COLLEGE OF
THE ROCKIES

WIST-203 – Internet of Things Fundamentals

Technology

Effective Term & Year: Fall 2022
Course Outline Review Date: 2027-03-01

Program Area: Information Technology

Description:

This course introduces students to the fundamentals of Internet of Things (IoT) systems and provides the basis of this emerging field. Students will be able to describe the Internet and its evolution to the internet of things and explain how the IoT can be used to provide solutions in healthcare and business. In this course students will create Python programs on the Raspberry Pi to provide IoT functionality, use Packet Tracer to model Python-based IoT systems, describe the various systems that support a typical data center, explain how the Software Defined Networking (SDN) framework plays a key role in data center virtualization, recognize the steps of the Data Analysis Lifecycle and perform these tasks using the RapidMiner and RStudio data analytics tools.

Program Information:

This course is required for successful completion of the Wireless Systems Technician Diploma program.

Delivery Methods: Hybrid – On-campus (Face-to-Face) and Online

Credit Type: College of the Rockies Credits

Credits: 4

Instructional Activity and Hours:

Activity	Hours

Classroom, Directed Studies or Online Instruction	90
Seminar/Tutorials	
Laboratory/Studio	90
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	180

Course Requisites:

- Earned a minimum grade of C- (55%) in each of the following:
    - WIST202 – Radio Frequency (RF) Transmission Lines and Antennas (3)

Flexible Assessment: Yes

In some cases students may be able to apply for recognition of prior learning outside the classroom. This flexible assessment process provides equivalent course credit. It is a rigorous process that may include external evaluation, worksite assessment, demonstration, standardized test, self-assessment, interview, products/portfolio, and challenge exam, or other measures as appropriate. Tuition fees apply. Contact an education advisor for more information.

Course Transfer Credit:

For information about receiving transfer credit for courses taken at other BC institutions, please see http://www.bctransferguide.ca. All requests for course transfer credit from institutions in BC or elsewhere should go to the College of the Rockies Enrollment Services office.

Textbook Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

Cisco Networking Academy Modules

Please see the instructor's syllabus or check COTR's online text calculator https://textbook.cotr.bc.ca/ for a complete list of the currently required textbooks.

Learning Outcomes:

Upon the successful completion of this course, students will be able to:

- describe the Internet and its evolution to the Internet of Things (IoT);explain how non-IP-enabled and IP-enabled devices can be connected to a network to communicate in the Internet of Things;
- explain the steps to evaluate and implement an IoT solution;
- explain the concept of prototyping and how this is critical in the nascent IoT market network;
- create circuits and microcontroller programs with the Arduino and a variety of components;
- create Python programs on the Raspberry Pi to provide IoT functionality;
- use Packet Tracer to model Python-based IoT systems;
- explain how the IoT can be used to provide solutions in healthcare, energy and smart-city;
- describe the various systems that support a typical data center;
- explain how server virtualization consolidates idle resources, reduces cost and provide better services to business;
- explain how the Software Defined Networking (SDN) framework plays a key role in data center virtualization;
- recognize the steps of the Data Analysis Lifecycle and perform these tasks using the Rapid Miner and RStudio data analytics tools;
- select and present a problem and an IoT solution to an expert panel;
- create a prototype action plan including objects and visuals;
- present the concept and validate the prototype; and
- present the solution to the judging panel and demo the prototypes

Course Topics:

- Internet of Things
- Prototyping
- Python Programs
- Server Virtualization
- Software Defined Networking (SDN)
- Data Analysis Life Cycle

See instructor's syllabus for the detailed outline of weekly readings, activities and assignments.

Evaluation and Assessments

Assessment Type: On-Campus (face-to-face) and Online, or Hybrid

Assessment Type	% of Total Grade
Exams (x4)	80%
Lab1	5%
Lab1	5%

Lab1	5%
Lab1	5%
Total	100%

Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	<50

Pass requirements: None

Evaluation Notes: A grade of "D" grants credit, but may not be sufficient as a prerequisite for sequential courses.

Evaluation Notes Comments:

Please see the instructor's syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments and use of electronic aids

Exam Attendance:

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior approval will receive a "0" on the exam.

Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Conduct (plagiarism, other cheating, behavioral misconduct)
- Policy 2.5.8 Academic Performance
- Policy 2.5.3 Grade Appeal
- Policy 2.4.9 Student Concerns Re Faculty

Equivalent Course(s) and Course Code Changes

Prior Course Code: AUST 204, WIST 205

Course Changes:

The College of the Rockies updates course outlines regularly to meet changing educational, employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outline.