

# Work In Progress: Curriculum Visualization

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38<sup>th</sup> Annual Frontiers in Education Conference  
October 23, 2008

# We can do better than this:

<b>MINOR IN COMPUTER SCIENCE, 26 hours</b>			
PREFIX	NO	SHORT TITLE	CR HRS
MATHS	161	Appl Calc 1	3
CS	120	Comp Sci 1	4
	121	Comp Sci 2	4
	124	Discr Struct	3
	230	Org Arch 1	3
	232	Data Struct	3
6 hours from			
CS	300	LAN WAN (3)	
	330	Org Arch 2 (3)	
	335	Prog Lang (3)	
	345	G U I (3)	
MATHS	362	Num Anls 1 (3)	6
		-----	
			26 hrs



# Course Representation

```
% Define the course details

course(cs120, 'Computer Science 1', 4,
      []).
course(cs121, 'Computer Science 2', 4,
      [prereq(cs120)]).
course(cs124, 'Discrete Structures', 3,
      [prereq(cs120)]).
course(cs230, 'Organization and Architecture 1', 3,
      [prereq(cs121)]).
course(cs232, 'Data Structures and Algorithms', 3,
      [prereq(cs121),prereq(cs124),prereq(maths161)]).
course(cs300, 'LAN/WAN', 3,
      [pre_or_parallel([cs121,cs276])]).
course(cs330, 'Organization and Architecture 2', 3,
      [prereq(cs230)]).
course(cs335, 'Programming Languages', 3,
      [prereq(cs232)]).
```



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# Curriculum Representation

```
% Define the CS Minor as an academic program

program(cs_minor, 'Computer Science Minor', minor,
  [maths161, cs120, cs121, cs124, cs230, cs232],
  [hours_of(6, 6, [cs300, cs330, cs335, cs345, maths362])]).

% Define some queries over academic programs

is_required_on(Course, Program) :-
  program(Program, _, _, Req, _),
  member(Course, Req).

is_elective_on(Course, Program) :-
  program(Program, _, _, _, Etc),
  member(hours_of(_, _, ElecList), Etc),
  member(Course, ElecList).
```



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# CS Minor in dot

```
digraph G {
  label=
  "Computer Science Minor";
  rankdir=LR;
  "cs120" [];
  "cs120" [];
  "maths161" [];
  "cs120" [];
  "maths162" [shape=box];
  "cs121" [];
  "cs124" [];
  "cs230" [];
  "cs232" [];
  "cs232" [];
  "cs232" [];
  "cs330" [style=filled];
  "cs335" [style=filled];
  "cs345" [style=filled];
  "maths362" [style=filled];

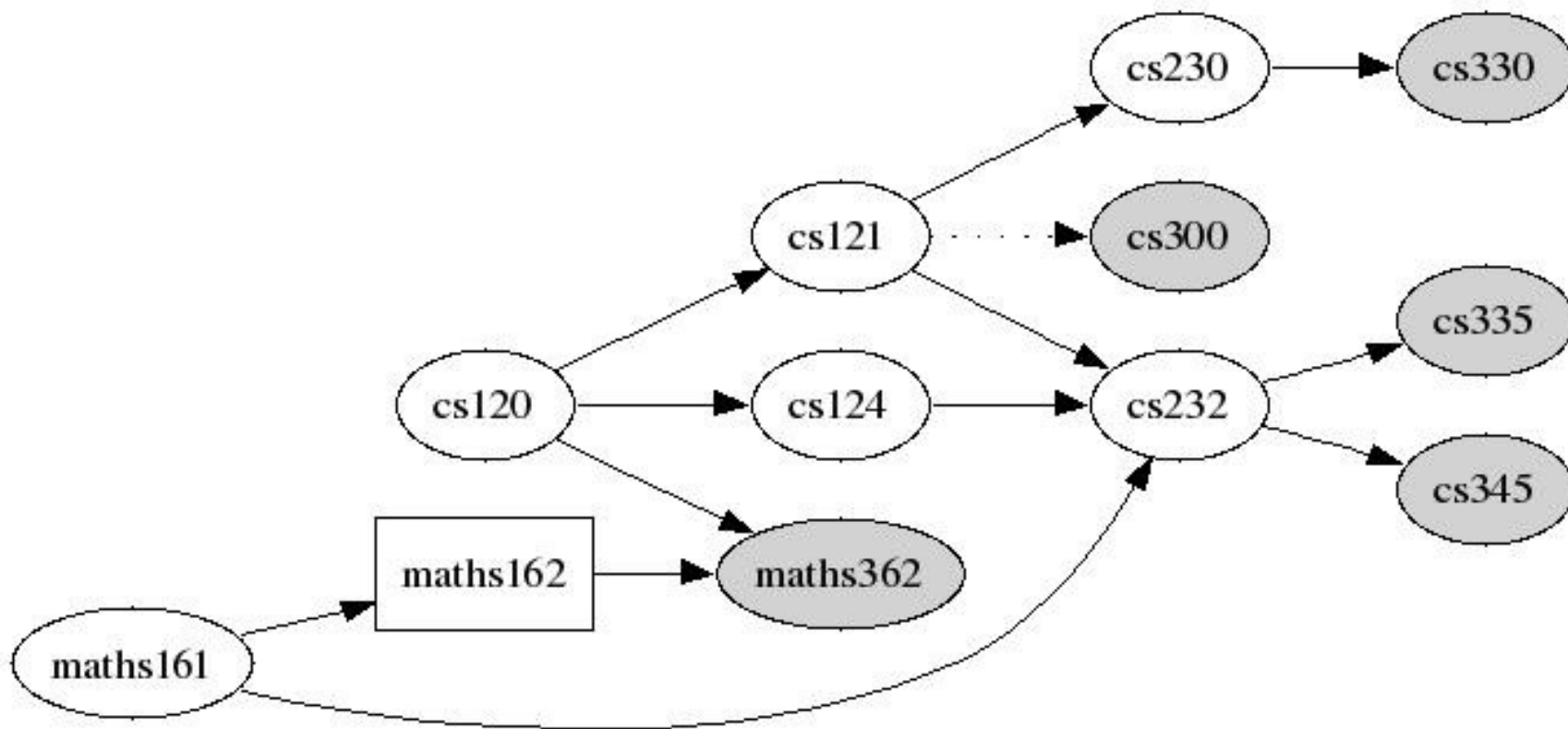
  "maths362" [style=filled];
  "cs300" [style=filled];
  "cs120" -> "cs121" [];
  "cs120" -> "cs124" [];
  "cs121" -> "cs230" [];
  "cs121" -> "cs232" [];
  "cs124" -> "cs232" [];
  "maths161" -> "cs232" [];
  "cs230" -> "cs330" [];
  "cs232" -> "cs335" [];
  "cs232" -> "cs345" [];
  "cs120" -> "maths362" [];
  "maths162" -> "maths362" [];
  "cs121" -> "cs300" [style=dotted];
  maths161->maths162;
}
```



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# Output from dot



Computer Science Minor





# Complications

- Prolog?!
- Large static diagrams
- No standard formats for courses or curricula
- No established visual semantics



# Future Work

- Scalable, dynamic visualization
- Interactive queries
- Integration with student records

