Course Outline

TECH3101
Systems Development:
Concepts and Analysis
Fall 2020 - Current

TECH3101 Systems Development: Concepts and Analysis

COURSE DESCRIPTION

In this course, learners explore practical approaches to a blend of traditional and object-oriented analysis and design. Learners focus on the application of tools, methodologies, and techniques used in software analysis and design including the exploration of Unified Modeling Language (UML).

REQUISITES	None
EQUIVALENTS	None
CREDITS	3
HOURS	45
ELIGIBLE FOR PLAR	Yes
ZERO TEXTBOOK COST	Yes

COURSE LEARNING OUTCOMES

Bow Valley College is committed to ensuring our graduates can demonstrate their abilities in key areas that will make them effective citizens and encourage their development as lifelong learners. In addition to the discipline-specific skills that learners acquire in their programs, the College has identified ten learning outcomes.

College-Wide Outcomes:

1. Communication
2. Thinking Skills
3. Numeracy and Financial Literacy
4. Working with Others
5. Digital Literacy
6. Positive Attitudes and Behaviours
7. Continuous Learning
8. Health and Wellness Awareness
9. Citizenship and Intercultural Competence
10. Environmental Sustainability

#	COURSE LEARNING OUTCOME(S)	COLLEGE WIDE OUTCOMES SUPPORTED
1	Discuss the roles within software development teams from both traditional and iterative perspectives.	1, 2, 3, 4, 6, 7, 8, 9
2	Incorporate development and communication tools into a software development project individually or in groups.	1, 2, 3, 4, 5, 6, 7
3	Discuss the phases of the software development life cycle.	1, 2, 3, 4, 5, 6, 7
4	Apply concepts and tools of modern system analysis and design.	1, 2, 3, 4, 5, 6, 7
5	Determine the requirements for a given information system.	1, 2, 3, 4, 5, 6, 7
6	Apply graphical (diagramming) techniques.	1, 2, 3, 4, 5, 6, 7

COURSE MODULES AND SCHEDULE

Course schedule subject to change, depending on delivery mode and term of study. For exact dates, please consult the Course Offering Information in Brightspace.

WEEK/HOURS	MODULES
Week 1	Module-01 First class - Course Orientation/Introduction Syllabus, outline, work ethics, assessments, resources, expectations, workload, instructional methods, course dynamics, D2L, textbook and tools, Q&A Introduction to Systems Analysis and Design The systems Development Life Cycle, Systems Development Methodologies, Typical Systems Analyst Roles and Skills, Basic Characteristics of Object-Oriented Systems, Object-Oriented Systems Analysis and Design (OOSAD), The Unified Process, The Unified Modeling Language, In-class learning activities.
Week 2	Module-02 Requirement Determination Requirement Determination, Requirement Analysis Strategies, Requirement-Gathering Techniques, In-class learning activities, Alternative Requirements Documentation Techniques, Concept Maps, User Stories, The System Proposal, In-class learning activities.
Week 3	Module-03 Data and Process Modeling Overview of Data and Process Modeling Tools, Data Flow Diagrams, Creating a Set of DFD, Guidelines for Drawing DFDs, Data Dictionary, Process Description Tools, Logical Versus Physical Models Business Process Identification with Use Cases and Use-Case Diagrams Elements of Use-Case Diagrams, Identify the Major Use Cases, Creating a User-Case Diagram, Types of Use Cases, Elements of A Use-Case, Guidelines for Creating Use-Case Description, Creating Use Case Descriptions, In-class learning activities
Week 4	Module-04 Business Process Modeling with Activity Diagrams Elements of An Activity Diagram, Guidelines for Creating Activity Diagrams, Creating Activity Diagrams, Verification and Validation Through Walkthroughs, Functional Model Verification and Validation, In-class learning activities, GLA

Week 5	Module-05 Structural Modeling Structural Models, Object Identification, Crc Cards, In-class learning activities
Week 6	Module-05 Structural Modeling Class Diagrams, Creating Structural Modeling Using CRC Cards and Class Diagrams, Verifying and Validating the Structural Model, In-class learning activities, GLA
Week 7	Module-06 Behavioral Modeling Behavioral Models, Interaction Diagrams, Sequence Diagrams, In-class learning activities
Week 8	Module-06 Behavioral Modeling Interaction Diagrams, Communication DirDiagrams, In-class learning activities, Behavioral State Machines, Crude Analysis, Verifying and Validating the Behavioral Model, In-cla class learning activities
Week 9	Reading Week
Week 10	Module-06 Behavioral Modeling Review Class, GLA
Week 11	Module-07 Moving on To Design Verifying and Validating the Analysis Models, Evolving the Analysis Models into Design Models, In-class learning activities, Packages and Package Diagrams, Design Strategies, Selecting an Acquisition Strategy, In-class learning activities
Week 12	Module-08 Data Management Layer Design Object Persistence Formats – Q, Mapping Problem Domain Objects to Object Persistence Formats, Optimizing RDBMS-Based Object Storage, Designing Data Access and Manipulation Classes, Nonfunctional Requirements and Data Management Layer Design – Q, Verifying and Validating the Data Management Layer, In-class learning activities Design Modeling - Physical Architecture Layer Elements of Physical Architecture Layer – Q, Cloud Computing, Ubiquitous Computing and the Internet of Things – Q, Green IT – Q, In-class learning activities
Week 13	Module-08 Design Modeling - Physical Architecture Layer Infrastructure Design, Nonfunctional Requirements and Physical Layer Architecture – Q, Verifying and Validating the physical Architecture Layer – Q, In-class learning activities
Week 14	Module-08 System Delivery and Implementation – Construction Managing Programming – Q, Developing Documentation – Q, Designing Tests System Delivery and Implementation – Installation and Operations Cultural Issues and Information Technology Adoption, Conversion, Change Management, Post-Implementation Activities, In-class learning activities
Week 15	Project Presentation Class

ASSESSMENT

COURSE LEARNING OUTCOME(S)	ASSESSMENT	WEIGHT
1, 3, 4, 5, 6	Quizzes	20%
2, 3, 4, 5, 6	Learning activities	20%
2, 3, 4, 5, 6	Assignments	30%
2, 3, 4, 5, 6	Project	30%

Important: For details on each assignment and exam, please see the Course Offering Information.

PERFORMANCE STANDARDS

A minimum grade of D is required to pass this course. However, a program may require a higher grade in this course to progress in the program or to meet specific program completion requirements.

Please consult with the program area or contact the program chair for further details. A minimum Grade Point Average of 2.0 is required for graduation.

GRADING SCHEME

Grade	Percentage	Grade Point	Description
A+	95-100	4.0	Exceptional: superior knowledge of subject matter
A	90-94	4.0	Excellent: outstanding knowledge of subject matter
A-	85-89	3.67	
B+	80-84	3.33	
B	75-79	3.0	Very Good: knowledge of subject matter generally mastered
B-	70-74	2.67	
C+	67-69	2.33	
C	64-66	2.0	Satisfactory/Acceptable: knowledge of subject matter adequately mastered

C-	60-63	1.67	
D+	57-59	1.33	
D	50-56	1.0	Minimal Pass
F	Less than 50	0.0	Fail: an unsatisfactory performance

REQUIRED LEARNING RESOURCES

No Textbook required.

Additional learning resources may be found in the Course Offering Information or in Brightspace.

ADDITIONAL INFORMATION

Additional information may be found in the Course Offering Information or in Brightspace.

ACADEMIC ACCOMMODATIONS

Learners with a disability (learning, physical, and/or mental health) may qualify for academic and exam accommodations. For more information, or to apply for accommodations, learners should make an appointment with Accessibility Services in the Learner Success Services (LSS) Department. Accessibility Services can also assist learners who may be struggling with learning but do not have a formal diagnosis. To make an appointment visit LSS on the first floor of the south campus or call 403-410-1440. It is the learner's responsibility to contact Accessibility Services and request academic accommodations. For more information, please visit our website at http://www.bowvalleycollege.ca/accessibility.

INSTITUTIONAL POLICIES

Bow Valley College is committed to the highest standards of academic integrity and honesty. Learners are urged to become familiar with and uphold the following policies: Academic Integrity (500-1-7), Learner Code of Conduct, Procedures and Guidelines (500-1-1), Learner Appeals (500-1-12), Attendance (500-1-10), Grading (500-1-6), Academic Continuance and Graduation (500-1-5), and Electronic Communications (300-2-13). Audio or video recording of lectures, labs, seminars, or any other teaching and learning environment by learners is allowed only with consent of the instructor as part of an approved accommodation plan. Recorded material is to be used solely for personal study and is not being used or distributed without prior

written consent from the instructor.

Turnitin:

Students may be required to submit their course work to Turnitin, a third-party service provider engaged by BVC. Turnitin identifies plagiarism by checking databases of electronic books and articles, archived webpages, and previously submitted student papers. Students acknowledge that any course work or essays submitted to Turnitin will be included as source documents in the Turnitin.com reference database, where it will be used solely to detect plagiarism. The terms that apply to a student's use of Turnitin are described on Turnitin.com.

Online Exam Proctoring:

Examinations for this course may require proctoring through an online proctoring service. Online proctoring enables online exam taking within a controlled and monitored environment, thereby enhancing academic integrity. Online proctoring may occur through a variety of methods, including but not limited to:

a. live online proctoring where a remote invigilator authenticates identity and observes completion of an exam using specialized software and recordings;
b. automated proctoring where the exam session is recorded and AI (artificial intelligence) analyzed;
c. browser lockdown that limits access to other applications, websites, copying, printing, screen capture and other functions; or
d. a combination of both live/automated proctoring and browser lockdown.

Course instructors will review recordings, analyses, and data obtained through online proctoring for academic integrity infractions. It is the student's responsibility to meet the technical, software, location, and identity verification requirements necessary to enable online proctoring.

Further details of these policies are available in the Academic Calendar and on the Bow Valley College website, bowvalleycollege.ca.

Learners are encouraged to keep a copy of this course outline for future reference.

Collection of Personal Information:

This course, including your image and voice, may be recorded and made available to you and other students taking the course section. By attending the class(es) online or in person, you consent to the collection of your personal information. If you do not wish to be recorded, please contact your instructor before starting the course/class to discuss alternative arrangements.

You may use the recordings only for educational purposes and you must not copy, share, or use the recordings for any other purpose without the instructor's express permission.

Your personal information is collected in accordance with section 33(c) of the Freedom of Information and Protection of Privacy Act (Alberta) to deliver academic programming, support learner flexibility, promote universal design for learning principles, and for purposes consistent with the course activities and outcomes. If you have any questions about the collection, disclosure, use, or protection of this information, please

contact the College's Access and Privacy Officer at foip@bowvalleycollege.ca.