

## EECS Graduate Program: Transfer Course Request

### For Completion by Student:

Name: Nathan Waltz \_\_\_\_\_ ID #: 016608558 \_\_\_\_\_

Requested Course:

Institution:	UT Austin
Course Subject/Number:	CS W395T
Course Title:	Structure and Implementation of Modern Programming Languages
Number of Credits:	3
Grade:	A
Date of Completion:	12/15/2025

WSU Equivalency:

Course Subject/Number:	CPTS 452
Course Title:	Compiler Design
Number of Credits:	3
Current Instructor:	Dr. Thomas Gilray

### For Completion by Advisor:

Rationale for Transfer:

There are some differences, but essentially we build a compiler for a object oriented programming language called OAK I think.

Suggested Faculty Reviewer: Dr. Thomas Gilray \_\_\_\_\_

### For Completion by GSC:

Assigned Faculty Member for Review: \_\_\_\_\_

### For Completion by Faculty Reviewer:

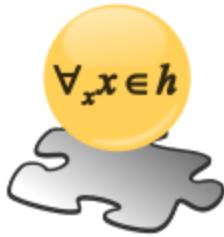
Please select one:

- I approve the transfer of this course as requested.
- I approve the transfer of this course for a decreased number of credits: \_\_\_\_\_ Credits.
- I approve the transfer of this course as a different graduate-level course than requested.
- deny the request to transfer this course.

Comments:

Reviewer Signature: \_\_\_\_\_

# ALR Spring 2021



Welcome to the home page for  
Automated Logical Reasoning!

## Logistical Information:

Instructor:	<a href="#">İşıl Dillig</a>
Time:	Tuesday, Thursday 2-3 pm
Place:	Zoom
Instructor e-mail:	<a href="mailto:isil@cs.utexas.edu">isil@cs.utexas.edu</a>
Instructor office hours:	Thursday 3-4 pm
TA:	Shankara Pailoor
TA e-mail:	<a href="mailto:spailoor@cs.utexas.edu">spailoor@cs.utexas.edu</a>
TA office hours:	Monday 4-5 pm
Reference books (optional):	<a href="#">The Calculus of Computation</a> by Aaron Bradley and Zohar Manna; <a href="#">Decision Procedures: An Algorithmic Point of View</a> by Daniel Kroening and Ofer Strichman
Course Webpage:	<a href="http://www.cs.utexas.edu/~isil/cs389L/">http://www.cs.utexas.edu/~isil/cs389L/</a>

## Course Description:

Automated logical reasoning has enabled substantial progress in many fields of computer science, including software and hardware verification, theorem proving, program analysis, and artificial intelligence. In this course, we will study widely-used logical theories and decision procedures for answering whether formulas in these theories are satisfiable. In particular, we will consider automated reasoning techniques for propositional logic, first-order logic, linear arithmetic over reals and integers, theory of uninterpreted functions, and combinations of these theories. We will also look at applications of logic in program analysis and verification.

## Requirements:

- Regular class attendance is required. Please email instructor if you will not be able to attend class on a particular day.
- This course will have a combination of programming assignments and problem sets. Collaboration is **not** allowed on either.

- This offering of the course will not have exams.

## Announcements:

- Our first class will meet on Tuesday, Jan 19.
- All problem sets and programming assignments will be posted on [Piazza](#).

## Syllabus:

In the Reading section of the syllabus below, COC refers to the Bradley & Manna Calculus of Computation book, while DP refers to the "Decision Procedures: An Algorithmic Point of Book" by Kroening & Strichman.

Date	Lecture topics	Notes	Reference
01/19	Introduction and basics	<a href="#">Lecture 1</a>	COC 1.1-1.5
01/21	Normal forms and DPLL	<a href="#">Lecture 2</a>	COC 1.6-1.7
01/26	CDCL-based SAT Solvers	<a href="#">Lecture 3</a>	DP 2.2 <a href="#">CDCL SAT solvers</a>
01/28	Free time for programming assignment	N/A	N/A
02/02	Practical applications of boolean satisfiability	<a href="#">Lecture 4</a>	N/A
02/04	Binary decision diagrams	<a href="#">Lecture 5</a>	<a href="#">Notes on BDDs</a> DP 2.3
02/09	Semantics of First Order Logic	<a href="#">Lecture 6</a>	COC 2.1-2.4, COC 2.7
02/11	Proof rules and properties of FOL	<a href="#">Lecture 7</a>	COC 2.6
02/16	Unification	<a href="#">Lecture 8</a>	
02/18	First-order theorem proving	<a href="#">Lecture 9</a>	
02/23	Overview of First-Order Theories	<a href="#">Lecture 10</a>	COC Chapter 3
02/25	Theory of Equality	<a href="#">Lecture 11</a>	COC Chapter 9
03/02	Free time for programming assignment	N/A	N/A
03/04	Linear Arithmetic over Rationals	<a href="#">Lecture 12</a>	CLRS Chapter 29
03/09	Linear Arithmetic over Integers	<a href="#">Lecture 13</a>	
03/11	Nelson-Oppen	<a href="#">Lecture 14</a>	COC Chapter 10
03/16	Spring break		
03/18	Spring break		
03/23	DPLL(T) Framework	<a href="#">Lecture 15</a>	
03/25	Hoare Logic	<a href="#">Lecture 16</a>	
03/30	Verification conditions	Lecture 17	
04/01	VCs with functions and pointers	<a href="#">Lecture 18</a>	
04/06	Intro to Dafny	N/A	
04/08	Time for programming assignment		
04/13	Abstract interpretation	<a href="#">Lecture 19</a>	

04/15	Guess-and-check methods	<a href="#">Lecture 20</a>	<a href="#">Houdini Abduction</a>
04/20	Predicate abstraction; CEGAR	<a href="#">Lecture 21</a>	
04/22	Proving (non-)termination	Lecture 22	
04/27	Reasoning about concurrency	Lecture 23	
04/29	Program Synthesis I	Lecture 24	
05/04	Program Synthesis II	Lecture 25	
05/06	Wrap-up		