

Summary Information

Module Code	4544NCCG
Formal Module Title	Programming and Software Development
Owning School	Computer Science and Mathematics
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Nelson and Colne College Group

Learning Methods

Learning Method Type	Hours
Lecture	60

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-PAR	PAR	January	12 Weeks
SEP-PAR	PAR	September	12 Weeks

SEP_NS-PAR	PAR	September (Non-standard start date)	12 Weeks
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Aims and Outcomes

Aims	This module will introduce students to the software development life cycle and to designing, coding, implementing and testing programmes to meet specified briefs.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Define basic algorithms to carry out an operation and outline the process of programming an application.
MLO2	2	Explain the characteristics of procedural, object-orientated and event-driven programming, conduct an analysis of a suitable Integrated Development Environment (IDE).
MLO3	3	Implement basic algorithms in code using an IDE
MLO4	4	Determine the debugging process and explain the importance of a coding standard.
MLO5	5	Describe and implement the stages of the software development lifecycle

Module Content

Outline Syllabus	Major theme: Programming• Algorithm definition: the relationship between algorithms and code. The generation process of code. Roles of the pre-processor, compiler and linker, interpreter. • Characteristics of procedural, object-orientated and event-driven programming. Definitions of: data types, methods, control structures, iteration, scope, parameter passing, classes, inheritance and events. • Implement basic algorithms in code: developing simple applications using a suitable language and IDE. • Debugging processes. Importance of a coding standard. Documentation of the debugging process• Testing and integration & test environments• Importance of feasibility study: Requirement gathering techniques. Feasibility criteria• Carry out software development: Identify requirements: stakeholders; consideration of alternate solutions and security considerations; quality assurance required. Report documentation structure. • Systems analysis terminology and tools: data stores and entities; data flows; process representation techniques, examples relevant to methodology chosen. • Techniques: Flowcharts; Pseudocode; Formal specification Methods; Event/State/Data Driven; Finite State Machines (extended-FSM)/FSP; problem of e-FSM state explosion; reachability analysis, safety, liveness properties; Automatic analysis and animation tools.Minor theme: Software development processesSoftware development lifecycles: Lifecycle models, both predictive and adaptive. Lifecycle stages: feasibility study, analysis, design, implementation, testing, review or analysis, design, implementation, maintenance, planning; requirements traceability.
Module Overview	
Additional Information	

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Coding Exercise	67	0	MLO1, MLO3

Report	Assignment	33	0	MLO2, MLO4, MLO5
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Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Silvester Czanner	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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