Syllabus for “Cloud Computing” Track

Sr. No	Module Name	Sub topics/ Key Takeaways	Hour(s)
1	**Introduction to cloud computing**	--Definition and essential characteristics	**12**
		--A brief history and evolution of Cloud	
	Comparing vendor cloud products	Amazon, Google, Microsoft , IBM	
	Concept of Adopting the Cloud	- when cloud is needed for scalability on demand	
		- Benefits of Cloud Computing	
	Services on IBM Cloud	Blockchain	
		Internet of Things	
		Cloud Paks	
	Cloud Computing Service and Deployment Models	Infrastructure as a Service (IaaS)	
		Platform as a Service (PaaS)	
		Software as a Service (SaaS)	
	Virtualization, VMs, Bare Metal		
	Cloud Storage	Basics of Cloud Storage	
		File Storage	
		Block Storage	
		Object Storage Overview	
		Object Storage - Tiers and APIs	
	Content Delivery Network (CDN) Concept		
	Cloud Native and Emergent Cloud Trends	Microservices	
		Cloud Native Applications	
		DevOps on the Cloud	
2	**Building a RESTful API with Express**	Guided Project	**6**
3	**Deploy a web server using python and kubernetes**	Guided Project	**5**
4	**Working with GIT**	Introduction Git, Github and GitLab	**4**
		Difference between Git and Github	
		Install GIT CLI	

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		Working with different Git Command	
		Handling Repository	
		Git Push Pull Branch	
5	**Location and Cost Estimator**	Locations and Regions	**20**
		Account Types and Support Plans	
		Billing and Usage	
		Cost Estimator	
		Use the Cost Estimator Tool	
	VMware		
	Containers	Containers and Kubernetes	
		Deploy an Application to Kubernetes	
		OpenShift	
		Cloud Foundry	
		Deploy an Application to Cloud Foundry	
	Cloud Functions	Introduction	
		Database - traditional databases, cloudlite db for mobile applications, NoSQL databases,	
		Get to Know Cloudant	
		Integration	
		A I	
		BlockChain	
	Cloud Paks		
6	**Docker Essentials**	Run your first container	**8**
		Add CI/CD value with Docker images	
		Orchestrate applications with Docker Swarm	
7	**Kubernetes**	Understanding the Benefits of Containers	**10**
		Understanding Kubernetes Architecture	
		Managing Applications with Kubernetes	
		The Kubernetes Ecosystem	
8	**Working with Containers Dockers and the IBM Cloud Container Registry**	Guided Project	**4**

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9	**Serverless Computing**	Serverless essentials	**14**
		Create and invoke actions	
		Manage actions with packages	
		Connect actions to event sources	
		Expose actions as APIs	
		Use the Web User Interface (Web UI)	
		Differentiate a Function-as-a-Service (FaaS) from a Container-as-a-Service (CaaS)	
10	**Deploy a Computer Vision App in a Serverless Environment**	Guided Project	**5**
11	**Working with Databases in IBM Cloudant**	Guided Project	**4**
12	**Performing Database Operations in the Cloudant Dashboard**	Guided Project	**4**
13	**Using an HTTP API to Create and Query IBM Cloudant Databases**	Guided Project	**4**
14	**Building Cloud Native and MultiCloud Application**	Cloud Native and Multicloud Concepts and Goals	**16**
		Migrating Apps to Advantage Cloud Infrastructure	
		Modernizing Applications to be CN	
		Applying CI/CD to CN applications	
		Managing Applications in Multicloud Deployments	
15	**Data Visualisation & AI**	Overview of data visualisation and its importance	**16**
		The importance of data visualisation	
		Server, storage, network visualisation	
		The relationships, comparisons, distribution, and composition of data	
		Analytics	
		Artificial Intelligence	
16	**Deploying applications on Cloud:**	Scale and update apps: Services, replica sets, and health checks	**7**
		Deploying an application on IBM Cloud	

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		Run the application and service	
		Private /public cloud deployment	
17	**Private cloud environment**	Security and privacy to be maintained through private clouds	**7**
		Elimination of third-party or intruders	
18	**Public cloud environment**	Administration of public cloud	**7**
		Managing multiple users of the same data at the same time	
19	**Cloud performance tuning**	Load Balancing	**6**
		Load Testing	
		Auto-scaling	
20	**Exploiting Software as a Service (SaaS)**	Characterizing SaaS	**9**
		Streamlining administration with centralized installation	
		Optimizing cost and performance with scale on demand	
		Comparing service scenarios	
		Improving collaboration with business productivity tools	
		Simplifying business process creation by integrating existing components	
		Inspecting SaaS technologies	
		Deploying web applications	
		Implementing web services: SOAP, REST	
		Choosing a development platform	
21	**Delivering Platform as a Service (PaaS)**	Exploring the technical foundation for PaaS	**9**
		Specifying the components of PaaS	
		Analyzing vendor PaaS provisions	
		Selecting an appropriate implementation	
		Building services with solution stacks	
		Becoming familiar with service platform tools	
		Managing cloud storage	
		Controlling unstructured data in the cloud	

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		Improving data availability	
		Employing support services	
		Testing in the cloud	
		Monitoring cloud-based services	
22	**Deploying Infrastructure as a Service (IaaS)**	Scalable server clusters	**9**
		Achieving transparency with platform virtualization	
		Elastic storage devices	
		Accessing IaaS	
		Provisioning servers on demand	
		Handling dynamic and static IP addresses	
		Tools and support for management and monitoring	
23	**Cloud security**	Infrastructure Security	**8**
		Network-level security	
		Host level security	
		Data Security and Storage	
		Cloud Access: authentication, authorisation and accounting	
		Identity and access management (IAM)	
		Data loss prevention (DLP)	
		Authentication as a service using gmail authentication	
24	**Migrating to the Cloud**	Technical considerations	**6**
		Rearchitecting applications for the cloud	
		Integrating the cloud with existing applications	
		Avoiding vendor lock-in	
		Planning the migration and selecting a vendor	
		Paths for Application Modernization	
		Application Migration using Containers	