

# Designing a comprehensive course on Go

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# Why Go

- Popularity
- Use cases
  - CLIs
  - Web Development
  - Cloud
  - DevOps
- Career
  - Google, Microsoft, Meta, Cloudflare, Twitter, Uber, ...

## TIOBE Index

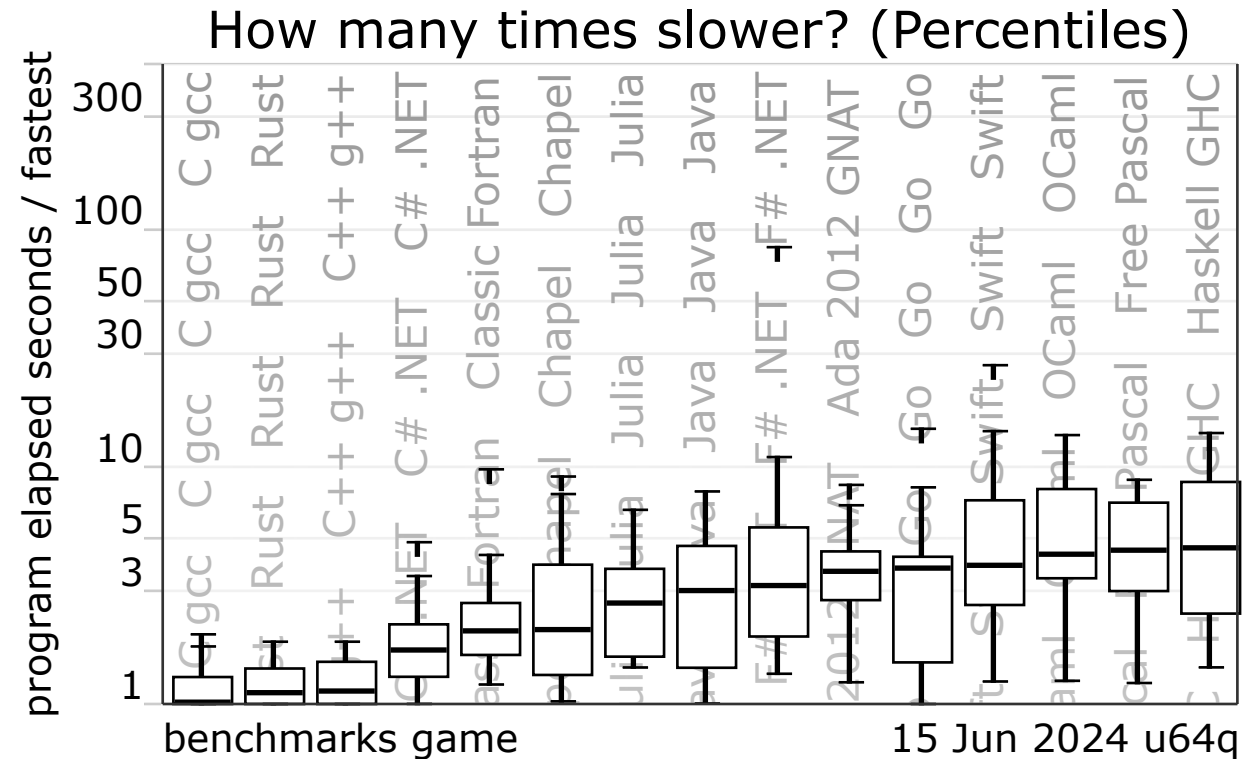
Jun 2024	Jun 2023	Change	Programming Language		Ratings	Change
1	1			Python	15.39%	+2.93%
2	3	▲		C++	10.03%	-1.33%
3	2	▼		C	9.23%	-3.14%
4	4			Java	8.40%	-2.88%
5	5			C#	6.65%	-0.06%
6	7	▲		JavaScript	3.32%	+0.51%
7	14	▲▲		Go	1.93%	+0.93%
8	9	▲		SQL	1.75%	+0.28%
9	6	▼		Visual Basic	1.66%	-1.67%
10	15	▲▲		Fortran	1.53%	+0.53%

<https://www.tiobe.com/tiobe-index/>

# Go Characteristics

- Garbage collected
- Concurrency
- Messaging
- Goroutines
- Simplicity
- 25 keywords
- Performance

benchmarks game



<https://benchmarksgame-team.pages.debian.net/benchmarksgame/box-plot-summary-charts.html>

# Old Course

- PB173: Autumn 2023
  - Martin Ukrop, Pavel Tišnovský, Ivan Nečas, Stanislav Zeman
  - First run
  - Half-semester course
- Red Hat
  - <https://github.com/RedHatOfficial/GoCourse>

# Old Design

Week	Homework	Lectures	Exercises
01		Introduction	
02		Go Syntax and Semantics	
03		Concurrency and Parallelism in Go	
04		Practical Examples	
05		Go in the Real World	
06		Additional Topics	
07			
08			
09			
10			
11			
12			
13			

# Motivation

- Feedback
  - Hands-on practice
- Update materials
  - Restructure
  - Update outdated slides
  - Add new concepts

# Assignment

- Design a new course
  - Based on the Red Hat Go course
- Requirements
  - Lectures covering the whole semester (11/12)
  - Hands-on exercises
  - Homework assignments and/or larger projects
  - Basic didactical reasoning
  - Public materials under permissive license


# New Design

Week	Homework	Lectures	Exercises
01		Introduction	Workspace setup
02		Go Fundamentals #1	Katas
03	CLI	Go Fundamentals #2	Options & Katas
04		Concurrency & Parallelism	Concurrency
05	Concurrency	Go Advanced Features #1	Generic datastructures
06		Go Advanced Features #2	Profiling
07	REST API	REST API	net/http
08		Containerization	Docker
09	Containerization & Persistence	Databases	databases/sql
10		Infrastructure	Caddy & GCP
11	CI/CD & Metrics	Observability	Prometheus & Grafana
12			
13			



# Beyond just Go

- Containerisation
  - Docker
- Infrastructure
  - CI/CD
  - Proxying
  - Google Cloud Platform
- Observability
  - Metrics
  - Logs
  - Traces
  - OpenTelemetry



**Course Go**  
Go course you will, of course, go for  
3 followers <https://course-go.dev> [tutors@course-go.dev](mailto:tutors@course-go.dev) Verified


Follow

README.md

## Course Go


### Structure

- [Course](#): general repository for course information, course schedule, discussions and resources
- [Lectures](#): set of lecture slides covering topics of the course
- [Exercises](#): set of exercises designed as a form of complementary work to lectures
- [Homework](#): set of graded homework assignments
- [Code](#): contains code used throughout the course exercises and homework




Pinned



Customize pins


 **course** Public

General course repository


 **lectures** Public


Course lectures

  1

 **exercises** Public

Course exercises



 **homework** Public

Course homework

View as: Public

You are viewing the README and pinned repositories as a public user.

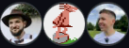
Get started with tasks that most successful organizations complete.

Top discussions this past month

Discussions are for sharing announcements, creating conversation in your community, answering questions, and more.


[Start a new discussion](#)

People



Invite someone

Top languages

 Go

Most used topics

go

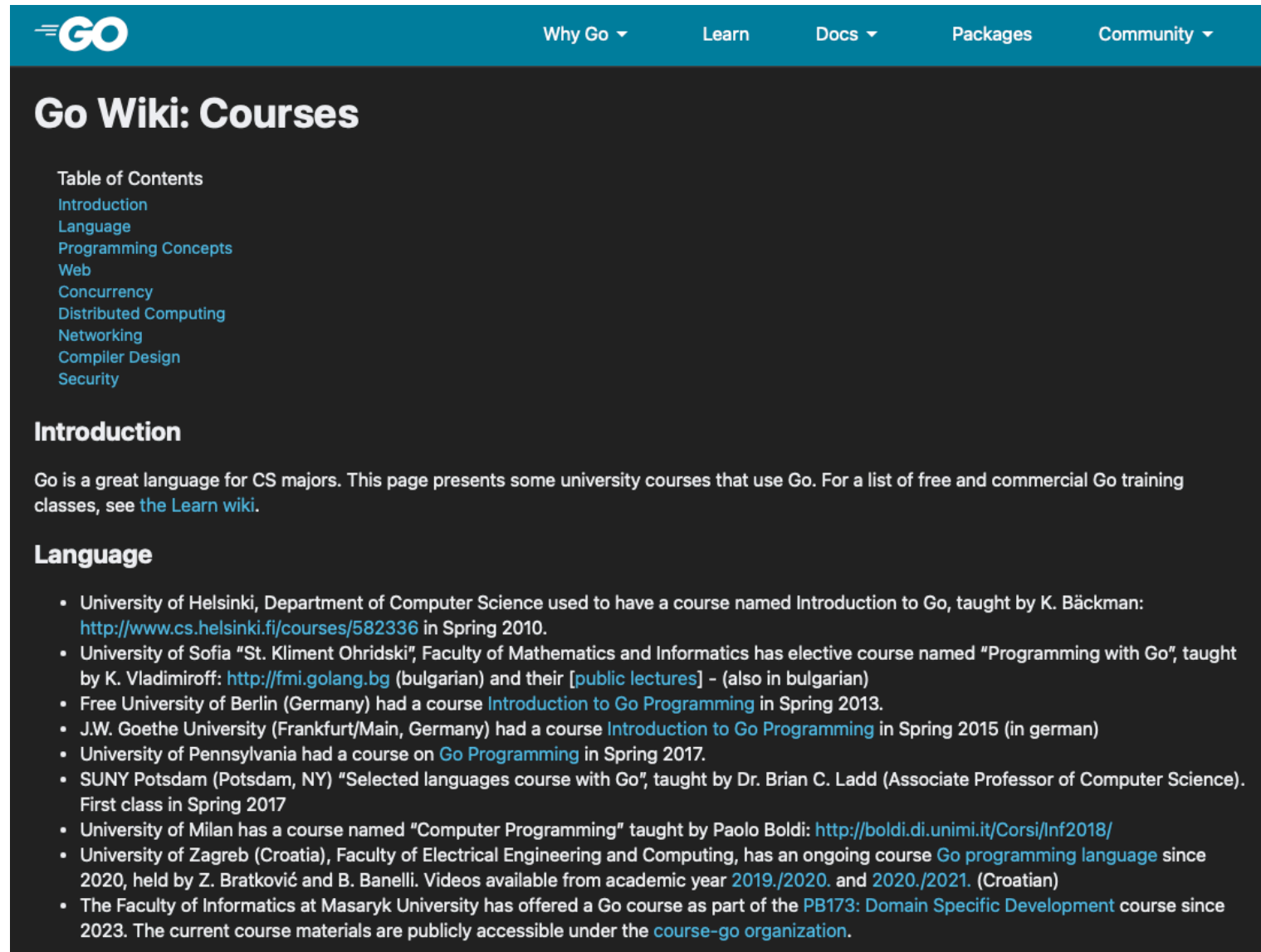
golang

course

exercises

homework

# Go Wiki



The screenshot shows the 'Go Wiki: Courses' page. At the top is a teal navigation bar with the Go logo and links for 'Why Go', 'Learn', 'Docs', 'Packages', and 'Community'. Below the navigation bar, the page title 'Go Wiki: Courses' is displayed. A 'Table of Contents' section lists various topics: Introduction, Language, Programming Concepts, Web, Concurrency, Distributed Computing, Networking, Compiler Design, and Security. The 'Introduction' section follows, stating that Go is a great language for CS majors and provides a link to the 'Learn' wiki. The 'Language' section contains a bulleted list of university courses that use Go, including those from the University of Helsinki, University of Sofia, Free University of Berlin, J.W. Goethe University, University of Pennsylvania, SUNY Potsdam, University of Milan, University of Zagreb, and Masaryk University.

**Go Wiki: Courses**

Table of Contents

- Introduction
- Language
- Programming Concepts
- Web
- Concurrency
- Distributed Computing
- Networking
- Compiler Design
- Security

**Introduction**

Go is a great language for CS majors. This page presents some university courses that use Go. For a list of free and commercial Go training classes, see [the Learn wiki](#).

**Language**

- University of Helsinki, Department of Computer Science used to have a course named Introduction to Go, taught by K. Bäckman: <http://www.cs.helsinki.fi/courses/582336> in Spring 2010.
- University of Sofia "St. Kliment Ohridski", Faculty of Mathematics and Informatics has elective course named "Programming with Go", taught by K. Vladimiroff: <http://fmi.golang.bg> (bulgarian) and their [\[public lectures\]](#) - (also in bulgarian)
- Free University of Berlin (Germany) had a course [Introduction to Go Programming](#) in Spring 2013.
- J.W. Goethe University (Frankfurt/Main, Germany) had a course [Introduction to Go Programming](#) in Spring 2015 (in german)
- University of Pennsylvania had a course on [Go Programming](#) in Spring 2017.
- SUNY Potsdam (Potsdam, NY) "Selected languages course with Go", taught by Dr. Brian C. Ladd (Associate Professor of Computer Science). First class in Spring 2017
- University of Milan has a course named "Computer Programming" taught by Paolo Boldi: <http://boldi.di.unimi.it/Corsi/Inf2018/>
- University of Zagreb (Croatia), Faculty of Electrical Engineering and Computing, has an ongoing course [Go programming language](#) since 2020, held by Z. Bratković and B. Banelli. Videos available from academic year [2019./2020.](#) and [2020./2021.](#) (Croatian)
- The Faculty of Informatics at Masaryk University has offered a Go course as part of the [PB173: Domain Specific Development](#) course since 2023. The current course materials are publicly accessible under the [course-go organization](#).

# What next?

- Sample solutions and revision
- PB173: Autumn 2024
  - Feedback
  - Iterate
- Extend
  - Auth, Event-driven, gRPC, GraphQL, etc.
- Share
- Dedicated course?

# Thank you

