## Syllabus

| Week | Topic | Readings |
|---|---|---|
| 1 | Introduction to Programming | Prologue, Chapter 1 (1.1-1.4), Chapter 2 (2.1-2.5) |
| 2 | Introduction to Design | Chapter 1 (1.5 - 1.7), Chapter 3, Chapter 4 (4.1 - 4.4) |
| 3 | Design with Fixed-Size Data | Chapter 5 (5.1-5.11) |
| 4 | Towards Arbitrarily Large Data | Chapter 4 (4.5-4.7), Chapter 6 (6.1-6.2), Chapter 9 (9.3-9.4) |
| 5 | Design with Arbitrarily Large Data | Chapter 8 (8.1-8.4), Chapter 9 (9.1-9.6), Chapter 10 (10.1-10.4), Chapter 11 (11.1-11.4) |
| 6 | Abstracting Functions | Chapter 12, Chapter 14, Chapter 15 |
| 7 | Using Abstractions | Chapter 16 (16.1) |
| 8 | Design with Abstractions, Lambda | Chapter 16 (16.2-16.7), Chapter 17 |
| 9 | Practice with Abstractions, Trees | Intermezzo: Scope, Chapter 19 (19.1) |
| 10 | Trees | Chapter 19 (19.2) |
| 11 | Mutually Recursive Data and Multiple Complex Inputs | Chapter 19 (19.3), Chapter 23 |
| 12 | Graphs | Chapter 29 |
| 13 | Accumulators and Generative Recursion | Chapter 25, Chapter 28, Chapter 31 |
| 14 | Accumulators, Wrap-Up | Chapter 32, Chapter 33 |

The topics are linked to the detailed weekly lecture schedule listed below. The readings are linked to the on-line version of the textbook.

You are responsible for the readings. The lectures will help you understand the readings and may add pragmatic tips. But both the weekly homeworks and the exams will cover the assigned reading.

As the semester may unfold in unpredictable ways, the syllabus is subject to change. The most likely change concerns the last two weeks, which cover material that varies from semester to semester, and from instructor to instructor. Extra-credit homeworks, if any, will be based on this material.

## Detailed Lecture Schedule

Homeworks are due at 6:00pm on the day they are listed in the schedule. They must be submitted via the handin server.

| Week 1 | Introduction to Programming | |
|---|---|---|
| 09/09 | 1. Why CS; Arithmetic of numbers, strings, images; Administrivia | |
| 09/10 | 2. Defining constants, functions; Simple animations | |
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| Week 2 | Introduction to Design | |
| 09/14 | 3. Booleans, conditionals, tests | |
| 09/15 | Lab 1 (partners assigned for Friday's homework) | |
| 09/16 | 4. The Design Recipe | |
| 09/17 | 5. World Programs | |
| 09/18 | Homework due at 6pm | HW 01 |
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| Week 3 | Design with Fixed-Size Data | |
| 09/21 | 6. Structure Type Definitions | |
| 09/22 | Lab 2 | |
| 09/23 | 7. Custom Structures | |
| 09/24 | 8. Practice With Structures | |
| 09/25 | Homework due at 6pm | HW 02 |
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| Week 4 | Towards Arbitrarily Large Data | |
| 09/28 | 9. Union Data | |
| 09/29 | Lab 3 | |
| 09/30 | 10. Transition from Fixed-Size to Arbitrarily Large Data | |
| 10/01 | 11. Self-Referential Data Definitions | |
| 10/02 | Homework due at 6pm | HW 03 |
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| Week 5 | Design with Arbitrarily Large Data | |
| 10/05 | 12. Lists and Designing Functions on Lists | |
| 10/06 | Lab 4 | |
| 10/07 | 13. Lists of Structures | |
| 10/08 | 14. Practice with Lists | |

| 10/09 | Homework due at 6pm | HW 04 |
| 10/10 | Exam 1 review session (4-6pm) | |

| Week 6 | Abstracting Functions | |
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Midterm coming up: 10/14 @ 6:00-9:00pm

| 10/12 | Columbus Day (no classes) | |
| 10/13 | Lab 5 | |
| 10/14 | 15. Project Discussion, Exam Review | |
| 10/15 | 16. Similarities in Functions | |
| 10/16 | Homework due at 6pm | HW 05 |

| Week 7 | Using Abstractions | |
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| 10/19 | 17. Abstractions | |
| 10/20 | Lab 6 | |
| 10/21 | 18. DrRacket-provided Abstractions | |
| 10/22 | 19. More DrRacket-provided Abstractions | |
| 10/23 | Homework due at 6pm | HW 06 |

| Week 8 | Design with Abstractions, Lambda | |
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| 10/26 | 20. Scope and Local | |
| 10/27 | Lab 7 (new partners assigned for Friday's homework) | |
| 10/28 | 21. Design Recipe for Abstractions | |
| 10/29 | 22. Lambda | |
| 10/30 | Homework due at 6pm | HW 07 |

| Week 9 | Practice with Abstractions, Trees | |
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| 11/02 | 23. Practice with Abstractions, Sets as Lists | |
| 11/03 | Lab 8 | |
| 11/04 | 24. Practice with Lambda, Sets as Functions | |
| 11/05 | 25. Trees | |
| 11/06 | Homework due at 6pm | HW 08 |

| Week 10 | Trees | |
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| 11/09 | 26. Binary Trees | |
| 11/10 | Lab 9 | |
| 11/11 | Veterans' Day (no classes) | |

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| 11/12 | 27. More Trees | |
| 11/13 | Homework due at 6pm | HW 09 |
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| Week 11 | Mutually Recursive Data and Multiple Complex Inputs | |
| 11/16 | 28. Mutually Recursive Data | |
| 11/17 | Lab 10 | |
| 11/18 | 29. Multiple Complex Inputs | |
| 11/19 | 30. Practice with Multiple Complex Inputs | |
| 11/20 | Homework due at 6pm | HW 10 |
| 11/21 | Exam 2 review session (4-6pm) | |
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| Week 12 | Graphs | |
| Midterm coming up: 11/23 @ 6:00pm-9:00pm | | |
| 11/23 | 31. Graphs | |
| 11/24 | No Lab Today! | |
| 11/25 | Thanksgiving break (no classes) | |
| 11/26 | Thanksgiving break (no classes) | |
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| Week 13 | Accumulators and Generative Recursion | |
| 11/29 | Lab 11 | |
| 11/30 | 32. Graphs and Accumulators | |
| 12/02 | 33. Generative Recursion | |
| 12/03 | 34. More Generative Recursion, Accumulators | |
| 12/04 | Homework due at 6pm | HW 11 |
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| Week 14 | Accumulators, Wrap-Up | |
| 12/07 | 35. Accumulators | |
| 12/08 | Lab 12 | |
| 12/09 | 36. Practice with Accumulators, Wrap-Up, Homework due at 9pm | HW 12 |