Linux Operating Systems II

Information and Communications Technology

Course Number:	Co-Requisites:	Pre-Requisites:
CST8177	N/A	CST8207
Applicable Program(s):	**AAL:**	**Core/Elective:**
0150X01FWO - Computer Systems Technician	2	Core
0150X03FWO - Computer Systems Technician	2	Core
0155X01FWO - Computer Systems Technology - Networking	2	Core
0156X01FWO - Computer Systems Technology - Security	2	Core
Prepared by:	Todd Kelley, PT Professor	
Approved by:	Andrew Pridham, Academic Chair, ICT	
Approval Date:	Tuesday, August 12, 2014	
Approved for Academic Year:	2014-2015	
Normative Hours:	75.00	

Course Description

Focus is placed on the administration of a Linux workstation, and the administrative requirements, and capabilities of Linux in a multi-user, multi-computer and networked environment. Basic administrative tasks and tools, user and workstation account creation and management, process and services management and run levels are emphasized. Students also learn fundamental problem-solving methodologies through basic PDL and scripting languages in order to accomplish administrative tasks. The theory is reinforced through practical laboratory assignments.

Relationship to Vocational Learning Outcomes

This course contributes to your program by helping you acheive the following Vocational Learning Outcomes:

0150X01FWO - Computer Systems Technician

VLO 1	Analyze and resolve information technology problems through the application of systematic approaches and diagnostic tools (T,A)
VLO 2	Support the implementation and administration of computer systems. (T,A)
VLO 3	Support the implementation and administration of networking solutions. (T,A)
VLO 4	Install, configure, troubleshoot, maintain, and upgrade components of computer systems. (T,A)
VLO 6	Use a variety of scripting tools and languages to automate routine tasks. (T,A)
VLO 10	Conform to workplace expectations found in information technology (IT) environments. (A)

0150X03FWO - Computer Systems Technician

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VLO 2	Support the implementation and administration of computer systems. (T,A)
VLO 3	Support the implementation and administration of networking solutions. (T,A)

VLO 4	Install, configure, troubleshoot, maintain, and upgrade components of computer systems. (T,A)
VLO 6	Use a variety of scripting tools and languages to automate routine tasks. (T,A)
VLO 10	Conform to workplace expectations found in information technology (IT) environments. (A)

0155X01FWO - Computer Systems Technology - Networking

VLO 1	Analyze and resolve information technology problems through the application of systematic approaches and diagnostic tools. (T,A)
VLO 2	Analyze, plan, design, and implement computer systems. (T,A)
VLO 3	Analyze, plan, design, and implement networking solutions. (T,A)
VLO 4	Install, configure, troubleshoot, monitor, maintain, upgrade, and optimize computer systems. (T,A)
VLO 6	Use a variety of scripting tools and languages to automate routine tasks. (T,A)
VLO 10	Appraise existing security solutions with a view to on-going maintenance, development, and improvement of organizational security. (A)

0156X01FWO - Computer Systems Technology - Security

VLO 1	Analyze and resolve information technology problems through the application of systematic approaches and diagnostic tools. (T,A)
VLO 2	Analyze, plan, design, and implement computer systems. (T,A)
VLO 3	Analyze, plan, design, and implement networking solutions. (T,A)
VLO 4	Install, configure, troubleshoot, monitor, maintain, upgrade, and optimize computer systems. (T,A)
VLO 6	Use a variety of scripting tools and languages to automate routine tasks. (T,A)
VLO 10	Appraise existing security solutions with a view to on-going maintenance,development, and improvement of organizational security. (A)

Relationship to Essential Employability Skills

This course contributes to your program by helping you acheive the following Essential Employability Skills:

EES 1	Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience. (A)
EES 2	Respond to written, spoken or visual messages in a manner that ensures effective communication. (A)
EES 4	Apply a systematic approach to solve problems. (T)
EES 5	Use a variety of thinking skills to anticipate and solve problems. (A)
EES 6	Locate, select, organize and document information using appropriate technology and information systems. (T,A)
EES 7	Analyze, evaluate and apply relevant information from a variety of sources. (A)
EES 10	Manage the use of time and other resources to complete projects. (A)

Course Learning Requirements/Embedded Knowledge and Skills

Course Learning Requirements	Embedded Knowledge and Skills
When you have earned credit for this course, you will have demonstrated the ability to:	

1.) Control system processes	-Interpret the process table maintained by the kernel using a set of process management tools. -Control and troubleshoot the boot process. -Set up, start, stop, monitor and log system services. -Monitor user processes. -Set up and monitor a set of services using runlevel or event-driven management tools. -Schedule administrative tasks and user jobs.
2.) Control user access to system resources through account and group management	-Set up, modify and remove user and group accounts. -Implement a password policy to control user access. -Set and administer file permissions to control access to resources.
3.) Setup and maintain file systems	-Create a volume and set up a file system. -Make multiple file systems accessible in the Linux directory structure. -Verify and maintain file system integrity using file system management tools and integrated file system features.
4.) Automate administrative tasks using scripting	-Interface with the operating system using advanced features of the command interpreter. -Write process automation scripts using BASH shell scripting constructs. -Investigate other script-like tools, such as sed and awk, in somewhat less detail.

Learning Resources

Recommended: A Practical Guide to Fedora and Red Hat Enterprise Linux, 4th edition (or later), by Mark Sobell, Prentice Hall, ISBN 0-13-706088-2

Learning Activities

This course consists of 3 hours of lecture and 2 hours of lab per week. It is anticipated that you will need to spend an additional 4 hours per week, on average, of your own time for practical work and study.During this course you are likely to experience:Lectures:
Lectures will present the theoretical material of the course and labs. You are encouraged to prepare prior to lectures by reading on the upcoming topics, and by attending all of the lectures. You are encouraged to ask questions during lectures and to consult with your professors on any topics you do not clearly understand. Professors will inform students at the beginning of the course of suitable times for consultations.Labs:
Practical laboratory work will be closely integrated with the lecture material. You are expected to perform initial reading, analysis and design before your scheduled lab in order to take advantage of the limited lab time when your professor is immediately available to help you. Your ability to successfully complete the assigned practical work will directly correlate with your level of success on term tests and the final exam.Samples of learning activities include (but are not limited to):In-class lectures, discussions, and demonstrations of Linux administration-related topics, tools, and methodsOnline lecture notes and supplementary materialInstallation, configuration, and use of administrative tools and automation techniquesFollowing prescribed lab documents and answering questions related to the lab activityParticipating in discussions during lectures and labs

Evaluation/Earning Credit

The following will provide evidence of your learning achievements:	This activity validates the following outcomes:

Labs: 40% weekly graded practical work	-Control system processes [CLR 1] -Control user access to system resources through account and group management [CLR 2] -Setup and maintain file systems [CLR 3] -Automate administrative tasks using scripting [CLR 4] -Communicate clearly, concisely and correctly in the written, spoken and visual form that fulfills the purpose and meets the needs of the audience. [EES 1] -Respond to written, spoken or visual messages in a manner that ensures effective communication. [EES 2] -Apply a systematic approach to solve problems. [EES 4] -Use a variety of thinking skills to anticipate and solve problems. [EES 5] -Locate, select, organize and document information using appropriate technology and information systems. [EES 6] -Analyze, evaluate and apply relevant information from a variety of sources. [EES 7] -Manage the use of time and other resources to complete projects. [EES 10]
Final exam: 30% will cover any of the class material from the semester	-Control system processes [CLR 1] -Control user access to system resources through account and group management [CLR 2] -Setup and maintain file systems [CLR 3] -Automate administrative tasks using scripting [CLR 4]
Term Tests and Quizzes: 30% allocated as 10% Midterm I 15% Midterm II 5% Quizzes	-Control system processes [CLR 1] -Control user access to system resources through account and group management [CLR 2] -Setup and maintain file systems [CLR 3] -Automate administrative tasks using scripting [CLR 4]

Prior Learning Assessment and Recognition

Students who wish to apply for prior learning assessment and recognition (PLAR) need to demonstrate competency at a post-secondary level in all of the course learning requirements outlined above. Evidence of learning achievement for PLAR candidates includes:
-Challenge Exam
-Project/Assignment

Grade Scheme

Final Grade	Mark Equivalent	Numeric Value	Final Grade	Mark Equivalent	Numeric Value
A+	90% - 100%	4.0	A	85% - 89%	3.8
A-	80% - 84%	3.6	B+	77% - 79%	3.3
B	73% - 76%	3.0	B-	70% - 72%	2.7
C+	67% - 69%	2.3	C	63% - 66%	2.0

C-	60% - 62%	1.7	D+	57% - 59%	1.4
D	53% - 56%	1.2	D-	50% - 52%	1.0
F	0% - 49%	0	FSP	0	0

Course Related Information

The following will provide evidence of your learning achievement:

- Assessment of student learning will be done by means of term tests, the final exam, online quizzes, and laboratory practical work.
- Laboratory attendance is not compulsory, but absence from labs is likely to contribute to a poor final grade, possibly even "F".

In the case of a documented emergency the professor, in consultation with the Chair, will determine how the marks will be made up and/or final grade adjusted.
The Computer Studies Department requires that all course assignments (homework exercises, laboratory work, projects, etc) be submitted by students using a standard which could be specific to one or more courses. Professors will ensure, at the beginning of the term, that students are advised of the exact details of these course specific submission requirements. Professors will also post them online alongside the course outline. Student submissions that do not meet the course published submission standards may not be marked, and may incur a penalty of up to 100% of the submission mark.
The final lab score will be a compilation of lab work submitted in a timely fashion, corrected by the Lab Professor. Term Tests, Quizzes, and Final Exam will be conducted on the theory covered in lectures, material covered in the lab as well as any additional material indicated by the Professor.
All students are required to write the final exam. There are no provisions for "making up" a missed final exam. If, as a result of being off-track in your program or some unforeseen circumstance, you note that there is a scheduling conflict in your final exam schedule, it is your responsibility to alert your course professor no later than one week before final exams start, to allow for any special arrangements.

Program Related Information

0150X01FWO - Computer Systems Technician

Theory Evaluation:

Theory evaluation is conducted by the Professor, and submitted to the final grade roll-up.
Theory attendance, in-class quiz and tests may be a part of the course requirements, will be identified by your professor, and is unique to each individual course.All students are encouraged to prepare before class, attend class regularly, and actively participate while in class to enrich their learning experience.Policy AA42 outlines the requirements for posting class notes or information to Blackboard. Any such information made available by professors is done solely to assist students in understanding the material presented and is not intended to replace attendance to theory class. Any and all information presented in class is considered testable material, be it presented verbally, written on the whiteboard, on-screen, or in a document - whether students were in attendance or not. It remains the student's responsibility to attend class. listen and take adequate notes, as needed.Lab Evaluation:

Lab evaluation is conducted by the Lab Professor, and submitted to the final grade roll-up. In this program, the following criteria may be required in order to obtain a non-zero lab mark:
Satisfactory attendance and participation in the lab;N.B: lab attendance requirements will be identified by your professor, and is specific to each individual course. Satisfactory workmanship and behavior in the lab;Satisfactory adherence to rules prescribed for the lab facility;Being properly equipped & prepared for lab work prior to

attending the lab;N.B.: coming to your lab period without the required equipment/tools or being prepared may result in you being marked as absent, at your professor's discretion.Timely completion of individual labs and required work therein on the student's assigned lab computer, as prescribed by lab handouts.Late submission or extended deadlines may be afforded, along with associated penalties - these will be identified by your professor, and are specific to each individual course.Work done outside of the lab environment may not be counted, unless indicated otherwise by your lab teacher.The lab Professor reserves the right to suspend or deny access to the lab at any time if the above criteria are not being met. No allowances are made in the course for students whose access in the lab are suspended or denied.

Final Examination

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Department Related Information

STUDENT ACADEMIC RESPONSIBILITIES

Each student is responsible for:
• Knowing the due dates for marked out-of-class assignments.
• Attending all classes and knowing the dates of in-class marked assignments and exercises.
• Maintaining a folder of all work done in the course during the semester for validation claims in cases of disagreement with faculty.
• Keeping both paper and electronic copies of all assignments, marked and unmarked, in case papers are lost or go missing.
• Regularly checking both Blackboard announcements as well as one's Algonquin e-mail account for important messages from both professors and college administration.
• Participating in on-line and classroom exercises and activities as required.
• Retaining course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Harassment/Discrimination/Violence will not be tolerated. Any form of harassment (sexual, racial, gender or disability-related), discrimination (direct or indirect), or violence, whether involving a professor and a student or amongst students, will not be tolerated on the college premises. Action taken will start with a formal warning and proceed to the full disciplinary actions as outlined in Algonquin College Policies - HR22 and SA07.
Harassment means one or a series of vexatious comment(s) (whether done verbally or through electronic means), or conduct related to one or more of the prohibited grounds that is known or ought reasonably to be known to be unwelcome/unwanted, offensive, intimidating, derogatory or hostile. This may include, but is not limited to: gestures, remarks, jokes, taunting, innuendo, display of offensive materials, offensive graffiti, threats, verbal or physical assault, stalking, slurs, shunning or exclusion related to the prohibited grounds.

For further information, a copy of the official policy statement can be obtained from the Student Association.

Violation of the Copyright Act
General – The Copyright Act makes it an offence to reproduce or distribute, in whatever format, any part of a

publication without the prior written permission of the publisher. For complete details, see the Government of Canada website at http://laws.justice.gc.ca/en/C-42 . Make sure you give it due consideration, before deciding not to purchase a textbook or material required for your course.

Software Piracy - The Copyright Act has been updated to include software products. Be sure to carefully read the licensing agreement of any product you purchase or download, and understand the terms and conditions covering its use, installation and distribution (where applicable). Any infringement of licensing agreement makes you liable under the law.

Disruptive Behaviour is any conduct, or threatened conduct, that is disruptive to the learning process or that interferes with the well being of other members of the College community. It will not be tolerated. Members of the College community, both students and staff, have the right to learn and work in a secure and productive environment. The College will make every effort to protect that right. Incidents of disruptive behaviour must be reported in writing to the departmental Chair as quickly as possible. The Chair will hold a hearing to review available information and determine any sanctions that will be imposed. Disciplinary hearings can result in penalties ranging from a written warning to expulsion.

For further details, consult the Algonquin College Policies AA32, SA07 and IT01 in your Instaguide.

College Related Information

Email

Algonquin College provides all full-time students with an e-mail account. This is the address that will be used when the College, your professors, or your fellow students communicate important information about your program or course events. It is your responsibility to ensure that you know how to send and receive e-mail using your Algonquin account and to check it regularly.

Centre for Students with Disabilities (CSD)

If you are a student with a disability, it is strongly recommended that you identify your needs to the professor and the Centre for Students with Disabilities (CSD) by the end of the first month of the semester in order that any necessary support services can be arranged for you.

Academic Integrity* & Plagiarism*

Adherence to acceptable standards of academic honesty is an important aspect of the learning process at Algonquin College. Academic work submitted by a student is evaluated on the assumption that the work presented by the student is his or her own, unless designated otherwise. For further details consult Algonquin College Policies AA18 http://www3.algonquincollege.com/directives/policy/academic-discipline/ and AA20 http://www3.algonquincollege.com/directives/policy/plagiarism/

Student Course Feedback*

It is Algonquin College's policy to give students the opportunity to complete a course assessment survey in each course that they take which solicits their views regarding the curriculum, the professor and the facilities. For further details consult Algonquin College Policy AA25 http://www3.algonquincollege.com/directives/policy/course-assessment/

Use of Electronic Devices in Class*

With the proliferation of small, personal electronic devices used for communications and data storage, Algonquin College believes there is a need to address their use during classes and examinations. During classes, the use of such devices is disruptive and disrespectful to others. During examinations, the use of such devices may facilitate cheating. For further details consult Algonquin College Policy AA32 http://www3.algonquincollege.com/directives/policy/use-of-electronic-devices-in-the-academic-environment/

Transfer of Credit

Students, it is your responsibility to retain course outlines for possible future use to support applications for transfer of credit to other educational institutions.

Note: College policies (previously called directives) are under review and redesign. The term *directives* is being retired. Students, it is your responsibility to refer to the Algonquin College Directives/Policies website for the most current information available at http://www3.algonquincollege.com/directives/

Legend

Terms

-ALO: Aboriginal Learning Outcome
-Apprenticeship LO: Apprenticeship Learning Outcome
-CLR: Course Learning Requirement
-DPLO: Degree Program Learning Outcome
-EES: Essential Employability Skill
-EOP: Element of Performance
-GELO: General Education Learning Outcome
-LO: Learning Outcome
-PLA: Prior Learning Assessment
-PLAR: Prior Learning Assessment and Recognition
-VLO: Vocational Learning Outcome

Assessment Levels

-T: Taught
-A: Assessed
-CP: Culminating Performance