

## CSE121:ORIENTATION TO COMPUTING-II

L:2 T:0 P:0 Credits:2

**Course Outcomes:** Through this course students should be able to

CO1 :: Understand the need for data science and big data along with its tools, job roles, and skill set

CO2 :: Discuss the use of AI and machine learning in different fields along with its tools, job roles, and skill set

CO3 :: Recognize the attacks, malware, tools, job roles, suspicious links, secure connection and skill set for cyber security

CO4 :: Identify various DevOps and software testing tools, job roles, skill sets, and their applications in IT companies

CO5 :: Analyze different types of cloud model implementations and services along with their tools, job roles, and skill set

CO6 :: Describe the differentiation and usefulness of various front-end and back-end technologies along with their tools, job roles, and skill set

### Unit I

**Data Science & Big Data** : Data science and its need, Applications of data science/Big data, Data science Lifecycle with use case, Big data and its 3Vs, Challenges of Big data, Skill needed for Big data, Tools usage like Apache Hadoop, Tableau, R language, Excel, Big Data on the Cloud, Use of Big Data in different areas, Job roles and skillset for Data science and Big data

### Unit II

**Artificial Intelligence & Machine Learning** : Introduction to AI, ML and Deep Learning, Expert systems, Fuzzy systems, Augmented Reality, Use of AI in different fields - NLP, Healthcare, Agriculture, Social media monitoring, Tools and techniques for implementing AI, Google Translator, Driverless Car, ALEXA, Siri, ChatGPT, Current trends and opportunities, Job roles and skillset for AI and ML

### Unit III

**Introduction to Cyber Security** : Introduction to cyber security, Information security concepts, Threats, Types of malware, Types of attacks, Use of cyber security in different industries like Healthcare, Manufacturing, E-commerce, Tools for cyber security assessment like nmap, Wireshark, Metasploit, AI based cyber threat intelligence solutions, Cyber security opportunities in market and skillset

**Secure web-browsing** : Recognize a secure connection, Recognize suspicious links, Update Browsers and plugins, Recognize untrusted source warnings, social media security (Facebook, WhatsApp, email).

### Unit IV

**DevOps & Software Engineering** : Introduction to DevOps, DevOps Vs Traditional Software Development Models, DevOps Tools : Git, Docker, Selenium, Maven, Puppet, Ansible, Kubernetes, Nagios, Fundamentals of testing, Objectives of Testing, Types of Testing, Levels of testing, Applications of software testing in IT companies, Career opportunities in the field of DevOps and software testing with skillset

### Unit V

**Introduction to Cloud Computing** : Introduction to cloud computing, Uses of cloud computing in applications services, Platform deployments, Types of cloud model implementations, Types of cloud services, Data analytics, Virtualization, Tools and techniques for implementing, Job roles and skillset for cloud computing

### Unit VI

**Introduction to Full Stack Web Development and UI/UX** : Introduction to Web Development, User Interface Design, frontend, backend, databases, CRUD applications, Languages such as HTML, CSS, PHP, Java Scripts, and frameworks, by using VS code tool, Single page applications (SPA), Responsive web design, mobile-first development, Job-roles and skillset for full stack and UI/UX

### References:

1. BIG DATA by ANIL MAHESHWARI, MC GRAW HILL
2. PRINCIPLES OF SOFT COMPUTING by S.N. SIVANANDAM, S.N. DEEPA, WILEY

**References:**

3. HTML, CSS, AND JAVASCRIPT ALL IN ONE, SAMS TEACH YOURSELF by JULIE C. MELONI, JENNIFER KYRNIN, PEARSON
4. CLOUD COMPUTING: FUNDAMENTALS, INDUSTRY APPROACH AND TRENDS by RISHABH SHARMA, WILEY