarter I: 5G-301 Fundamentals of Core Networking and 5G Architecture](#)

    Note: Detailed syllabi for remaining quarters are currently undergoing testing and review.

Innovation Training Program

All PIAIC students, regardless of which technical track they're enrolled in, must also participate in the innovation track. The innovation track courses are compulsory for all PIAIC students and are offered in parallel to the technical training programs.

1. **Quarter I: MGT-501 4IR Innovation Leadership and Architecture**

   The first quarter of the innovation track covers the following international certification:

    a. PMI Agile Certified Practitioner (PMI-ACP)

2. **Quarter II: DevOps-501 Infrastructure As Code and DevOps**

    The second quarter of the innovation track covers the following international certifications:

    a. HashiCorp Certified: Terraform Associate

    b. Certified Jenkins Engineer

    c. Red Hat Certified Specialist in Ansible Automation

    Note: Detailed syllabi for remaining quarters are currently undergoing testing and review.
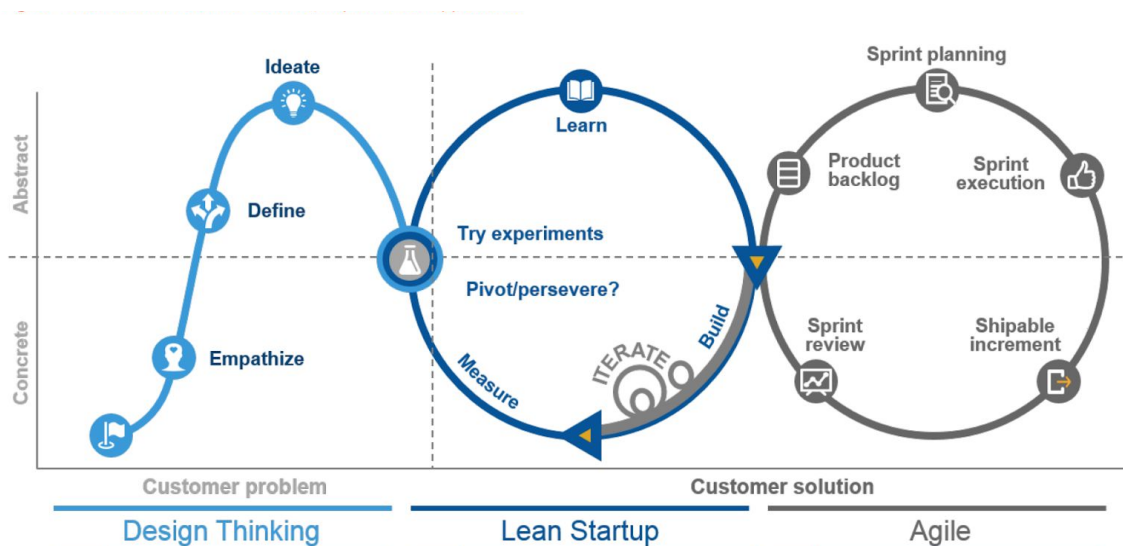
Source: Gartner

All PIAIC Programs and their syllabi are continuously being revised and improved to stay up to date with the latest trends in the silicon valley and the global markets. All programs are geared towards the international certifications that have been enumerated in the details of each program. If a program does not mention an international certification, it's because there isn't any certification for that program at this time. As soon as a certification becomes available, it will be integrated into the program of study.

Regards,

Zia Khan

Zia Khan
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