109學年度第一學期博士學位候選人資格考試

參考書籍與考試大綱

109-1_Reference & Outlines

考試科目	參考書籍與考試大綱
有限元素法 Finite Element Method	**參考書籍：** Reference Reddy, J.N., *An introduction to the finite element method*, McGraw-Hill, New York, USA. **考試大綱：** Outlines 1. Calculus of variations and applications 2. Weak formulation of boundary value problems 3. Variational methods of approximation 4. Finite element analysis of 1D problems (a) Spring and Bar problems (b) Beam problems (c) Frame problems 5. Finite element analysis of 2D problems (a) Potential problems (b) Plane elasticity problems
結構動力學 Dynamics of Structure	**Reference:** *Dynamics of Structures:* *Theory and Applications to Earthquake Engineering* Anil K. Chopra, Prentice-Hall, Inc. **Outlines:** 1.Vibration of Single-Degree-of-Freedom Systems 2.Numerical Methods of Dynamic Response 3.Vibration of Multi-Degree-of-Freedom Systems 4.Modal Analysis 5.Design Spectra and Response Spectrum Analysis 6.Vibration of Distributed Mass and Elasticity Systems
工程數學 Engineering Mathematics	This exam contains one problem on each of the topics listed below: 1.Ordinary differential equations 2.Vectors, matrices, and vector calculus 3.Partial different equation 4.Complex analysis **Reference books**: 1.D.G. Zill, Advanced Engineering Mathematics, 6th Edition, Jones and Bartlett Publishers, 2018. 2.F.B. Hildebrand, Advanced calculus for applications, 2nd edition, Prentice-Hall, Inc., 1976. 3.E. Kreyszig, Advanced Mathematics for Engineers, 10th Edition, John Wiley &Sons, 2011.

109學年度第一學期博士學位候選人資格考試

參考書籍與考試大綱

考試科目	參考書籍與考試大綱
鋪面分析 Pavement Analysis	**Reference:** Huang, Y. H., Pavement Analysis and Design, 2nd Edition, Prentice-Hall, Inc., 2004 **Outlines:** CHAPTER 2 Stresses and Strains in flexible Pavements CHAPTER 4 Stresses and Deflections in Rigid Pavements CHAPTER 6 Traffic Loading and Volume CHAPTER 7 Material Characterization CHAPTER 9 Pavement Performance
材料機械性質 Mechanical Properties of Materials	**Reference books:** Bowman, K. (2004) Mechanical Behavior of Materials, John Wiley & Sons. Dowling, N. E. (1993) Mechanical Behavior of Materials, Prentice-Hall. Ashby, M.F. and Jones, D.R.H. (1980) Engineering Materials 1, An Introduction to their Properties and Applications, Pergamon. Ashby, M.F. and Jones, D.R.H. (1986) Engineering Materials 2, An Introduction to Microstructures, Processing and Design, Pergamon. Courtney, T.H. (1990) Mechanical Behavior of Materials, McGraw-Hill.
高等鋼筋混凝土 Advanced Reinforced Concrete	**Scope of the Examination:** 1.Confinement of concrete, behavior and design of members for earthquake resistant design, biaxial bending, and slender columns. 2.Prediction of the behaviors of flexure, flexure and axial load, and beam-column connections of RC members, and conduct the related seismic designs according to ACI 318. **Reference Books:** 1.Reinforced Concrete – Mechanics and Design, 7th Edition, 2015, James K. Wight, Prentice Hall 2.Design of Concrete Structures, 15th Ed.(in SI units), 2015, A. N. Nilson, D. Darwin and C. W. Dolan, McGraw Hill 3.R. Park and T. Paulay, *Reinforced Concrete Structures*, 1975 4.ACI 318-19: *Building Code Requirements for Structural Concrete and Commentary*, ACI Committee 318, American Concrete Institute