



Title:	Systems Scripting APPROVED
Long Title:	Systems Scripting
Module Code:	COMP7044
Duration:	1 Semester
Credits:	5
NFQ Level:	Intermediate
Field of Study:	Computer Science
Valid From:	Semester 1 - 2017/18 (September 2017)
Module Delivered in	5 programme(s)
Module Coordinator:	Donna OShea
Module Author:	VINCENT RYAN
Module Description:	System administrators in an organisation are generally responsible for the provisioning, operation and maintenance of hardware and software and related infrastructure. As part of their role they often need to automate tasks using scripts which are computer programs designed for a particular Operating System (OS). This module will address the scripting skills that system administrators need to help them perform their daily tasks.
Learning Outcomes	
<i>On successful completion of this module the learner will be able to:</i>	
LO1	Identify system administration and automation tasks where scripting may be of assistance.
LO2	Solve system administration problems using a shell interface.
LO3	Develop complex scripts in a modern scripting language.
LO4	Deploy scripts in a manner which takes the Information Technology (IT) infrastructure into account
Pre-requisite learning	
Module Recommendations	
<i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named CIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</i>	
No recommendations listed	
Incompatible Modules	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed. You may not enrol on this module if you have not acquired the learning specified in this section.</i>	
No requirements listed	
Co-requisites	
No Co Requisites listed	

Module Content & Assessment

Indicative Content

Tasks for Automation

Suggested scenarios where scripting may help. Script design to automate repetitive tasks. Troubleshooting

Shell Scripting

Shell syntax, sed, awk, grep, sort, uniq, diff, join, etc. Shell programming using loops, arrays etc. Unix and Windows CLI. cmdlets, WMIC. Managing processes, services, events and network connections.

Scripting in a high-level Language

Language syntax, importing and using available libraries, writing scripts to perform tasks such as querying network devices, running external processes, managing user accounts, monitoring filesystems & processes, working with LDAP and AD, analysing log files, monitor and map network services, processes, package management, statistics gathering and reporting. Phases of script design.

Script Deployment

Remote and local deployment. Deployment in modern networks and domains. Windows vs linux based deployment

Assessment Breakdown

	%
Course Work	100.00%

Course Work

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Students will create and submit a number of assigned scripts, many of which will be shell based.	1,2,3,4	25.0	Week 5
Project	Students will create and submit a number of scripts, many of which will be developed in languages such as python, perl or ruby, and will address complex tasks. Some of the tasks may be suggested rather than assigned, and the students will have to infer what script is needed.	1,3,4	35.0	Week 11
Practical/Skills Evaluation	Lab based exam, where the students will develop scripts for previously unseen problems.	2,3,4	40.0	Week 13

No End of Module Formal Examination

Reassessment Requirement

Coursework Only

This module is reassessed solely on the basis of re-submitted coursework. There is no repeat written examination.

The institute reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lecture delivering theory underpinning learning outcomes.	2.0	Every Week	2.00
Lab	Lab to support learning outcomes.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	Independent Study	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Workload: Part Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Lecture delivering theory underpinning learning outcomes.	2.0	Every Week	2.00
Lab	Lab to support learning outcomes.	2.0	Every Week	2.00
Independent & Directed Learning (Non-contact)	independent Study	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

Module Resources
<i>Recommended Book Resources</i>
<ul style="list-style-type: none"> • Al Sweigart 2015, <i>Automate the Boring Stuff with Python</i>, No Starch Press [ISBN: 9781593275990]
<i>Supplementary Book Resources</i>
<ul style="list-style-type: none"> • Mark Lutz 2013, <i>Learning Python</i>, O'Reilly Media [ISBN: 9781449355739] • Rytis Sileika 2014, <i>Pro Python System Administration</i>, APress [ISBN: 9781484202180] • Justin Seitz 2014, <i>Black Hat Python</i>, No Starch Press [ISBN: 9781593275907] • David Copeland 2013, <i>Build Awesome Command-Line Applications Ruby 2: Control Your Computer, Simplify Your Life</i>, Pragmatic [ISBN: 9781937785758] • Ellie Quigley 2014, <i>Perl By Example</i>, Prentice Hall [ISBN: 9780133760811] • Jaosn Cannon 2015, <i>Shell Scripting: How to Automate Command Line Tasks Using Bash Scripting and Shell Programming</i>, CreateSpace [ISBN: 9781517380434] • Shantanu Tushar, Sarath Lakshman 2013, <i>Linux Shell Scripting Cookbook</i>, 2 Ed., Packt [ISBN: 9781782162742]
<i>This module does not have any article/paper resources</i>
<i>Other Resources</i>
<ul style="list-style-type: none"> • website: <i>Command Line Kung Fu</i> http://blog.commandlinekungfu.com/ • website: <i>Bash Guru</i> http://www.bashguru.com/ • web blog: <i>Python for system administrators Making system administration easier (and more fun)</i> https://www.ibm.com/developerworks/aix/l_ibrary/au-python/

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_KITMN_8	<u>Bachelor of Science (Honours) in IT Management</u>	4	Mandatory
CR_KITSP_7	<u>Bachelor of Science in Information Technology</u>	4	Elective
CR_KCOMP_7	<u>Bachelor of Science in Software Development</u>	4	Mandatory
CR_KCOME_6	<u>Higher Certificate in Science in Software Development</u>	4	Mandatory
CR_KCLCO_8	<u>Higher Diploma in Science in Cloud Computing</u>	1	Elective