

MICHAEL AND CECILIA IBRU  
UNIVERSITY

CSC 311(SURVEY OF PROGRAMMING  
LANGUAGES)

4 UNITS COURSE

FIRST SEMESTER, 2017/2018 SESSION

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Assistant Lecturer

Involves the formal study of programming languages, specification, and analysis in terms of data types and structures.

## **Topics**

**Week one:** Overview of programming languages: History of programming languages, brief survey of programming paradigms (procedural languages, object-oriented languages, functional languages, declarative-non algorithmic languages, scripting languages)

**Week two:**the effects of scale on programming methodology.

**Week three:**Language description: syntactic structure (expression notations, abstract syntax tree, lexical syntax, grammars for expressions and variants of grammars).

**Week four:**Language semantics (informal semantics, overview of formal semantics, denotation semantics, axiomatic semantics, operational semantics)

**Week five:**Declarations and types: the concept of types, declaration models (binding, visibility, scope and lifetime)

**Week six:**overview of type-checking, garbage collection

**Week seven:**Abstract mechanisms: procedures, function, and iterations as abstraction mechanisms, parameterization mechanisms (reference vs. value), activation records and storage management, type parameters and parameterized types.

**Week eight:**Modules in programming languages; object oriented language paradigm, functional and logic language paradigms.

### ***Learning objectives:***

1. Summarize the evolution of programming languages illustrating how this history has led to the paradigms available today.
2. Identify at least one distinguishing characteristic for each of the programming paradigms covered in this unit.
3. Evaluate the tradeoffs between the different paradigms, considering such issues as space efficiency, time efficiency (of both the computer and the programmer), safety, and power of expression.
4. Distinguish between programming-in-the-small and programming-in-the-large.

### **Assessment**

Assessment is strictly based on how well the student will perform in class activities, Lab activities, and other activities. Performance will be monitored throughout the semester. Following are the tools used to measure the competency level of the student:

- Class quizzes: This will be conducted at the end of each unit taught.

- Class presentation: Each student (group) is required to present on latest technology related topic. There will be at least one presentation per student (group).
- Laboratory exercises
- Home Assignments
- Projects

Students are expected to pay attention in class.

## **Resources**

Textbook, computer system, lecture notes