

Course No.	401.664	Lecture No.	001	Course Title (Subtitle)	Dynamics of Building Structures		Credit	3
Instructor	Name	Prof. Cheol-Ho Lee			Homepage	archisteel@snu.ac.kr		
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	Interview Time/Place : Wednesday 1:00-2:00 PM/Room 423							
Prerequisite Course								
* 1. Course Summary	This course covers the linear and nonlinear dynamic analysis of SDOF and MDOF systems subjected to various types of dynamic loading with primarily focusing on seismic design and analysis applications. The core concepts of emerging technologies such as performance based seismic design, base isolation, and energy dissipators are also treated.							
* 2. Textbook and References	<p><u>Textbook:</u></p> <p>1. Dynamics of Structures: Theory and Applications to Earthquake Engineering, 2nd Edition, Anil K.Chopra, Prentice Hall, 2001</p> <p><u>References:</u></p> <p>1. Videos for Engineering Seismology and Modern Seismic Testing Techniques</p> <p>2. Dynamics of Structures, R.W. Clough and J. Penzien, McGraw-Hill, 1982</p> <p>3. Dynamics of Structures: Theory and Computation, M. Paz, VNR, 1980, 1991</p> <p>4. Vibration Problems in Engineering, S. Timoshenko et al., John Wiley & Sons, 1974</p> <p>5. Introduction to Structural Dynamics, J.M. Biggs, McGraw-Hill, 1972</p> <p>6. Random Vibration, S.H. Crandall and W.D Mark, Academic Press, 1973</p> <p>7. Random Vibration and Spectral Analysis, D.E. Newland, Longman Inc., 1981</p> <p>8. Introduction to Random Vibrations, N.N. Nigam, The MIT Press, 1983</p> <p>9. Probability, Random Variables, and Stochastic Process, A. Papoulis, McGraw-Hill, 1984</p> <p>10. The Fast Fourier Transform, E.O. Brigham Prentice Hall, 1974</p> <p>11. Finite Element Procedures in Engineering Analysis, Prentice-hall, K.J. Bathe, 1982</p> <p>12. Analytical and Field Investigations of Buildings Affected by the Northridge Earthquakes of January 17, 1994, SAC 95-04, Part 2, 8-1~8-49</p> <p>13. Lee, C.H. (2009), Seismic Design of Steel Buildings per KBC 2009, Journal of Korean Society of Steel Construction, KSSC, Vol.21, No.6</p> <p>14. Lee, C.H. (2009), Seismic Design of Steel Moment Frame and Braced Frame, Technical Lecture in Earthquake Engineering Society of Korea</p> <p>15. Lee, C.H. (2009), Design Philosophies and Standard of Steel Moment Frame and Concentrically Braced Frame, Lecture in Earthquake Engineering Society of Korea</p> <p>16. Lee, C.H. (2007), Seismic Design Provisions for Steel Moment Frames, Special Issue, Journal of Korean Society of Steel Construction, KSSC, Vol.19, No.4, pp.18-24</p> <p>17. Lee, C.H. (2008), Seismic Design of Steel Buildings per Capacity Design Concept, Special Issue, Journal of the Architectural Institute of Korea Structure & Construction</p> <p>18. Lee, C.H. (2008), Seismic Design of Tall Buildings per Performance Based Design Concept, Lecture in Samsung Advanced Academy</p> <p>19. Principles of Supplemental Damping and Seismic Isolation, C. Christopoulos and A. Filiatrault, IUSS Press, 2006</p> <p>20. Proceedings and Papers about 2016 Gyeongju Earthquake and 2017 Pohang Earthquake etc.</p>							
* 3. Evaluation Method	Attendance	Task	Medium	Final				Total
	0%	50%	20%	30%				100%
Note: Students who are absent for over 1/3 of the class will receive a grade of 'F' or 'U' for the course. (Exceptions can be made when the cause of absence is deemed unavoidable by the course instructor.)								

<p>* 4. Lecture Plan (week)</p>	<p>Part I. Single-Degree-of-Freedom System</p> <ol style="list-style-type: none"> 1. Equation of Motion, Problem Statement, and Solution Methods 2. Free Vibration 3. Response to Harmonic and Periodic Excitation 4. Response to Arbitrary, Step and Pulse Excitation 5. Numerical Evaluation of Dynamic Response 6. Earthquake Response of Linear Systems 7. Earthquake Response of Inelastic Systems <p>Part II. Multi-Degree-of-Freedom System</p> <ol style="list-style-type: none"> 8. Equation of Motion, Problem Statement, and Solution Methods 9. Free Vibration 10. Damping in Structures 11. Dynamic Analysis and Response of Linear Systems 12. Earthquake Analysis of Linear Systems <p>Part III. Advanced Topics</p> <ol style="list-style-type: none"> 13. Performance based seismic design / Seismic reinforcement overview 14. Theoretical background of DCM / CSM 15. Theory and application of seismic isolation/energy dissipation
<p>5. Notes</p>	<p>* Course supporting materials download: ftp://147.46.197.152;421/ (ID: steel & PW: steel)</p> <p>* All homework assignments should be submitted a week after the assignment.</p>