CSC 253/453 Syllabus (August, 2017)

topic area	topics		reading	case studies	assignments
Design principles	Design principles	4 essential difficulties, limit of design	Brooks, Parnas, Wirth, Gabriel.		in-class quiz
	Software design	Information hiding, program families, UE, design review, documentation	Parnas 7,8,10,12,13,16-18.		(individual and group) DVCS, **continue till end of course**
	Software engineering	Unified process, workflow, phase, teams	Schach, ***OOSE*** 2,4, PartII,		
	Design patterns	observer, command, proxy, decorator, singleton, builder, DSL, configuration.	Olsen, Design Patterns in Ruby (5, 8, 10, 11, 12, 14, 16, 18).		written homework
Prog. techniques	Dynamic languages	Dynamic typing	Ruby 1.8 README.TXT	Ruby interpreter	
	Pure functions	Anonymous functions (lambdas), iterators. Unit testing	Church numerals	Lambdas/ iterators in Ruby and C	(individual) iterators in Ruby and C
	Advanced functions	Streams	SICP book 3.5 (online access)..		(individual) Streams
	Advanced functions	Continuation, CPS, actors	Steele HOPL	Scheme	(individual) enumerator and CPS in Ruby.
	Pure objects	object-model, module/ mix-in	Lecture slides.	Self by Ungar/ Smith	
	Meta-programming	meta-classes	Lecture slides.	Accessors, Singleton, Forwardable	(individual) meta-programming in Ruby
	Static typing	generics, co-/contra-variance, typed lambdas, type class	Lecture slides, Findler slides, PLAI, Haskell tutorial.	Haskell, Scala	written homework
Tools	Distributed version control system (DVCS)		Mercurial, Git, coverage tools		
Analysis	Locality, footprint, reuse distance, miss ratio,		Unpublished manuscript		written homework