

Video Lectures for Programming-Related Course Content

1 Required Material

The video lectures listed below cover essential material for the course. **Students are responsible for all material covered in these lectures.** Each student must watch these lectures in accordance with the schedule provided on the course web site. For each video viewed, the student must also submit a completed video-lecture feedback form by the appropriate deadline as indicated on the course web site.

1. Software Development Tools [104.02 mins \approx 1.73 hours]
 - (a) Getting Started [13.31 mins \approx 0.22 hours]
 - i. C++ Compiler and Linker [Duration: 13:19]
<https://youtu.be/w5s7XgnLHoo>
 - (b) Version Control Systems [37.40 mins \approx 0.62 hours]
 - i. Version Control Systems [Duration: 06:50]
https://youtu.be/9s9_DLH1jaY
 - ii. Git Introduction [Duration: 17:24]
https://youtu.be/scm2kxsX_Rk
 - iii. Git Demonstration [Duration: 13:10]
<https://youtu.be/8VHC7vzWihw>
 - (c) Build Tools [53.31 mins \approx 0.88 hours]
 - i. Build Tools [Duration: 03:24]
https://youtu.be/FPcK_swg-f8
 - ii. CMake Introduction [Duration: 22:13]
<https://youtu.be/Ak6cGZshduY>
 - iii. CMake Examples [Duration: 27:42]
<https://youtu.be/cDWOECgupDg>
2. Basics [202.5 mins \approx 3.37 hours]
 - (a) Introduction [Duration: 06:06]
<https://youtu.be/mP1wuVWKQmg>
 - (b) Objects, Types, and Values [Duration: 1:09:06]
<https://youtu.be/FlbBgg5IamY>
 - (c) Operators and Expressions [Duration: 22:10]
<https://youtu.be/hwI4IHEUMZs>
 - (d) Control-Flow Constructs [Duration: 23:19]
https://youtu.be/kEKy_TwNbEE
 - (e) Functions [Duration: 1:00:57]
<https://youtu.be/NHS1726zvmE>
 - (f) Input/Output (I/O) [Duration: 12:41]
<https://youtu.be/MFSA1-ld2Bc>
 - (g) Miscellany [Duration: 08:12]
<https://youtu.be/IcPgHnmWy-8>
3. Classes [143.5 mins \approx 2.39 hours]
 - (a) Introduction [Duration: 02:09]
<https://youtu.be/8XIdrmAS4Aw>
 - (b) Members and Access Specifiers [Duration: 35:13]
<https://youtu.be/ZdtqC6zASEI>
 - (c) Constructors and Destructors [Duration: 30:27]
<https://youtu.be/9NVA6AGtccc>
 - (d) Operator Overloading [Duration: 41:05]
<https://youtu.be/kpIJzSEIe4Y>
 - (e) More on Classes [Duration: 12:25]

- <https://youtu.be/esPOG-FQhdc>
- (f) Temporary Objects [Duration: 14:01]
<https://youtu.be/TT0TcIUo88E>
- (g) Functors [Duration: 08:14]
https://youtu.be/qM2kvcSW4_E
4. Templates [55.01 mins \approx 0.91 hours]
- (a) Introduction [Duration: 01:24]
<https://youtu.be/q9Wx-kB7MRw>
- (b) Function Templates [Duration: 25:48]
<https://youtu.be/hD9MN9aVfi4>
- (c) Class Templates [Duration: 18:56]
<https://youtu.be/NXUR5tfiHtE>
- (d) Variable Templates [Duration: 04:03]
<https://youtu.be/tble6t8uFGk>
- (e) Alias Templates [Duration: 04:50]
<https://youtu.be/mzM0MHQIQcI>
5. Standard Library [97.1 mins \approx 1.61 hours]
- (a) Introduction [Duration: 10:15]
https://youtu.be/-TY7_GniLig
- (b) Containers, Iterators, and Algorithms [Duration: 38:57]
<https://youtu.be/TxufBysSPK0>
- (c) The vector Class Template [Duration: 27:43]
<https://youtu.be/T8uaiYTIwjc>
- (d) The basic_string Class Template [Duration: 15:15]
<https://youtu.be/J6POJIHactU>
- (e) Time Measurement [Duration: 04:58]
<https://youtu.be/UeCiNGRZAyA>
6. Signal Processing Library (SPL) [12.0 mins \approx 0.20 hours]
- (a) Introduction [Duration: 12:04]
https://youtu.be/0q_3pE8xZB4
7. Computational Geometry Algorithms Library (CGAL) [79.36 mins \approx 1.32 hours]
- (a) Introduction [Duration: 08:04]
https://youtu.be/Mk-NH2-_hMo
- (b) Polygon Meshes [Duration: 33:53]
<https://youtu.be/R8h1JCR4x00>
- (c) Surface Subdivision Methods [Duration: 03:22]
https://youtu.be/t_zvp9dTTBY
- (d) Example Programs for Polygon Meshes [Duration: 34:03]
<https://youtu.be/sTfG7tStFvI>
8. Open Graphics Library (OpenGL) [129.85 mins \approx 2.16 hours]
- (a) Introduction [Duration: 03:42]
<https://youtu.be/T60QUk-1IbQ>
- (b) GLUT [Duration: 20:39]
<https://youtu.be/u2gPthpg1Mo>
- (c) OpenGL [Duration: 39:01]
<https://youtu.be/qgleMfiNS6w>
- (d) OpenGL Example Programs [Duration: 1:06:29]
<https://youtu.be/wvaU7S3FrLY>

2 Optional Material

The video lectures listed below are not formally part of the course and are mentioned only for informational purposes. Students who would like to learn more about C++ beyond what is covered in the course may find these videos to be of interest.

1. Concurrency [246.3 mins \approx 4.10 hours]
 - (a) Preliminaries [Duration: 1:01:49]
<http://youtu.be/oM1VxfrTQWg>
 - (b) Threads [Duration: 33:44]
<http://youtu.be/fqG8BgVbmcM>
 - (c) Mutexes [Duration: 1:25:24]
<http://youtu.be/Vm-Jsno58Y0>
 - (d) Condition Variables [Duration: 17:37]
<http://youtu.be/Wsk56vrK0ng>
 - (e) Promises and Futures [Duration: 47:44]
http://youtu.be/hic5W_UMjqU
2. Miscellany [27.9 mins \approx 0.46 hours]
 - (a) Make Introduction [Duration: 27:55]
https://youtu.be/FsGAM2pXP_Y