



FUNDAMENTALS OF COMPUTERS AND SENSORS NETWORKS

1.0 Faculty Information

Name: Babangida Zachariah

Email: babangidazachariah@gmail.com

2.0 Course Information

Course Title and Month Year	Fundamentals of Computers, Networks and Sensors May, 2023
Class days (For synchronous course)	Fridays
Class time (For synchronous course)	7:00PM
Course total contact hours	12Hrs.
Class location	NSRIC online platform
Prerequisites and/or co-requisites	N/A
Level: A, C, E, H, I, K12, M, P, S, T, U, V, W	Undergraduate/U

Note: The below classification of courses is related any areas of knowledge:

A: Advanced level academic level courses; **C:** Canadian Immigration Training Program; **E:** Executive courses; **H:** Higher-level courses (i.e., graduate courses); **I:** Intermediate courses (i.e., university preparatory courses – Grade XII+); **K12:** Foundational, and lower-level courses; **M:** Mid-level courses (i.e., undergraduate courses); **P:** Professional courses; **S:** Short/seminar courses; **T:** Training courses; **U:** Tutorial Courses; **V:** Vocational training courses; and **W:** Workshop courses.

3.0 Professor Information

Name	Babangida Zachariah
Title	Instructor
Contact Information	Email:babangidazachariah@gmail.com
Office Location	NSRIC online platform
Office Hours	Fridays, 10:00am – 11:00am EST

Our Specializations:

1. **ADK:** to create different avenues and opportunities for the **Acquisition and Dissemination of Knowledge**.
2. **BD:** to create **business development** relationship for the growth of the institution and to market products in the world.
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4.0 Course Description

Advancements in science, technology and engineering has brought us to an era of advanced modern communications made possible through various technologies and technological devices capable performing some computational, storage, and communication tasks. These have had and are continually influencing processes in almost all spheres of life. Computer and Sensor network are technologies that have made modern communication possible by providing the backbone for the implementation of useful services. These networks come in different fashion and designs with various capabilities and constraints. Therefore, their design and developments takes into accounts these constraints. Particularly, the protocols and the network management strategies and techniques. Topics covered include introduction to computers, networks and data communication models. It also provides overview of wireless sensor networks.

5.0 Course Learning Outcomes

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

- CLO1: Describe basic concepts of computers, computing and networks.
- CLO2: Describe various networks based on certain categorization scheme.
- CLO3: Describe the basics of and differentiate between TCP/IP and OSI Models.
- CLO4: Become familiar with the basics of wireless sensor networks.

6.0 Course Materials

Online course materials

- 1) Online PowerPoint presentation slides in pdf form, and video/audio recording of lectures

Textbook and resources (If any)

- 1) Karl, H. and Willig, A. (2005). Protocols and Architectures of for Wireless Sensor Networks. ISBN-13 978-0-470-09510-2, John Wiley & Sons, Ltd. The Atrium, Southern Gate, Chichester, West West England.
- 2) Kim, D. S. and Tran-Dang, H. (2019). Industrial Sensors and Controls in Communication Networks. ISBN: 978—3-030-04926-3, Springer Nature, Switzerland.

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7.0 Academic Integrity

Students are encouraged to have a look at the NSRIC's statement of academic integrity at NSRIC website. It is noted that by signing this syllabus, you will acknowledge that you have understood that any detected plagiarism should be reported.

8.0 Assessment for Grade

The course grade is only related to the academic courses (i.e., K12, and university level courses) based on individual and team performance as shown in Table 1:

Table 1: NSRIC grading system

Type of Assessment	Grade %
Participation/Engagement/Performance	10%
Assignments	20%
Midterm Exam I	20%
Midterm Exam II	20%
Final Exam	30%
Total	100%

Important Note:

- i) The below classified courses (i.e., academic courses) will only be evaluated based on the grade system shown in Table 2. A grade and certificate will be issued for the student(s) and participant(s).
A: Advanced level academic level courses; **H:** Higher-level courses (i.e., graduate courses); **I:** Intermediate courses (i.e., university preparatory courses – Grade XII+); **K12:** Foundational, and lower-level courses; **M:** Mid-level courses (i.e., undergraduate courses).
- ii) The below classified courses will **not** be evaluated based on the grade system shown in Table 2. A certificate will be issued for the student(s) and participant(s).
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Participation/Engagement/Performance

Your participation in every aspect of the course is important for the learning process. Your engagement in every discussion in the course, due delivery of all assignments, quizzes, and research projects will be fruitful. These efforts from your side will reflect your performance in

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the course delivery and your commitments. This performance is the reflection of your dream grade!!

Assignments

You will be given **2 assignments** during the course delivery. The due dates for assignments are specified in the course content and schedule section. The assignments will be given time to time to solve/answer during the term. Assignments will be posted through NSRIC online platform at least one week before they are due. Due dates are given in course schedule (tentative schedule). However, in case of any special circumstance, the date will be posted beforehand or announced in class.

Midterm and Final Exams

Two midterm exams and one final exam will be taken according to the NSRIC policies and guideline. The exams would be through NSRIC online platform. The midterm and final exams dates would be announced by the course instructor/NSRIC administration.

9.0 Grading Scale of the Course

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At the end of the term, the below Table 2 will be used for translating your marks into a “Latter Grade” based on NSRIC grading policy.

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Table 2: NSRIC grading system

Marks	Letter Grade	Points	Description
≥ 93	A+	4.00	Outstanding
≥ 90	A	3.75	
≥ 87	A-	3.50	Excellent
≥ 84	B+	3.25	Very good
≥ 81	B	3.0	
≥ 78	B-	2.75	Moderately Good
≥ 75	C+	2.50	Good
≥ 72	C	2.25	
≥ 69	C-	2.0	Moderately Good
≥ 66	D+	1.75	Pass
≥ 63	D	1.50	
≥ 60	D-	1.25	Poor Pass
< 60	F	0	Failing

10.0 Advice and additional requirements

I advise you to:

- Please contact me if you need any help.
- Students are expected to attend all scheduled online lecture classes.
- Students are expected to study from the course materials and/or textbooks which will help to easily read and understand.
- Students are encouraged to write their own notes during lectures/presentations (pdf PowerPoint presentations, and additional materials if any).
- Students are encouraged to attend online platform classes on time because late-attende disrupts the flow of the class for both the instructor and the other students.

Additional information (During Online Course offering Period)

- The PowerPoint course materials, and video lectures will be available at the NSRIC Platform.
- There will be scheduled discussion/tutorial sessions on **every Sunday** at the class scheduled time. All students must attend this session.
- There will be an office hour for students on Sunday from **3:00 pm – 4:00 pm**, Toronto, Canada time. Students need to send an email request so that a zoom meeting can be arranged. In addition, any time student can set up an online appointment (i.e., phone, zoom, and/or other mode of communications) based on

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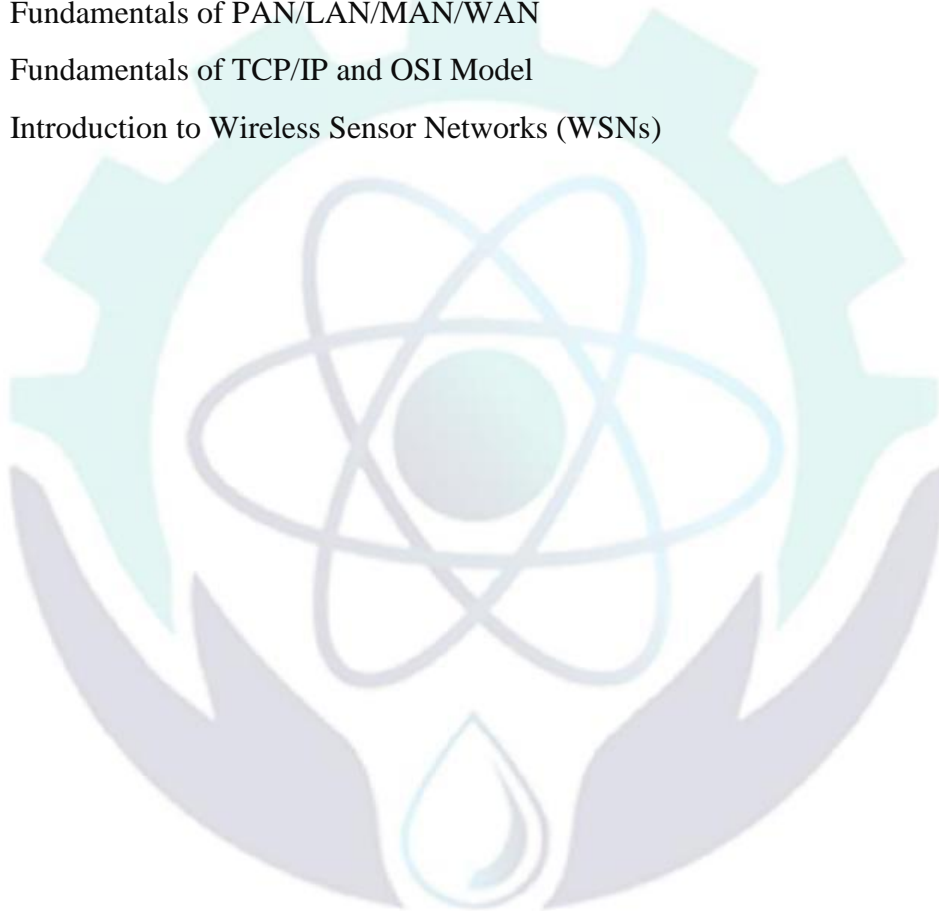
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availability of the course instructor. However, student should send an email request for setting up this type of meeting.

11.0 Course Topics

- Introduction to Computers and Computing
- Introduction to Computer Networks
- Operation and Historical Perspectives of Computer Networks
- Fundamentals of PAN/LAN/MAN/WAN
- Fundamentals of TCP/IP and OSI Model
- Introduction to Wireless Sensor Networks (WSNs)



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12.0 Course Contents and Schedule

Lec No.	Module	Topics	Remarks
01	Introduction Computers and Computing I	Course overview, setting expectations, Introduction to Computers	
02	Introduction Computers and Computing II	Introduction to Computing	
03	Introduction to Computer Networks I	Computer networks and communication model	
04	Introduction to Computer Networks II	Goals and types of computer networks based on certain criteria	
05	Introduction to Computer Networks III	Computer Networks Assessment Criteria	
06	Introduction to Computer Networks IV	Historical Background of Computer Networks	Assignment 1 due
		Mid Term Exam 1	6th Lecture
07	Fundamentals of Area-Based Networks I	Personal and Local Area Networks	
08	Fundamentals of Area-Based Networks II	Metropolitan and Wide Area Networks	
09	Fundamentals of TCP/IP and OSI Models I	Fundamentals of TCP/IP	
		Mid Term Exam 2	6th Lecture
10	Fundamentals of TCP/IP and OSI Models II	Fundamentals of OSI Models and significance of TCP/IP and OSI Models	
11	Fundamentals of TCP/IP and OSI Models III	Computer Networks Addressing	Assignment 2 due
12	Wireless Sensor Networks	Introduction to Wireless Sensor Networks	
	Final Exam	TBA	

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NSRIC Inc.

Bringing people together through knowledge dissemination

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