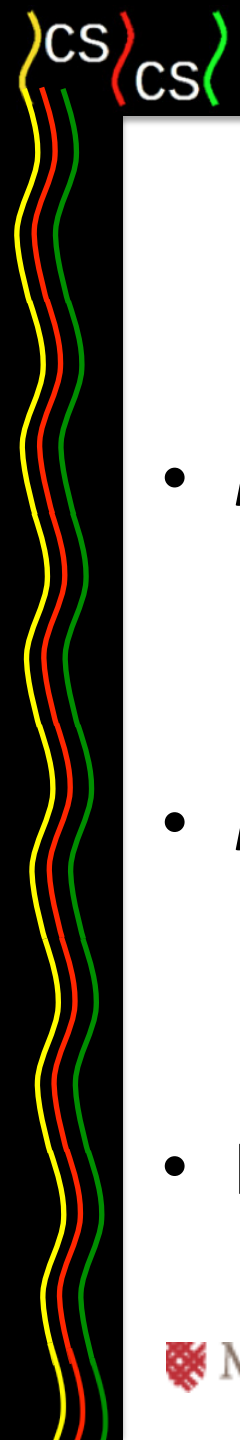


Curriculum recommendations

CSinParallel Four Corners Workshop
July 2013

Emerging curriculum efforts

- ACM/IEEE Joint Curricular Recommendations
 - All topics, for undergraduate CS major
 - CS2013 “Ironman” draft released March 2013
- NSF/TCPP Curriculum Initiative
 - PDC topics only, for undergraduate CS or CE
 - Version 1.0 released December 2012

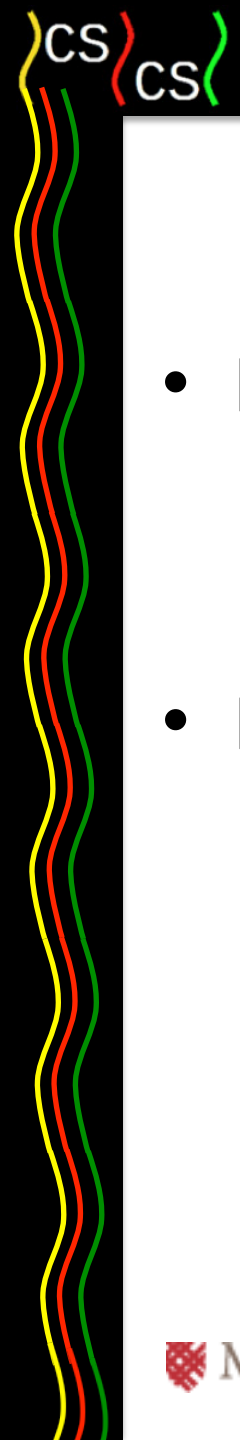


ACM/IEEE Joint Curricular Recommendations

- *Knowledge areas, e.g.,*
 - Algorithms and Complexity (AL)
 - Programming Languages (PL)
 - Computational Science (CN)
- *Knowledge units, e.g.,*
 - AL/Basic Analysis
 - AL/Algorithmic Strategies
 - AL/Advanced Automata Theory & Computability
- Hours recommended per knowledge unit

CS2013 (Ironman), p. 34

Knowledge Area	CS2013		CS2008	CC2001
	Tier1	Tier2	Core	Core
AL-Algorithms and Complexity	19	9	31	31
AR-Architecture and Organization	0	16	36	36
CN-Computational Science	1	0	0	0
DS-Discrete Structures	37	4	43	43
GV-Graphics and Visual Computing	2	1	3	3
HCI-Human-Computer Interaction	4	4	8	8
IAS-Security and Information Assurance	3	6	--	--
IM-Information Management	1	9	11	10
IS-Intelligent Systems	0	10	10	10
NC-Networking and Communication	3	7	15	15
OS-Operating Systems	4	11	18	18
PBD-Platform-based Development	0	0	--	--
PD-Parallel and Distributed Computing	5	10	--	--
PL-Programming Languages	8	20	21	21
SDF-Software Development Fundamentals	43	0	47	38
SE-Software Engineering	6	21	31	31
SF-Systems Fundamentals	18	9	--	--
SP-Social Issues and Professional Practice	11	5	16	16
Total Core Hours	165	142	290	280
All Tier1 + All Tier2 Total	307			
All Tier1 + 90% of Tier2 Total	292.8			
All Tier1 + 80% of Tier2 Total	278.6			



CS2013 Ironman

- Hours recs organized in two *tiers*
 - Tier 1 is required (165 hours)
 - 80-90% of Tier 2 is required (113-128 hours)
- New Knowledge Areas since CS2001
 - IAS, Security and information assurance
 - PBD, Platform-based development
 - **PD, Parallel and distributed computing**
 - **SF, System Fundamentals**

CS2013 (Ironman), p. 34

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What is in SF?

SF. Systems Fundamentals [18 core Tier 1, 9 core Tier 2 hours, 27 total]

	Core-Tier 1 hours	Core-Tier 2 hours	Includes Electives
SF/Computational Paradigms	3		N
SF/Cross-Layer Communications	3		N
SF/State-State Transition-State Machines	6		N
SF/Parallelism	3		N
SF/Evaluation	3		N
SF/Resource Allocation and Scheduling		2	N
SF/Proximity		3	N
SF/Virtualization and Isolation		2	N
SF/Reliability through Redundancy		2	N
SF/Quantitative Evaluation			Y

What's in PD?

PD. Parallel and Distributed Computing (5 Core-Tier1 hours, 9 Core-Tier2 hours)

	Core-Tier1 hours	Core-Tier2 hours	Includes Electives
PD/Parallelism Fundamentals	2		N
PD/Parallel Decomposition	1	3	N
PD/Communication and Coordination	1	3	Y
PD/Parallel Algorithms, Analysis, and Programming		3	Y
PD/Parallel Architecture	1	1	Y
PD/Parallel Performance			Y
PD/Distributed Systems			Y
PD/Cloud Computing			Y
PD/Formal Models and Semantics			Y

CS2013 (Ironman), p. 34

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T CPP recommendations

		<i># topics</i>	<i>hours</i>
Architecture	Classes	25	
	Memory hierarchy	6	
	Floating point representation	5	
	Performance metrics	7	
Programming	Parallel programming paradigms and notations	20	
	Semantics and correctness issues	12	
	Performance issues	24	
Algorithms	Parallel and distributed models and complexity	23	7.5
	Algorithmic paradigms	22	4.5
	Algorithmic problems	22	8.5
Cross-cutting	High-level themes	1	
	Cross-cutting topics	6	
	Current/advanced topics	10	