

Westwood Dynamic Limited

Course Syllabus/Content

WD-UK Level 4 (UK Qualifications Framework - Information Technology)

(Credits 120)

Revised Modules	Contact hours (Full-Time)	Contact hours (Part-Time)	Assessment	Teaching Methods	Passing Mark
Advanced Programming Concepts	50	50	Assignment Based	Classroom Lectures & Online	50%
Web Development and Design	50	50	Assignment Based	Classroom Lectures & Online	50%
Systems Analysis and Design	50	50	Assignment Based	Classroom Lectures & Online	50%
Network Security	50	50	Assignment Based	Classroom Lectures & Online	50%
Database Management	50	50	Assignment Based	Classroom Lectures & Online	50%

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IT Service Management	50	50	Assignment Based	Classroom Lectures & Online	50%
Mobile App Development	50	50	Assignment Based	Classroom Lectures & Online	50%
Cloud Computing Basics	50	50	Assignment Based	Classroom Lectures & Online	50%
Project Planning and Control	50	50	Assignment Based	Classroom Lectures & Online	50%
Ethical Hacking	50	50	Assignment Based	Classroom Lectures & Online	50%

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Subject	Advanced Programming Concepts								
Aims and Objectives	The aim of this course is to deepen students' understanding of advanced programming concepts and methodologies, enabling them to develop complex software systems effectively. By the end of the course, students should be proficient in applying advanced programming principles to solve real-world problems and be prepared for further study or professional practice in software development.								
Learning Outcomes	<ol style="list-style-type: none"> 1. Understanding Advanced Data Structures: Students will be able to analyze, design, and implement advanced data structures such as trees, graphs, and hash tables, and understand their applications in solving complex problems efficiently. 2. Proficiency in Algorithms: Students will gain a deep understanding of algorithm design and analysis, including advanced algorithms for sorting, searching, and optimization, and be able to apply them to solve computational problems. 3. Concurrency and Parallelism: Students will learn about concurrency models, parallel programming paradigms, and synchronization techniques, enabling them to develop efficient and scalable concurrent software systems. 4. Software Design Patterns: Students will be introduced to common design patterns and architectural principles used in software development, and learn how to apply them to design modular, reusable, and maintainable software components. 5. Advanced Topics in Object-Oriented Programming: Students will explore advanced concepts in object-oriented programming such as inheritance, polymorphism, interfaces, and generics, and understand their role in building extensible and flexible software systems. 								
Credit Points:	12 credit points								
Assessment	<ul style="list-style-type: none"> ▪ Assignment based 								
Teaching Mode (Full-Time)	<table style="width: 100%; border: none;"> <tr> <td style="padding-right: 20px;">Lectures:</td> <td>60 hours</td> </tr> <tr> <td>Tutorials/workshop:</td> <td>30 hours</td> </tr> <tr> <td>Private Study:</td> <td>30 hours</td> </tr> <tr> <td>Total:</td> <td>120 hours</td> </tr> </table>	Lectures:	60 hours	Tutorials/workshop:	30 hours	Private Study:	30 hours	Total:	120 hours
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Subject	Web Development and Design								
Aims and Objectives	<p>Aim: To provide students with advanced knowledge and skills in web development and design, preparing them for professional roles in the field.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. To deepen understanding of front-end and back-end web technologies. 2. To develop proficiency in designing responsive and user-friendly web interfaces. 3. To enhance problem-solving skills in the context of web development projects. 4. To cultivate collaboration and communication skills essential for teamwork in web development projects. 5. To explore emerging trends and technologies in web development and design. 								
Learning Outcomes	<p>Upon completion of the course, students will be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate advanced proficiency in HTML, CSS, JavaScript, and relevant frameworks for front-end development. 2. Implement dynamic and interactive web applications using advanced JavaScript techniques and libraries (e.g., React, Angular, Vue.js). 3. Design and develop databases and server-side components using technologies such as Node.js, Express.js, and MongoDB. 4. Create responsive and accessible web designs that prioritize user experience across various devices and screen sizes. 5. Apply principles of usability and user-centered design to enhance the effectiveness of web interfaces. 6. Employ version control systems (e.g., Git) and collaborative development tools to manage web development projects efficiently. 								
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Subject	Systems Analysis and Design								
Aims and Objectives	<p>Aim: This course aims to provide students with a comprehensive understanding of system analysis and design principles and practices.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. To familiarize students with the fundamental concepts and theories of systems analysis and design. 2. To develop students' skills in analyzing business requirements and designing effective system solutions. 3. To equip students with the knowledge and tools necessary to create high-quality software systems that meet user needs and organizational goals. 4. To enable students to apply various methodologies and techniques in system analysis and design to real-world scenarios. 5. To cultivate critical thinking and problem-solving abilities in the context of designing and implementing information systems. 								
Learning Outcomes	<p>Upon successful completion of this course, students should be able to:</p> <ol style="list-style-type: none"> 1. Analyze and document business requirements using appropriate techniques such as interviews, surveys, and observations. 2. Design efficient and scalable system architectures that align with organizational objectives and constraints. 3. Utilize modeling tools and techniques (e.g., UML diagrams) to represent system structures, behaviors, and interactions. 4. Apply various methodologies (e.g., waterfall, agile) and development approaches to manage the system development lifecycle effectively. 5. Evaluate and select appropriate technologies and platforms for implementing system solutions. 6. Collaborate effectively with stakeholders to gather feedback and refine system designs iteratively. 								
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Subject	Network Security								
Aims and Objectives	The aim of this course is to provide students with a comprehensive understanding of network security principles, techniques, and best practices. By the end of the course, students will be equipped with the knowledge and skills necessary to analyze, design, implement, and manage secure network infrastructures.								
Learning Outcomes	<p>Upon successful completion of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand the fundamental concepts of network security, including threats, vulnerabilities, and risk assessment. 2. Analyze various network security architectures and their applicability to different environments. 3. Implement encryption algorithms and protocols to secure data transmission over networks. 4. Configure and manage firewalls, intrusion detection systems (IDS), and intrusion prevention systems (IPS) to protect network infrastructure. 5. Apply access control mechanisms to restrict unauthorized access to network resources. 6. Evaluate and implement secure network protocols, such as SSL/TLS, IPsec, and SSH. 								
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Subject	Database Management								
Aims and Objectives	The aim of this course is to provide students with a comprehensive understanding of database management principles, techniques, and technologies. By the end of the course, students will be equipped with the necessary knowledge and skills to design, implement, and manage databases effectively in various organizational contexts.								
Learning Outcomes	<p>Upon successful completion of this course, students will be able to:</p> <ol style="list-style-type: none"> 1. Understand the fundamental concepts and principles of database management systems (DBMS). 2. Analyze and evaluate different types of database models, including relational, hierarchical, network, and object-oriented models. 3. Design and implement relational databases using appropriate database design techniques, including entity-relationship modeling and normalization. 4. Demonstrate proficiency in SQL (Structured Query Language) for data manipulation, retrieval, and management tasks. 5. Apply security measures and techniques to safeguard database systems from unauthorized access and malicious attacks. 								
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Subject	IT Service Management								
Aims and Objectives	The aim of this course is to provide students with a comprehensive understanding of IT Service Management (ITSM) principles, practices, and frameworks. By the end of the course, students will be equipped with the knowledge and skills necessary to effectively manage IT services within an organization.								
Learning Outcomes	<ol style="list-style-type: none"> 1. Understand the fundamental concepts and principles of IT Service Management. 2. Analyze different ITSM frameworks such as ITIL, COBIT, and ISO/IEC 20000. 3. Demonstrate proficiency in designing and implementing IT service strategies aligned with organizational goals. 4. Evaluate the role of ITSM in enhancing business value and customer satisfaction. 5. Apply ITSM best practices to improve service delivery, incident management, problem management, and change management processes. 6. Utilize ITSM tools and technologies for effective service monitoring, reporting, and optimization. 								
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Subject	Mobile App Development								
Aims and Objectives	<p>Aim: The aim of this course is to equip students with the knowledge and skills necessary to design, develop, and deploy mobile applications across various platforms, focusing on both Android and iOS ecosystems.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. To provide a comprehensive understanding of mobile app development principles and practices. 2. To introduce students to programming languages and frameworks commonly used in mobile app development. 3. To enable students to design user-friendly interfaces for mobile applications. 4. To teach students how to implement various features and functionalities in mobile apps, such as user authentication, data storage, and multimedia integration. 5. To familiarize students with the process of testing, debugging, and optimizing mobile applications. 6. To instill best practices for app deployment and maintenance, including app store guidelines and updates. 								
Learning Outcomes	<ol style="list-style-type: none"> 1. Demonstrate an understanding of the mobile app development lifecycle, from ideation to deployment. 2. Utilize programming languages such as Java (for Android) and Swift (for iOS) to develop mobile applications. 3. Design intuitive and responsive user interfaces for mobile devices using appropriate tools and frameworks (e.g., Android Studio, Xcode). 4. Implement essential features in mobile apps, including user authentication, database integration, and integration with device hardware. 5. Apply debugging and testing techniques to identify and resolve issues in mobile applications. 6. Optimize mobile apps for performance, usability, and compatibility across different devices and screen sizes. 7. Follow app store guidelines and best practices for publishing and updating mobile applications. 								
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Subject	Cloud Computing Basics								
Aims and Objectives	<p>-Provide a comprehensive understanding of cloud computing concepts, principles, and technologies.</p> <p>- Equip students with the knowledge and skills necessary to utilize cloud computing services effectively.</p> <p>- Foster critical thinking and problem-solving abilities in the context of cloud computing applications.</p> <p>- Prepare students for further studies or professional roles in cloud computing-related fields.</p>								
Learning Outcomes	<p>By the end of this course, students should be able to:</p> <ol style="list-style-type: none"> 1. Define cloud computing and explain its significance in modern IT environments. 2. Identify various cloud computing service models (IaaS, PaaS, SaaS) and deployment models (public, private, hybrid). 3. Compare and contrast different cloud computing providers and their offerings. 4. Analyze the benefits and challenges associated with migrating to the cloud. 5. Demonstrate proficiency in using cloud computing platforms and services for storage, computation, and networking. 6. Apply security best practices to protect data and applications in the cloud. 								
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Subject	Project Planning and Control								
Aims and Objectives	<p>Aim: The aim of this course is to provide students with a comprehensive understanding of project planning and control principles, tools, and techniques.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. To introduce students to the fundamentals of project management and its importance in achieving organizational goals. 2. To familiarize students with the key concepts and terminology related to project planning and control. 3. To enable students to understand the stages involved in project planning and control, from initiation to closure. 4. To equip students with the knowledge and skills to develop effective project plans, schedules, and budgets. 5. To explore various methods and tools for monitoring and controlling project progress and performance. 								
Learning Outcomes	<ol style="list-style-type: none"> 1. Demonstrate a solid understanding of project management principles and their application in real-world scenarios. 2. Apply appropriate project planning methodologies to define project scope, objectives, and deliverables. 3. Develop comprehensive project plans, including work breakdown structures (WBS), schedules, and resource allocations. 4. Utilize project management software tools effectively for planning, scheduling, and resource management. 5. Implement strategies for monitoring project progress, identifying deviations, and implementing corrective actions. 6. Analyze project risks and develop risk mitigation plans to ensure project success. 								
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Subject	Ethical Hacking								
Aims and Objectives	<p>Aims: This course aims to provide students with a comprehensive understanding of ethical hacking principles, techniques, and tools, enabling them to identify and mitigate security vulnerabilities within computer systems and networks.</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1. Introduce students to the concepts of ethical hacking and its importance in maintaining cybersecurity. 2. Equip students with practical skills to assess and exploit security weaknesses within computer systems and networks. 3. Familiarize students with various hacking tools and methodologies employed by ethical hackers. 4. Develop students' ability to conduct penetration testing and vulnerability assessments ethically and legally. 5. Enhance students' knowledge of security measures and countermeasures to protect against cyber threats. 6. Encourage ethical conduct and responsibility in the practice of hacking to promote a safer digital environment. 								
Learning Outcomes	<ol style="list-style-type: none"> 1. Define ethical hacking and differentiate it from malicious hacking. 2. Identify common security vulnerabilities in computer systems and networks. 3. Demonstrate proficiency in using ethical hacking tools and techniques, including but not limited to: <ul style="list-style-type: none"> - Scanning and enumeration - Exploitation and post-exploitation - Social engineering - Wireless network attacks 4. Conduct penetration testing and vulnerability assessments following industry best practices and ethical guidelines. 5. Analyze and interpret the results of penetration tests and vulnerability assessments to propose effective security solutions. 6. Implement security measures to safeguard against common cyber threats, such as malware, phishing, and insider attacks. 								
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