Course Title: Beginning Programming in R  
Course Code: CS 89  
Instructor: Mohammad Shokoohi-Yekta  
Duration: 10 Weeks  
Slides/Material: canvas.stanford.edu

Course Summary:

*Please see course page for full description and additional details.

Note About Live Attendance and Recording:

Choose one: These class sessions will be recorded.

Participating the live sessions are optional, however, highly recommended. By attending the Zoom sessions, you get the chance to interact with the instructor and other students. Live sessions will be interactive, hands-on, and will include live coding and solving tons of real world problems.

Grade Options and Requirements:

- No Grade Requested (NGR)  
  - This is the default option. No work will be required; no credit shall be received; no proof of attendance can be provided.
- Credit/No Credit (CR/NC)  
  - Students must submit at least four labworks.
- Letter Grade (A, B, C, D, No Pass)  
  - Students must submit at least four labworks and the final project.

Final Project and Presentation:

The final project is due one week after Week 10.  
You will be working on a project of your interest, and implementing it in R. Your R implementation should include at least basic programming structures such as “if conditions”, “Loops,” and “Vectors.” Your innovation in picking a subject really matters, that’s the fun part. Here are a few examples: Tic Tac Toe, Tax Return App, Charity App, Hangman, Calculator, Data Analysis Tool, etc. You can make any assumptions you like for implementing your project. Please feel free to talk to me or send me an email to get feedback on your subject before you start implementing the idea.

You need to record a 5-10 minute presentation of your final project and post it on Canvas (more detailed instructions will be provided later). You may want to create slides and include the following items in your presentation:

Please contact the Stanford Continuing Studies office with any questions  
365 Lasuen St., Stanford, CA 94305  
continuingstudies@stanford.edu  
650-725-2650
1. Explain your chosen project and problem statement
2. Show a demo of your project and run your code in real time
3. Explain the details and implementation issues
4. Discuss the challenges you faced with
5. Describe a future work, as it could be done to improve your project

*Please Note: If you require proof that you completed a Continuing Studies course for any reason (for example, employer reimbursement), you must choose either the Letter Grade or Credit/No Credit option. Courses taken for NGR will not appear on official transcripts or grade reports.*

**Tentative Weekly Outline:**

<table>
<thead>
<tr>
<th>Week</th>
<th>Python Topic</th>
<th>Extracurricular Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Intro to Programming, Getting started with R installation</td>
<td>Data Mining-Malaria Detection</td>
</tr>
<tr>
<td>2</td>
<td>Variables, Assignment, Operators, Built-in functions</td>
<td>Data Mining-Predictive Modeling</td>
</tr>
<tr>
<td>3</td>
<td>While/For Loops</td>
<td>Machine Learning-Computer Vision</td>
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<tr>
<td>4</td>
<td>if statements and conditions</td>
<td>Software Engineering Interviews</td>
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<tr>
<td>5</td>
<td>Arrays/Lists, Vectors, Data Frames, Data Structures</td>
<td>Intro to Deep Learning</td>
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<tr>
<td>6</td>
<td>Search/Sorting algorithms, Functions</td>
<td>Improving Accessibility</td>
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<tr>
<td>7</td>
<td>Import Data Sets, Clean Data Sets, Correlation Analysis</td>
<td>How to become a Data Scientist?!</td>
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<tr>
<td>8</td>
<td>Define Functions, Object Oriented Design</td>
<td>Compare Large Tech Companies</td>
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<tr>
<td>9</td>
<td>ggplot2: Best Visualization Package Ever</td>
<td>Future of Tech</td>
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<tr>
<td>10</td>
<td>Shiny and RSelenium: Web Scraping and Web Apps in R</td>
<td>Final Presentations</td>
</tr>
</tbody>
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