



**Course** Programming: Distributed Applications Development (2016-2017)

**Code / Version** PROG3170 (101)

**Total Hours** 45

**Credits** 3

**PreRequisite(s)** PROG2230 (101) Programming: Microsoft Web Technologies  
or PROG2230 (102) Programming: MS Web Tech  
or PROG2230 (103) Programming: MS Web Tech  
and PROG2370 (101) Game Prog Data Structures  
or PROG2370 (100) Object Oriented Game Prog

**CoRequisite(s)**

## Course Description

This course teaches students how to develop business applications that are distributed over more than one computer. Topics covered include distributing n-tier applications across multiple computers, creating and consuming business-to-business services, Service Oriented Architecture (SOA) and cloud computing. Microsoft Windows Communication Foundation (WCF) will be used for programming tasks, but the significance of vendor-neutral standards and protocols will be emphasized.

**PLAR Eligible:** No

## Course Outcomes

Successful completion of this course will enable the student to:

1. Describe how distributed applications are used, including Service Oriented Architecture (SOA) and cloud computing.
2. Discuss standardized distributed computing standards and protocols and the organizations that create them.
3. Produce "contract first" designs for services.
4. Create and consume simple services.
5. Create and consume services that are secure, performance-optimized, maintain state, handle transactions and have exception handling.

Essential Employability Skills addressed in this course			Taught	Reinforced	Assessed
Communication	ⁿ	Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience		X	X
	ⁿ	Respond to written, spoken, or visual messages in a manner that ensures effective communication		X	X
Numeracy	ⁿ	Execute mathematical operations accurately		X	
Critical Thinking and Problem Solving	ⁿ	Apply a systematic approach to solve problems	X	X	X
	ⁿ	Use a variety of thinking skills to anticipate and solve problems	X	X	X
Information Management	ⁿ	Locate, select, organize, and document information using appropriate technology and information systems	X	X	X
	ⁿ	Analyze, evaluate, and apply relevant information from a variety of sources	X	X	X
Interpersonal	ⁿ	Show respect for the diverse opinions, values, belief systems, and contributions of others		X	
	ⁿ	Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals		X	X
Personal	ⁿ	Manage the use of time and other resources to complete projects		X	X



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Essential Employability Skills addressed in this course		Taught	Reinforced	Assessed
Personal	<sup>n</sup> Take responsibility for one's own actions, decisions, and consequences		X	

## Unit Outcomes

Successful completion of the following units will enable the student to:

### 1.0 Distributed Computing

- 1.1 Describe the use of physical tiers in logical n-tier applications.
- 1.2 Describe the addition of a service layer to logical n-tier applications.
- 1.3 Describe Service Oriented Architecture (SOA).
- 1.4 Explain the four tenets of SOA.
- 1.5 Explain cloud computing.
- 1.6 Describe the current state of cloud computing.
- 1.7 Describe Software as a Service (SaaS).

### 2.0 Lightweight Web Services

- 2.1 Design and implement API specification documents
- 2.2 Describe Representational State Transfer (REST) web services
- 2.3 Using WebAPI design, implement and test simple REST-based web services
- 2.4 Describe the Open Data Protocol (ODATA) and its use in web services

### 3.0 Standards and Protocols

- 3.1 Distinguish between open and vendor-specific aspects of distributed computing.
- 3.2 Identify the standards organizations and major vendors that are active in the field of distributed computing.
- 3.3 Identify distributed computing acronyms and terms.

### 4.0 Designing Services

- 4.1 Explain the "contract first" approach to developing services.
- 4.2 Prepare data contracts.
- 4.3 Prepare service contracts.
- 4.4 Describe the alternatives for deploying and hosting services.
- 4.5 Describe the alternatives for addressing services.
- 4.6 Describe the alternatives for binding services.

### 5.0 Implementing Simple Services

- 5.1 Create, test and deploy simple services.
- 5.2 Create clients that consume simple services.

### 6.0 Implementing Advanced Services

- 6.1 Create and consume services with exception handling.
- 6.2 Create and consume secure services.
- 6.3 Create and consume services that maintain state.
- 6.4 Create and consume services that support transactions.
- 6.5 Create and consume performance-optimized services.



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### Required Student Resources

John Sharp. Windows Communication Foundation 4 Step by Step (Dec 2010). Microsoft Press.

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### Optional Student Resources

Nishith Pathak. Pro WCF 4: Practical Microsoft SOA Implementation (Expert's Voice in .NET) (March 2011). Apress.

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### Evaluation

The minimum passing grade for this course is 55 (D).

In order to successfully complete this course, the student is required to meet the following evaluation criteria:

Assignments (4x10%)	40.00
Midterm Test	30.00
Final Exam	30.00
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	100.00 %

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### Other

Conestoga College is committed to providing academic accommodations for students with documented disabilities. Please contact the Accessibility Services Office.

Full time faculty reserves the right to revise and update course content to reflect evolving industry expectations for program graduates.

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**Prepared By** John McKay

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**School** Information Technology

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**Date** 2016-05-24

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