

# CE 406: Transportation Engineering II

Priyansh Singh (Coordinator) & Gourab Sil

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Web: [www.priyanshsingh.com](http://www.priyanshsingh.com)

Office Hours: W 09:00-11:30 a.m.

Course Webpage: [catchpriyansh.github.io/ce406/](https://catchpriyansh.github.io/ce406/)

Office: 311 POD 1D

Class Room: *online - L02*

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Class Hours: T 12:00-12:50 p.m. | W 11:00-11:50 a.m. | Th 16:00-16:50 p.m.

Tutorial: Th 17:00-17:50 p.m.

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## Course Description

**Airport Planning and Design:** Aircraft characteristics related to airport design; Airport configuration - runway configurations, relation of terminal area to runways, runway orientation; Geometric design of the airfield - ICAO and FAA design standards, runways, taxiways, holding aprons and aprons; Planning and design of the terminal area - apron-gate system, size and number of gates, aircraft parking configurations, the passenger terminal system; airport lighting and marking; air traffic control; airport planning and air travel demand forecasting; Structural design of airfield pavements.

**Railway Engineering:** Indian Railway Track - different gauges, cross sections, coning of wheels; Tractive resistances; Track components - rails, rail failures, sleepers, rail fixtures and fastenings and ballast; Geometric design of the track; Points and crossings Track junctions; Stations and yards; Signalling and interlocking; Track stresses; Track construction and maintenance.

## Course Objectives

This course is designed to provide the student with tools and methods to analyze, design and plan airport and railway infrastructure.

## Required Readings

- [1] M. Agarwal. "Indian railway track". In: *Prabha and Cooperation, A-68, NDSE Pt II, New Delhi-110049 India* (2007).
- [2] N. J. Ashford, S. Mumayiz, and P. H. Wright. *Airport engineering: planning, design, and development of 21st century airports*. John Wiley & Sons, 2011.
- [3] W. W. Hay. *Railroad engineering*. Vol. 1. John Wiley & Sons, 1982.
- [4] Horonjeff. *Planning and Design of Airports*. 5th ed. McGraw-Hill Education, 2010.
- [5] S. Khanna and M. Arora. *Airport: Planning & Design*. Nem Chand, 1976.
- [6] S. Khanna and C. Justo. *Highway Material Testing: Laboratory Manual*. Nem Chand, 1971.
- [7] J. Mundrey. *Railway track engineering*. Tata McGraw-Hill Education, 2009.

[8] S. Saxena and S. Arora. "A text book of railway engineering". In: *For Engineering Students*, 7th Edition,?. Dhanpat Rai Publications (p) Ltd, New Delhi (2001).

## Course Policy

I will detail the policy for this course below. Basically, don't cheat and try to learn stuff. Don't be that guy.

## Grading Policy

- 25% of your grade will be determined by Mid Semester Examination.
- 20% of your grade will be determined by tutorials, assignments and quizzes.
- 15% of your grade will be determined by a term project. Term project will include 05-page paper submission and a presentation. More information on term paper will be provided later in class.
- 40% of your grade will be determined by a final exam.

## Attendance Policy

There is no direct weightage given to attendance. However students are encouraged to attend classes because there may be surprise tutorials, assignments and quizzes.

*Showing up is 80 percent of life* – Woody Allen, via [Marshall Brickman](#)

## Late Arrival of the Professor Policy

Dear students I am writing this to let you know what you should do if I am late to class. This seems like an anachronism. I will inform students via e-mail in advance of class if class is cancelled for the day. I will also contact to department and your class representative if something happened on the way to work. Failing that, assume the worst happened to me. I ask the students make sure that my story gets the proper treatment on an *Prime TV* show. I also ask that my story be narrated by Arnab or Ravish.

## E-mail Policy

I am usually quick to respond to student e-mails. However, student e-mails tend to do several things that try my patience. I have made a policy, that outlines why I will not respond to certain e-mails students send. Multiple rationales follow.

1. The student could answer his/her own inquiry by reading the syllabus/handout.
2. The student wants to know what topics s/he missed during a class s/he skipped. The answer is always "you missed what was on the syllabus."
3. The student is protesting a grade without reference to specific points of objection. See the policy on protesting a grade in the syllabus. These e-mails tend to be expressive utility on the part of the student and do not require a response from me. Students interested in improving their knowledge of material should see me during office hours or ask an appointment for video conferencing.
4. The student wants to know how many classes s/he missed at some point during the semester. I assume the student has a better answer to that question than me until the end of the semester.

5. The student is requesting an extension on an assignment for which the syllabus already established the deadline. The answer is always “no”.
6. The student is “*grade grubbing*” or asking to round up a grade. The answer is always “no”.
7. The student is asking for an extra credit opportunity, a request that amounts to more grading for the professor. The answer is “no”.

### Make-Up Exam Policy

There are **NO** make-ups for missed exams unless backed by proper medical reasons. Otherwise Institute policies will be applicable.

### Academic Dishonesty Policy

Don’t cheat. Don’t be that guy. Yes, you. You know exactly what I’m talking about too.

### Class Schedule

Students must read the following before Tuesday’s class session. Important: class readings are subject to change, contingent on mitigating circumstances and the progress we make as a class. Students are encouraged to attend lectures and check the course website for updates.

Week	Topics
Week 01, 08/24 - 08/28	Syllabus Day, Introduction, Aviation History, Aircraft Types and Components, Aircraft Characteristics
Week 02, 08/31 - 09/04	Airport Terminal, Airport Planning, Demand Forecasting, Site Selection, Runway Orientation
Week 03, 09/07 - 09/11	Soil Investigation and Characterization, Pavement Stresses, Flexible Pavement Design
Week 04, 09/14 - 09/18	Airport Pavement Distress, Rigid Pavement Design and Distress
Week 05, 09/21 - 09/25	TBD
Week 06, 09/28 - 10/02	Mid Semester Examination (MSE)
Week 07, 10/05 - 10/09	Mid Semester Examination (MSE)
Week 08, 10/12 - 10/16	TBD
Week 09, 10/19 - 10/23	TBD
Week 10, 10/26 - 10/30	TBD
Week 11, 11/02 - 11/06	TBD
Week 12, 11/09 - 11/13	TBD
Week 13, 11/16 - 11/20	TBD
Week 14, 11/23 - 11/27	End Semester Examination (ESE)