**Reading Number is shown for the reading paper that is due on that date. E.g. Paper No. 1 is due at beginning of class on Jan 13. Readings Source: K&R: Kernighan & Ritchie, S: Stroustrup, H: Handout on course website (assigned handouts must be covered in your paper). Your paper must discuss each chapter, section, or handout listed; cover the entire chapter or section unless part of it is listed as “skip.” A section assigned as “skim” requires only a brief (e.g. one sentence) mention in your paper. Topics discussed in lecture will often overlap into the next class period, but reading assignments are still due on the scheduled date.**

<table>
<thead>
<tr>
<th>Date</th>
<th>No.</th>
<th>Lecture topics, reading assignments, and projects</th>
<th>K&amp;R: Kernighan &amp; Ritchie, S: Stroustrup, H: Handout on course website (assigned handouts must be covered in your paper)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 7</td>
<td>Th 1</td>
<td>C concepts: prototypes, headers, linkage.</td>
<td>K&amp;R 1-4. Much will be familiar but watch for new information, especially in Ch. 4; notice the differences from previous C++ coverage.</td>
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<tr>
<td>Jan 12</td>
<td>T 1</td>
<td>C concepts: prototypes, headers, linkage.</td>
<td>H: Header File Guidelines for C Programs (see above)</td>
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<tr>
<td>Jan 14</td>
<td>Th 2</td>
<td>Pointers, Arrays, Function pointers, structures.</td>
<td>K&amp;R 5. Read carefully about pointers, arrays, function pointers; skim 5.12 about complex declarations; K&amp;R 6-6.4; skim 6.5-6.9</td>
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<tr>
<td>Jan 19</td>
<td>T 2</td>
<td>Pointers, etc., continued. No new reading assignment, but if possible, read ahead in K&amp;R 7.8.5 about malloc/free.</td>
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<tr>
<td>Jan 21</td>
<td>Th 3</td>
<td>I/O, Type safety, memory allocation.</td>
<td>Read K&amp;R 7 on I/O and other functions, then pay special attention to the highlights presented in H: A Summary of Stream I/O in C</td>
</tr>
<tr>
<td>Jan 26</td>
<td>T 4</td>
<td>C++ review and preview. Lots to read, but this is a review of familiar things and a preview of later new material, so bear with it.</td>
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<tr>
<td>Jan 28</td>
<td>Th 5</td>
<td>Basic facilities. Much should be familiar, but watch for C++11 features!</td>
<td>Stroustrup: All four prefaces, Ch. 1. Then read &quot;Tour&quot; chapters 2, 3, 4 and 5 but skip 5.3 Concurrency. Watch for new C++11 usage.</td>
</tr>
<tr>
<td>Jan 29</td>
<td>F</td>
<td>*** Project 1 Due</td>
<td>H: Using using.</td>
</tr>
<tr>
<td>Feb 2</td>
<td>T 6</td>
<td>Exceptions, Classes, objects with dynamic memory contents, the &quot;Rule of Five&quot;</td>
<td></td>
</tr>
<tr>
<td>Feb 4</td>
<td>Th 7</td>
<td>Operator Overloading, Templates.</td>
<td></td>
</tr>
<tr>
<td>Feb 9</td>
<td>T 8</td>
<td>Standard Library Containers, strings, streams.</td>
<td></td>
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</tbody>
</table>

- **Feb 2 T 6**: Optional - S 14 and 15 are redundant with C coverage and earlier handouts - skim them if you want another view of these topics.
- **S 13 Exception Handling. Skip 13.3.1, skim 13.4, 13.5.2.4, 13.5.2.5, skip 13.5.3, 13.6.**
- **S 16 Classes, skip 16.2.9.4.**
- **H: Incomplete Declarations**
- **H: C++ Header File Guidelines**
- **H: Static Members**
- **S 17 Construction, Cleanup, Copy, Move. Skip inheritance-related and initializer-list sections 17.2.3, 17.2.5, 17.3.4, 17.4.2, 17.5.1.2, 17.5.1.4**

- **Feb 4 Th 7**: H: A Summary of Operator Overloading, then read • S 18 and • S 19. Skip 19.2.5, 19.2.6. Skim 19.3.
- **S 23 Templates. Skim 23.5.2, skip 23.5.2.1, 23.5.2.2, 23.7.1**

- **Feb 9 T 8**: S 30. An overview of the library. Learn to read this stuff without getting bogged down in the details. Skip 30.3.1, 30.4.1.2 and 30.4.1.3, and all of 30.4.3.
- **S 31. Note public interfaces described in compact tables. Use these for reference; read for the concepts. Skim 31.4.3.2 on unordered containers.**
- **S 34 on "almost containers" read 34.1 and 34.2 but skip 34.2.2 bitset and 34.2.3 vector<bool>; skim 34.2.4.2 tuple. Skip rest chapter for now.**
- **H: Notes on Basic C++ Stream I/O**
- **H: Using C++ File Streams**
- **S 36 Strings. Skim this complete presentation of an extremely important and elaborate class; plan to look up as needed, follow his examples.**
- **S 38 Streams. Skim, but if confused, re-read the streams Handouts. Skip 38.5 for now, then skip 38.6 on buffering.**
Feb 11 Th  Project 1 Code Review - very important; no reading assignment.
Feb 12 F  *** Project 2 Due
Feb 16 T  Algorithms, Iterators, Function Objects, Lambda, std::bind
  • S 32 STL Algorithms. Skim 32.2.1
  • S 33 Iterators. Skip 33.1.3. Go back and read 38.5 on stream iterators.
  • S 20.6 Pointers-to-members - this little topic is out of place there, so read it now, but skim 20.6.2, skip 20.6.3.
  • H: Fill'er Up: Winners and Losers for Filling an Ordered Container
  • Read • H: Using C++11's Lambdas then return to an earlier chapter and read • S 11.4 Lambda Expressions
  • H: Using C++11's bind with Containers and Algorithms
Feb 18 Th  Basic Class Design. No reading assignment, but bring H: Basic Class Design to lecture to mark up
Feb 23 T  Midterm Exam: Times, Rooms TBA
Feb 25 Th  Catch-up time - no class scheduled - finish Project 3 and enjoy Spring Break!
Feb 26 F  *** Project 3 Due
Mar  1,3 T,Th  Spring Break - no classes
Mar  8 T  10 Simple forms of inheritance and polymorphism: Inheritance & Virtual Functions
  • S 20 Derived Classes. Skim 20.3.5, 20.3.5.1, 20.3.6, 20.5.3. We already read 20.6, so skip it this time.
Mar 10 Th  Using Virtual Functions and Introduction to OO Design. Lecture: Project 4 design overview. No reading assignment is due, but bring to lecture:
  A hard copy of H: Introduction to UML, and H: Basic OOP Concepts (BasicOOPConcepts-HO.pdf) or the lecture notes on Basic OOP Concepts.
Mar 15 T  11 More on Inheritance and Virtual Functions; Exceptions and memory management, RAIL, "smart pointers"
  Read H: C++11’s Smart Pointers then read • S 34.Memory and Resources, starting at 34.3. Skip 34.4, 34.5, 34.6.
Mar 17 Th  Some Idioms and Design Patterns (no reading assignment - bring hardcopy of Lecture Notes: IdiomsDesPattsX.pdfs to mark up)
Mar 18 F  *** Project 4 Due
Mar 22 T  12 Multiple inheritance and run-time type identification.
  • S 22. Run-time Type Identification. Skip 22.2.4., 22.5.1, Skip 22.3.
Mar 24 Th  More Idioms and Design Patterns (no reading assignment - bring hardcopy of Lecture Notes: IdiomsDesPattsX.pdfs to mark up)
Mar 29 T  More Idioms and Design Patterns (no reading assignment - bring hardcopy of Lecture Notes: IdiomsDesPattsX.pdfs to mark up)
TBA below: Either scheduled lecture topic(s) or Kieras holding additional office hours during class time.
Mar 31 Th  TBA- More Idioms and Design Patterns
Apr  1 F  *** Project 5 Due
Apr  5 T  TBA- More Idioms and Design Patterns
Apr  7 Th  TBA - Kieras holding additional office hours during class time
Apr 12 T  TBA - Non-technical Issues in Software Development (No reading assignment).
Apr 14 Th  Kieras holding additional office hours during class time
Apr 18 M  *** Project 6 Due - time and place for submission of hard copy materials to be announced. (No class meeting).
Apr 26 T  FINAL EXAM, 4:00 PM - 6:00 PM, Rooms TBA