

# ME232: Dynamics

Timings	
Monday	14:30 to 15:50
Tuesday	16:00 to 17:20

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Room No. # 106*

# Course Plan

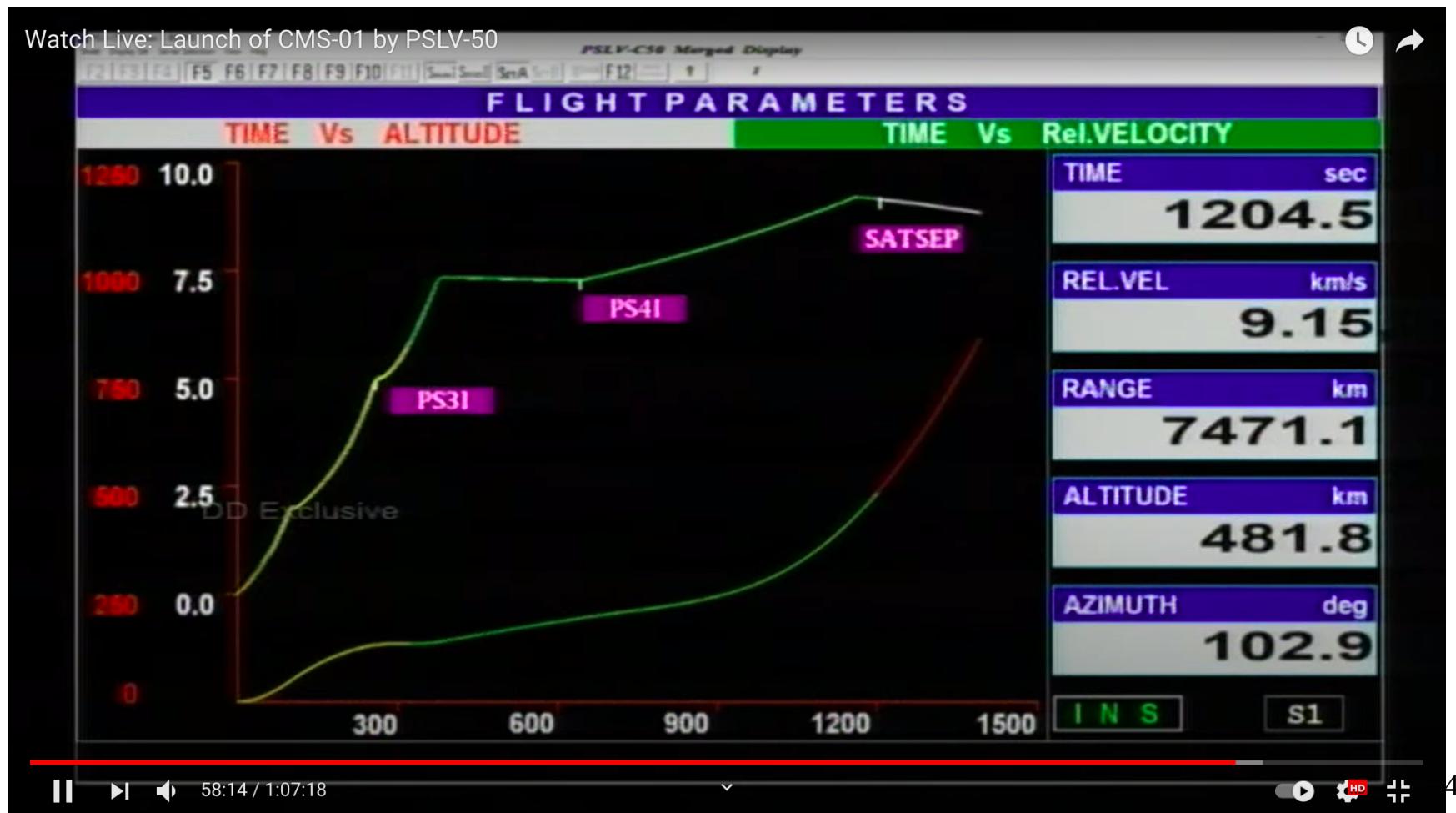
- **Tierce exam:  $25\% + 25\% + 25\% = 75\%$** 
  - Anyone found to be using unfair means (in any form) during the exam will be penalized with 100% negative marks. In case of coping both the students, the one who has copied and from whom he/she has copied, will be penalized without seeking any clarification/ justification.
- **Quizzes: 25%**
  - Short surprise quizzes of 5-10 mins. will be taken. Policy regarding the usage of unfair means remain same as for the tierce exam.
- **Suggestions/Recommendations for better learning**
  - Solve and practice as many problems as you can.

## **Term paper: Bonus 20%**

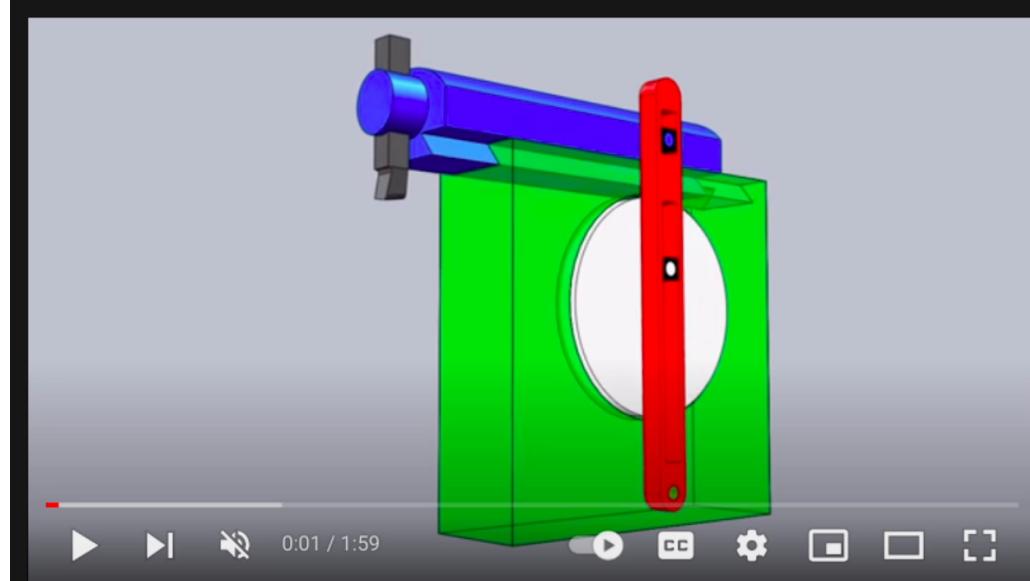
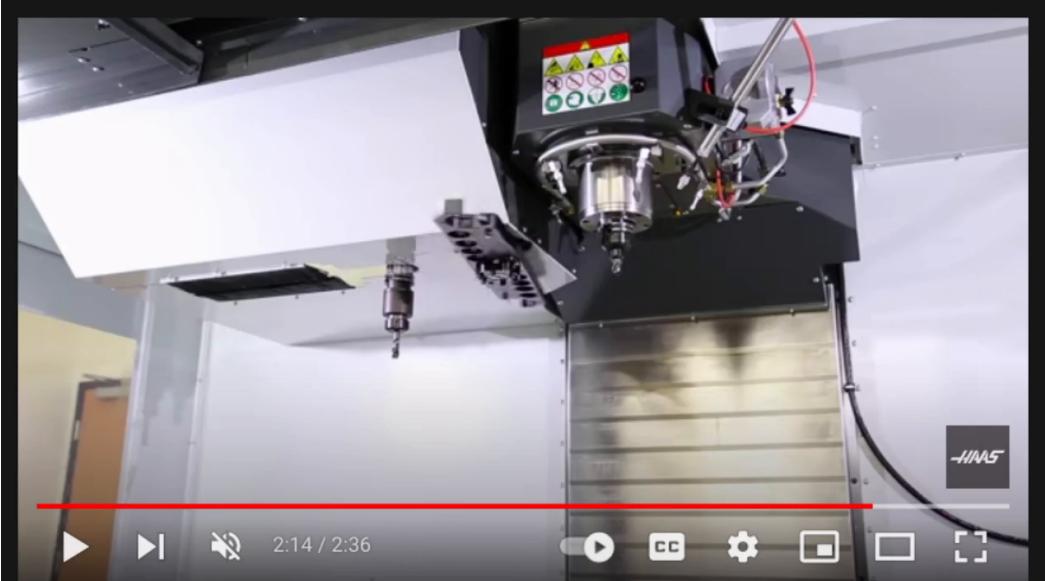
- Optional
- Anyone, who is willing to explore the subject by applying theoretical knowledge to practical problems, is welcome. Following timelines must be followed for the term paper.
  1. Interested student(s) must submit a detailed scope of work on a topic before the start of fourth fractal segment (i.e., 23<sup>rd</sup> Feb.). I may suggest some changes in the scope of work.
  2. Final work must be presented after the third tierce exam (i.e., 06<sup>th</sup> May), which should adhere to the scope presented earlier.

Students, who did not show their interest in Stage 1, will not be allowed for the term paper later.

- Analysis of motion, trajectories



# Design and analysis of machines and mechanisms



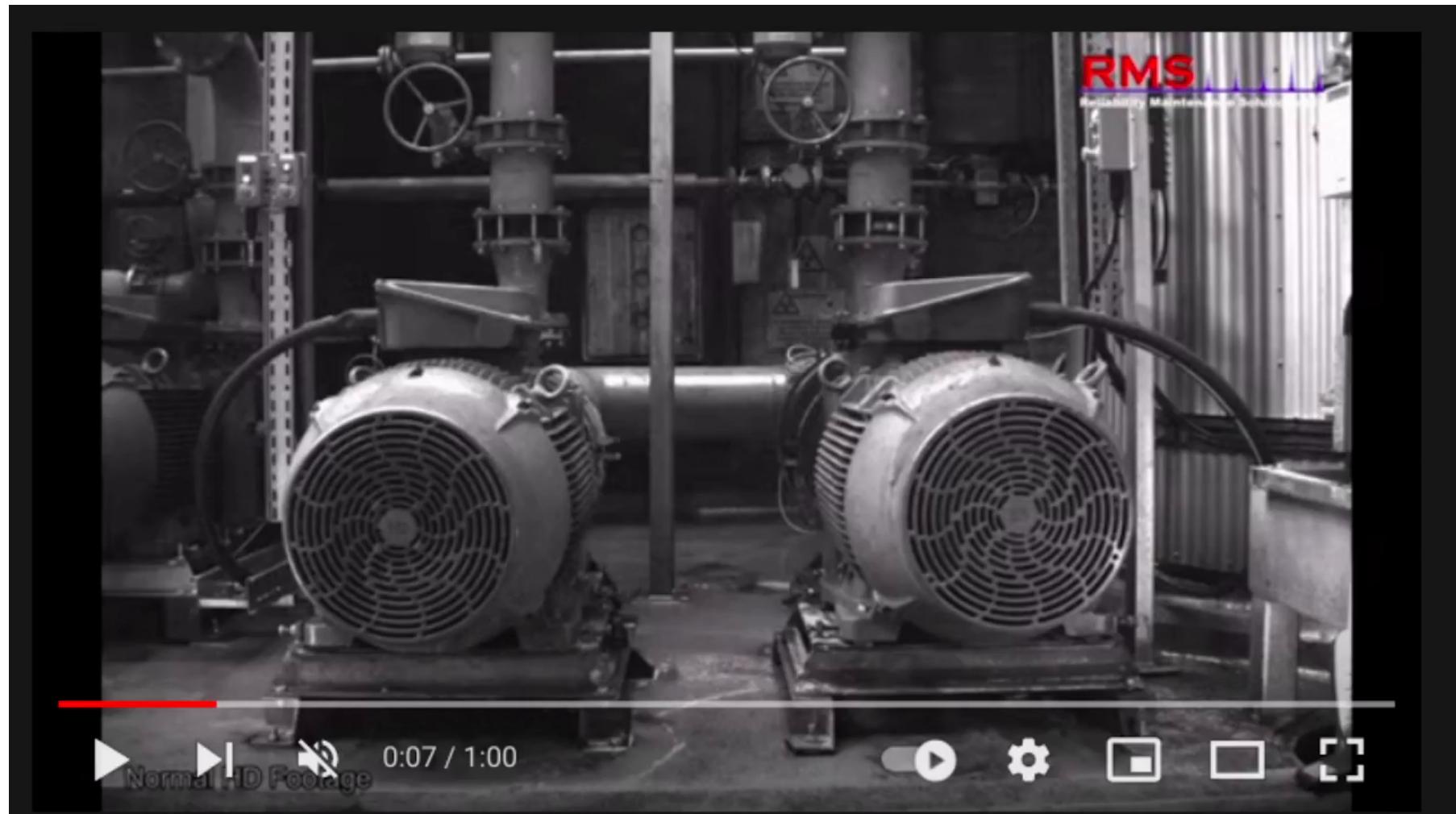
# Robotics (Dynamics with controls)



# Vibration



# Vibration



# Vibration

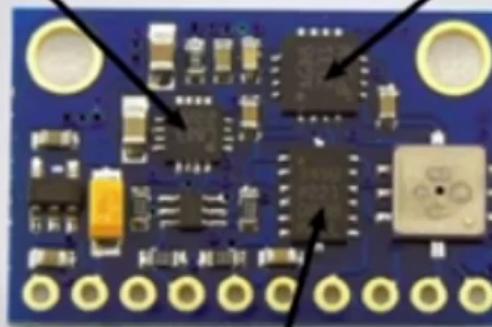
## MEMS Accelerometer, Gyroscope, Magnetometer

tutorial by [www.HowToMechatronics.com](http://www.HowToMechatronics.com)



MC5883L  
Magnetometer

L3G4200D  
Gyroscope



ADXL345  
Accelerometer

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0:28 / 9:57



# Vibration

## TACOMA NARROWS BRIDGE COLLAPSE

Length of center span	2800 ft
Width	39 ft
Depth of stiffening girders	8 ft
Start of construction	Nov. 23, 1938
Opened for traffic	July 1, 1940
Collapse of bridge	Nov. 7, 1940



0:04 / 4:12



- Design and analysis of Mechanisms and Machines
  - <https://www.youtube.com/embed/X4kU8qSvYWk?start=135&end=147>
  - <https://www.youtube.com/embed/Ga8yoLfB-1U>
- Robotics (Dynamics with Controls)
  - <https://www.youtube.com/embed/zbNe2FRS6zo?start=18&end=110>
  - <https://www.youtube.com/embed/uhND7Mvp3f4>
  - [https://www.youtube.com/embed/\\_luhn7TLfWU](https://www.youtube.com/embed/_luhn7TLfWU)
- Vibration
  - Tools: <https://www.youtube.com/embed/bgfilCJfVZ4?start=29&end=82>
  - Machines: <https://www.youtube.com/embed/Xb5MuiEzK9M>
  - MEMS: <https://www.youtube.com/embed/eqZgxR6eRjo?start=8&end=107>
  - Structures: <https://www.youtube.com/embed/3mclp9QmCGs>

# Books

- *Engineering Mechanics: Dynamics* by J. L. Meriam & L. G. Kraige & J. N. Bolton. Wiley.
- *Vector Mechanics for Engineers: Dynamics* by Beer, Johnston, DeWolf, Mazurek and Sanghi. Tata McGrawHill.