

Resources for Online Courses

By Tom Gaudette

Components of a Course

Traditional Course

Lecture

Recitation

Quizzes/Test

Homework

Lab

Study Group

Online Course

Video

Online Question/Answer

Group Grading

Student Affordable

Hardware or Simulation

Discussion Group

MathWorks Resources

Online Course

Video



Tools

Online Tutorials, Videos,
Webinars

Online Question/Answer
Group Grading



Cody, MATLAB Program
files

Student Affordable
Hardware or Simulation



Arduino, Raspberry Pi
support in Student Version
MATLAB Apps

Discussion Group



MATLAB Central

Videos

Guidance

- Videos need to be short
- Avoid a recording of your actual lecture
- Intersperse shorter sections and then ask the students to try problems based on just this topic

How

- Find short (<20min) videos on topic and link to them
- MathWorks has 1000's of videos and interactive tutorials

Online Training and Tutorials

Interactive Tutorials

- MATLAB Tutorial
- Simulink Tutorial
- Signal Processing Tutorial
- Control Systems Tutorial
- Computational Mathematics Tutorial

Online Grading

Guidance

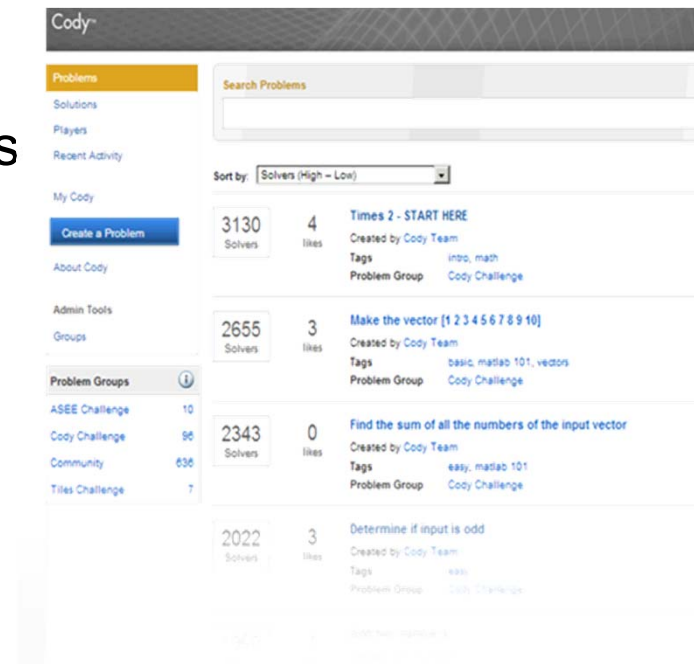
- Use focused topic specific questions
- Focus on small concepts
- Enable instant feedback to students
- Consider gamification to support motivation

How

- Cody

What is Cody?

- *Game*
 - Learn MATLAB by solving problems
 - Instant feedback
 - Contribute new problems
 - Motivates using social, scoring, badges, ranking, progress, feeds
- **First year online**
 - Nearly 12,000 players
 - Nearly 200,000 solutions
 - Over 900 problems created



The screenshot shows the Cody website interface. On the left is a navigation menu with options: Problems (highlighted), Solutions, Players, Recent Activity, My Cody, Create a Problem (button), About Cody, Admin Tools, and Groups. Below the menu is a 'Problem Groups' section with a table:

Problem Group	Solvers
ASEE Challenge	10
Cody Challenge	96
Community	636
Times Challenge	7

The main content area features a search bar, a 'Sort by' dropdown menu set to 'Solvers (High - Low)', and a list of problems. Each problem entry includes the number of solvers, likes, the problem title, creator, tags, and problem group.

Solvers	Likes	Problem Title	Created by	Tags	Problem Group
3130	4	Times 2 - START HERE	Cody Team	intro, math	Cody Challenge
2655	3	Make the vector [1 2 3 4 5 6 7 8 9 10]	Cody Team	basic, matlab 101, vectors	Cody Challenge
2343	0	Find the sum of all the numbers of the input vector	Cody Team	easy, matlab 101	Cody Challenge
2022	3	Determine if input is odd	Cody Team	easy	Cody Challenge

Student Affordable Hardware

Guidance

- Low cost should be in the range of a book
- Hardware needs to be reliable but not black box

How

- MATLAB and Simulink Student Version now supports a range of low cost hardware including
 - Analog Discovery
 - Raspberry Pi
 - Arduino
 - Lego NXT

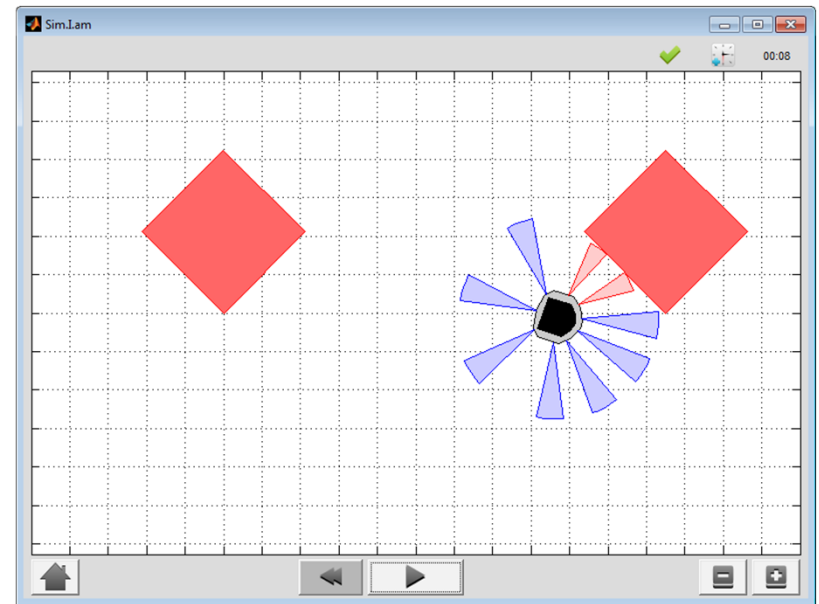
Simulations

Guidance

- Searching for existing material

How

- Check the MATLAB Central File Exchange



Discussion Group

Guidance

- Most Online courses already have discussion group technology
- Hold online office hours e.g. Google Hangouts
- Assign small study groups
- Encourage students to participate in other active communities

How

- MATLAB Central is already a very active community

Community = MATLAB Central

File Exchange

Recent Files

- 📁 Spike Neural Network (SNN) *Hossein Dehghan*
- 📁 RGDS_Practical_Guide *Ronald/Daniel*
- 📁 K means clustering for Image Compression *Vinay Kumar Tadepalli*
- 📁 Dynamical System Viewer *Henry Harrison*
- 📁 March Madness Algorithm *Nathan Lorah*
- 📁 Hierarchical RGB Image Compression with GUI *Amarjot*

Cody

Recent Problems

- 📁 nearest neighborhood method of interpolation *shhebaz ghouri*
- 📁 Moving average (variable kernel length) *Selvaraju*
- 📁 Track Logic *Michael C.*
- 📁 Travelling Salesman Problem (TSP) *Alex P.*
- 📁 Binary Coder *Ahmed*
- 📁 Geometry: Find Circle given 3 Non-Collinear Points *Richard Zapor*

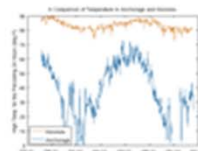
MATLAB Answers

Recent Questions

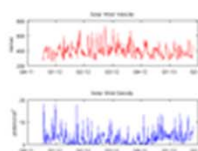
- 📁 I want you to help me please and how can i work simulation for effect the prameters such as distance ,space vau and wieht distribution on lenght interleaver *manal*
- 📁 How can I watermark an image? *Mithra*
- 📁 Excel Date column Plot in Matlab *Isa Isa*
- 📁 How I can detect human in movie ? *John*
- 📁 How automatic insert (once defined) symbolic expression from script or workspace to function? *Vladimir*
- 📁 Is there any way to correct the warning? *dav*

Trendy

Popular Plots



Temperatures in Anchorage and Honolulu (Comparison)
Ned Gulley



Solar Wind - Density and Velocity
Ned Gulley

Newsgroup

Active Threads

- 📁 'dataread' and 'textsc Files' *Tiger*
- 📁 Cutting a sphere in ol
- 📁 How to write a matlab cylinder *anyone*
- 📁 i need help *anyone*
- 📁 Spectrogram: nfft vs that?? *anyone*
- 📁 Searchnig for a string *Luong*

Link Exchange

Recent Links

academic biomedic control systems COUNTRY materials download electrical and comput language english ma and instrumentation mec modeling simulation SIn and simulation

Blogs

Recent Updates

-  File Exchange Pick of the Week *Additional Hardware Support in R2013a* 15 Mar 2013
[View archive](#)
-  Loren on the Art of MATLAB *Using the MATLAB Unit Testing Infrastructure for Grading Assignments* 14 Mar 2013
[View archive](#)
-  Doug's MATLAB Video Tutorials *Persistent variables in MATLAB* 14 Mar 2013
[View archive](#)
-  Steve on Image Processing *MATLAB software testing tools – old and new (R2013a!)* 12 Mar 2013
[View archive](#)
-  Guy and Seth on Simulink *Some of My Favorite New Features in R2013a* 11 Mar 2013
[View archive](#)
-  Cleve's Corner *Wilkinson's Polynomials* 04 Mar 2013
[View archive](#)
-  MATLAB Spoken Here *Dancing in the spotlight – The intersection between robotics, video processing and art* 04 Mar 2013
[View archive](#)