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| **Synopsis** | [Top](http://ivle.nus.edu.sg/module/student/?CourseID=3d67ee74-7224-4938-a07f-50d993a6d1c6&ClickFrom=Outline#top) |

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| Week 1: Introduction, Course Admins, [Clicker System](http://www.cit.nus.edu.sg/classroom-response-system/), Some "Wow" Moments, Mock/Preview Contest. Week 2: Mastery of Libraries (C++ STL & Java API), Mastery of Bit Manipulation, Binary Indexed (Fenwick) Tree. Week 3: Three problem solving techniques: Complete Search (Iterative/Recursive Backtracking); Divide & Conquer; and Greedy. (CNY holiday during Monday and Tuesday of Week03; **try not to skip our Wednesday class this week**). Week 4: Dynamic Programming (round 1): Quick Review of CS2010/CS2020 Dynamic Programming Materials. Week 5: Graph (round 1): Quick Review of CS2010/CS2020 Graph Materials; Tarjan's algorithm for finding Strongly Connected Components (SCCs). Week 6: Dynamic Programming (round 2): DP on String, formulating non trivial DP states+transitions, various DP tricks.  Mid-semester break  Week 7: Mid-semester team contest. Week01-06 stuffs. [**NOI 2012**](http://www.comp.nus.edu.sg/~noi/2011/)**: ?** Week 8: Graph (round 2): Maximum Flow + Bipartite Graph. Other computational problems frequently appear in programming contests:  Week 9: Mathematics: Overview of various mathematics-related problem + tips; Focus on BigInteger, Prime Factors, and Modulo Arithmetic. Week 10: String Processing: Focus on Suffix Tree and Suffix Array. Week 11: (Computational) Geometry: Focus on Algorithms on Polygon. Week 12: Hard Stuffs :). Week 13: Final team contest. Week01-12 stuffs.  **No final exam :)**  **Some** (older) teaching materials are available in this public website: <https://sites.google.com/site/stevenhalim/home/material> (we will use better versions next sem :) The programming languages used in this course are C/C++ (main) and Java (secondary). It is much better if you are a multi-lingual programmer. |

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| **Assessment** | [Top](http://ivle.nus.edu.sg/module/student/?CourseID=3d67ee74-7224-4938-a07f-50d993a6d1c6&ClickFrom=Outline#top) |

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| Tentative!! Steven is still adjusting the weightage...   **A. The path of speed (50% overall = 30% individual, 20% teamwork):** A.1. 10 Weekly Individual Contests (10 weeks x 3%/week = 30%, three problems in 75 minutes) A-very easy/easy: 0.5% B-easy/medium, 1.0% C-medium/hard, 1.5% Bonus 0.5% for top 3 in each contest A.2. 1 Mid-Semester **Team** Contest (5%, 10 "original" problems, worth 0.5% each) A.3. 1 Final **Team** Contest (15%, 10 "original" problems, worth 1.5% each)  Binary grading (Accepted or not Accepted: Wrong Answer, Time Limit, Memory Limit, Runtime Error, etc) Team = team of three students.   **B. The path of diligence:** B.1. 12 Weekly Homework (12 weeks \* 2.5%/week = 30%) Solve problem C of last week at home, 1% CP book review, 1% Solve 1 designated UVa problem, 0.5%  B.2. Set of "Achievements" (20%) Tentative list (likely 1% each): 1. **Let it begins:** Solve any 1st UVa problem by Thursday, 12 January 2012, 23:59 (one day after introduction lecture) 2\*. **Quick starter:**Solve a total of **40** UVa problems (from any category) by the end of Week02 3. **Chapter 1 diversity:** Solve four problems from different category in chapter 1 by the end of Week02 4. **Chapter 2 diversity:** Solve four problems from different category in chapter 2 by the end of Week03 5. **Chapter 3 diversity:** Solve eight problems from different category in chapter 3 by the end of Recess Week 6. **On track:** Solve at least 6 weeks\*4/week = 24 UVa problems by the end of Recess Week and already obtained **Chapter 1-2-3 diversity** 7. **Chapter 4 diversity:** Solve eight problems from different category in chapter 4 by the end of Week09 8. **Chapter 5 diversity:** Solve four problems from different category in chapter 5 by the end of Week10 9. **Still on track:** Solve at least 10 weeks\*4/week = 40 UVa problems by the end of Week 10 and already obtained **Chapter 1-2-3-4-5 diversity** 10. **Chapter 6 diversity:** Solve four problems from different category in chapter 6 by the end of Week11 11. **Chapter 7 diversity:** Solve four problems from different category in chapter 7 by the end of Week12 12. **Bookworm**: *Subjective title* for student who diligently study and review CP book by the end of Week12 13. **Chapter 8 diversity:** Solve four problems from different category in chapter 8 by the end of Week13 14. **High determination**: *Subjective title* for student who always diligently try problem C of all 10 weekly contests 15. **Active in lectures**: Subjective title for student who participated well during in-class lectures (clickers, answering questions, etc) 16\*. **Super diligent**: Solve at least 13 weeks\***10**/week = 130 UVa problems by the end of semester 17\*. **Surprise us**: Managed to surprise the teaching staffs (Steven/Harta/Phuong) by giving a better/more elegant solution/pinpoint bug in lecture, etc anytime during the semester 18\*. **Consistent coder**: Managed to solve problem A and B in at least 7 out of 10 weekly contests 19\*. **Bull-eye coder**: Managed to solve problem A and B in at least 7 out of 10 weekly contests with just one submission per problem. 20\*. **Surpass Steven**: Managed to get more than what Steven have solved in UVa online judge by the end of the semester    **No final exam, "no" Bell's curve, "easy to score", and a "very fun" course :)**  To get at least B+, student must score **at least 50 out of 100** from the assessment scheme shown above. **Almost all** students in the past 3 years of CS3233 (2009, 2010, 2011) managed to achieve B+ or more. |