<table>
<thead>
<tr>
<th>Course Title</th>
<th>Applied Linear Algebra for Electrical Engineering</th>
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<tbody>
<tr>
<td>Discipline</td>
<td>Electrical Engineering</td>
</tr>
<tr>
<td>Duration of course</td>
<td>4/8/12 weeks</td>
</tr>
<tr>
<td>Number of times you have taught this course totally and in the last 5 years (2-3 times is preferable, if not more)</td>
<td>1</td>
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<tr>
<td>Is this course syllabus approved by AICTE or by Senate in your/any institute? If Yes, please give the course name and institute under which this is approved.</td>
<td>Applied Linear Algebra I for Electrical Engineering - IIT Madras</td>
</tr>
<tr>
<td>The time frame of when you would want to offer the course: (Jan 2021/July 2021)</td>
<td>Jan-2021</td>
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</table>
| Will it map to any course in the AICTE model curriculum. | No. But covers Linear Algebra parts of:  
**BSC105** Paper – 1 Calculus and Linear Algebra - Mathematics (for Computer Science & Engg. students)  
**BSC103** Mathematics-I (Calculus, Multivariable Calculus & Linear Algebra)  
**BS101** Mathematics-I |
| Will it map onto any of the NPTEL domain | Electrical Engineering - **Communication and Signal Processing** |

### Instructors of the course – Please attach a scanned photograph of each instructor and the TAs also

<table>
<thead>
<tr>
<th>S.No</th>
<th>Name of the Instructor</th>
<th>Department</th>
<th>Institute</th>
<th>Mail -Id</th>
<th>Mobile Phone number</th>
<th>Website of instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andrew Thangaraj</td>
<td>Electrical Engineering</td>
<td>IIT Madras</td>
<td><a href="mailto:andrew@ee.iitm.ac.in">andrew@ee.iitm.ac.in</a></td>
<td></td>
<td><a href="http://www.ee.iitm.ac.in/andrew/">http://www.ee.iitm.ac.in/andrew/</a></td>
</tr>
</tbody>
</table>

### Intended audience

- **Senior level Undergraduate and First year Postgraduate/PhD**

### Is it a core/elective course?

- **Core**

### Is it a UG/PG/PhD course?

- **Senior level Undergraduate and First year Postgraduate/PhD**

### Is this course relevant for GATE exam preparation?

Linear Algebra for Mathematics and Statistics streams.
Which degrees would it apply to? (BE/ME/MS/BSc/MSc/PhD etc) | BE/ME/MS/PhD
---|---
What are the next set of courses that can be taken by students who complete this? | Digital Signal Processing, Control Systems, Error control coding, Digital Communications, Wireless Communications/Systems, Optimization, Stochastic Processes, Machine/Deep Learning, Data Science, Quantum Mechanics for Engineers
Pre-requisites in terms of educational qualification of participants, if any other courses should be done before this can be done | Basic Calculus, Should have done a basic (or a first) course in Linear Algebra
Industry recognition of this course – List of companies/industry that will recognize/value this online course | Communications, Artificial Intelligence, Analytics
Will the final certification exam be – paper/pen or computer based - both are proctored | Computer-based
Will the course require use of any software such as Matlab or any programming language, etc or any other tool? If yes, does it have a linux based compiler available or if licensed, can we get the educational license for the same? | C/C++ or Matlab or Python
Linux compilers available for C/C++ and Python.
Names of 2 reviewers for the course (can be from other institutes – will be used if we need any additional inputs on the course) – Name, Dept, email id, Institute |
List of reference materials/books/ | Linear Algebra Done Right - Sheldon Axler
Introduction to Linear Algebra - Gilbert Strang
Linear Algebra and Applications - Gilbert Strang
Linear Algebra - Serge Lang
Linear Algebra, S.H. Friedberg, A.J. Insel, and L.E. Spence
Course Outline (add/delete more weeks/modules as required - depending on the course)
Course plan: Has updated course plan
FOR GETTING THE INTRODUCTORY COURSE PAGE READY – TO OPEN FOR ENROLLMENTS
1. Introduce the course in about 4-5 lines

Introduce the fundamentals of vector spaces, inner products, linear transformations, and eigenspaces to electrical engineering students.
2. Photograph of instructor

3. About the instructor

Homepage: http://www.ee.iitm.ac.in/andrew/

4. 2 minute introductory video about the course

5:10 - 7:30 min of this video.