

# **SKEDGE**

**Smarter course scheduling for our  
University of Rochester**

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## **Abstract**

In this paper I present Skedge, a web application for students to comfortably and effectively engage with the University's course catalog. Skedge matches and surpasses the capabilities of the existing University tool for this purpose, "Course Description / Course Schedule" (CDCS) and presents its information in a more visually pleasing way. As a result, Skedge boasts strong user-retention rates, long session durations, and high student adoption despite having virtually no advertisement. Through collected usage data, I demonstrate that a) Skedge's differences from and additions to CDCS are usable and have real need, b) the two major use-cases associated with course browsing—direct search and exploratory search—are effectively accommodated by Skedge, and c) Skedge's search mechanism is user-friendly and self-teaches to users over time.

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# Chapter 1


## Introduction

This paper will begin by discussing Markov chains and how we set out to use them for our goal of creating an assistive program editor. We will then describe in detail how we implemented a Markov chain to house program syntax trees, how we were able to generate code using it, and finally we'll discuss our results and address the limitations of our product.

### 1.1 Introduction

#### 1.1.1 Markov chain

A Markov chain is a mathematical system that undergoes a stochastic process whereby



COURSE DESCRIPTION  
COURSE SCHEDULE

Course Description / Course Schedule (CDCS)

Search

Year/Term: (Required)  
 Fall 2016

School:

Subject:

Course: (MTH 162 or MTH or 162)  
 csc

Course Type:

Status:

Description - Keywords:

Title:

Instructor Name:

Day: ☐ M ☐ T ☐ W ☐ R ☐ F ☐ S ☐ U

Start Time Between:

Credit Hours Between:

Division:

☐ Upper Level Writing Courses  
☐ Diversity Courses

Arts, Sciences, and Engineering
Computer Science

CRN	Course	Course Title	Term	Credits	Status
49714	CSC 131	RECREATIONAL GRAPHICS	Fall 2016	4.0	Closed


**Schedule:** Day: TR Begin: 1105 End: 1220 Building: HARK Room: 114  
**Enrollment:** Section: 28 Enroll: 28 Section Cap: 28  
**Instructors:** PAWLICKI T  
**Prerequisites:** None  
**Description:** A hands on introduction to 3D computer graphics and animation techniques taught from a user point of view. Topics include 3D modeling, animation, and simulation. Assessment based on projects. No written exams.  
**Clusters:** N4CSC013, N4CSC014

CRN	Course	Course Title	Term	Credits	Status
49723	CSC 161	INTRO TO PROGRAMMING	Fall 2016	4.0	Open

**Schedule:** Day: TR Begin: 1915 End: 1930 Building: B&L Room: 109  
**Enrollment:** Section: 32 Enroll: 115 Section Cap: 115  
**Class Info:** YOU MUST REGISTER FOR A LAB & WORKSHOP WHEN REGISTERING FOR THE MAIN SECTION.  
**Instructors:** SARKIS R; STJACQUES R  
**Prerequisites:** None  
**Description:** Organized thinking, creative problem solving, and the precise description of solutions are valuable skills in academia and life. The formulation and solution of problems using computers is increasingly important in all artistic and scholarly fields. We introduce core concepts and techniques of programming as a way to develop these skills, as basis for further CS study, and for application to other fields. Lab required.  
**Clusters:** N4CSC013, N4CSC015, N4CSC016, N4CSC017, N4CSC018, N4ECE001

CRN	Course	Course Title	Term	Credits	Status
78686	CSC 161	INTRO TO PROGRAMMING	Fall 2016	4.0	Open

**Schedule:** Day: MW Begin: 1650 End: 1805 Building: GRGEN Room: 101  
**Enrollment:** Section: 53 Enroll: 115 Section Cap: 115  
**Class Info:** YOU MUST REGISTER FOR A LAB & WORKSHOP WHEN REGISTERING FOR THE MAIN SECTION.  
**Instructors:** STJACQUES R; SARKIS R  
**Prerequisites:** None



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Choose a schedule:  
 Spring 2016

Fall 2016
4 credits

**CSC 131: Recreational Graphics**  
 A hands on introduction to 3D computer graphics and animation techniques taught from a user point of view. Topics include 3D modeling, animation, and simulation. Assessment based on projects. No written exams.

**Time & Place:** Tues/Thurs 11:05am-12:20pm, HARK 114  
**Instructor:** Pawlicki T **CRN:** 49714

28/28 enrolled

Fall 2016
4 credits

**CSC 161: Intro to Programming**  
 Comments: YOU MUST REGISTER FOR A LAB & WORKSHOP WHEN REGISTERING FOR THE MAIN SECTION.  
 Organized thinking, creative problem solving, and the precise description of solutions are valuable skills in academia and life. The formulation and solution of problems using computers is increasingly important in all artistic and scholarly fields. We introduce core concepts and techniques of programming as a way to develop these skills, as basis for further CS study, and for application to other fields. Lab required.

**Time & Place:** Tues/Thurs 6:15pm-7:30pm, B&L 109  
**Instructor:** Sarkis R, St Jacques R **CRN:** 49723

32/115 enrolled

**Time & Place:** Mon/Wed 4:50pm-6:05pm, GRGEN 101  
**Instructor:** St Jacques R, Sarkis R **CRN:** 78686

53/115 enrolled

MTWRF

REL 389W

MTH 165

MTH 165

2 sections / 8 credits

Figure 1.1: CDCS (top) and Skedge (bottom) for the search query csc.

## Source code

The source code for Skedge is available online under an open source license:

<https://github.com/RocHack/skedge>.

## Live site

The site can be found at: <http://skedgeur.com>.

# Bibliography

- [1] Ariya Hidayat *Esprima*  
<http://esprima.org/>
- [2] Takis Konstantopoulos *Introductory lecture notes on Markov Chains and Random Walks*.  
Uppsala University,  
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- [4] Yusuke Suzuki *Encodegen*  
<https://github.com/Constellation/escodegen>
- [5] Mozilla Developer Network *SpiderMonkey Parser API*  
[https://developer.mozilla.org/en-US/docs/SpiderMonkey/Parser\\_API](https://developer.mozilla.org/en-US/docs/SpiderMonkey/Parser_API)

## Appendix