Course Outline:

- **Unit I: Fundamentals of Programming using Racket**
  - Why do we have programming languages?
  - Syntax vs Semantics
  - Using Racket-style (prefix) notation.
  - Using functions in racket.
  - What is an algorithm?
  - Writing functions in racket. (lambda optional)

- **Unit II: Boolean Values and Conditional Statements**
  - What are Boolean values?
  - How do comparison operators work?
  - What are boolean operators?
  - Using functions that return boolean values.
  - Using `If`.
  - Using `Cond`.
  - Introduction to recursion.

- **Unit III: Computer Hardware/Software**
  - How do computers represent information?
  - What are the main parts of a computer, how do they work together?
  - What is the purpose of the operating system?
  - What is the internet? How are computer connected on the internet?
  - What can be done to secure your information and identity while online?

- **Unit IV: Introduction to NetLogo Programming with Turtles and Patches**
  - Understanding Agents and context (turtles, patches, observer).
  - Modifying turtle properties.
  - Modifying patch properties.
  - Representing colors.
  - Moving turtles.
  - Using random values.
  - Using boolean values: comparison operators, boolean operators, if and ifelse.
  - Writing procedures with and without parameters.

- **Unit V: Customizing the Interface and Advanced Procedures**
  - Using buttons and sliders in the interface.
  - Writing Reporter functions.
  - Using monitors.

- **Unit VI: Advanced Control of Agents and Age Sets**
  - Using with to filter agent sets.
  - Using ask to direct specific agents and agent sets.
  - Creating and using custom properties.
  - Creating and using breeds.
  - Turtle-Patch interaction

- **Unit VII: Working With Patches**
  - Patch properties.
  - What are cellular automata, including Conway's Game of Life.
  - Programming Conway's Game of Life and other life-like cellular automata.

- **Unit VIII: Building larger Programs**
  - Designing & Prototyping projects before programming.
  - Reviewing program prototypes.
  - Iterative program development with check points.
  - Demonstrating completed projects.

- **Optional Topics** (To be added at teachers discretion)
  - **Racket**
    - Using lists to store multiple elements.
    - Using map and filter to manipulate lists.
  - **NetLogo**
    - Using patches to manipulate images.
      - Edge detection
    - Turtle-Turtle interaction.
    - Using lists.
    - Navigating the models library
      - **Optional project:** Demonstrating a model from the models library.