

| 科目名稱              | 參考用書   | 備註 |
|-------------------|--|----|
| 工程數學              | 參考用書：<br>Advanced Engineering Mathematics, O'Neil.<br>考試大綱：<br>1. First-Order Differential Equations.<br>2. Linear Second-Order Equations.<br>3. The Laplace Transform<br>4. Series Solutions.<br>5. Vectors And Vector Spaces.<br>6. Matrices And Linear Systems.<br>7. Determinants.<br>8. Eigenvalues.<br>9. Vector Differential Calculus.<br>10. Vector Integral Calculus.   |    |
| 自動控制              | 參考用書：<br>Automatic Control Systems, B.C. Kuo<br>考試大綱：<br>1. Mathematical Foundation<br>2. Block Diagram and Signal-Flow Graphs<br>3. Modeling of Physical Systems<br>4. State Variable Analysis<br>5. Stability of Linear Control Systems<br>6. Time-Domain Analysis of Control Systems<br>7. Root-Locus Technique<br>8. Frequency-Domain Analysis<br>9. Design of Control Systems   |    |
| 製造學               | 參考用書：<br>Manufacturing Engineering and Technology, Serope Kalpakjian, Steven R. Schmid<br>考試大綱：<br>1. Nonferrous Metals and Alloys: Production, General Properties, and Applications<br>2. Ceramics, Graphite, Diamond, and Nanomaterials: Structure, General Properties, and Applications<br>3. Ceramics, Glasses, and Superconductors: Processing and Equipment<br>4. Rapid-Prototyping Processes and Operations<br>5. Fundamentals of Machining<br>6. Advanced Machining Processes<br>7. Fabrication of Microelectronic Devices<br>8. Fabrication of Microelectromechanical Devices and Systems and Nanoscale Manufacturing<br>9. Brazing, Soldering, Adhesive-Bonding, and Mechanical-Fastening Processes<br>10. Surface Treatments, Coatings, and Cleaning<br>11. Automation of Manufacturing Processes<br>12. Computer-Aided Manufacturing |    |
| 工程力學<br>(靜力學、動力學) | 參考用書：<br>1. Engineering Mechanics: Statics, by R. C. Hibbeler<br>2. Engineering Mechanics: Dynamics, by R. C. Hibbeler<br>考試大綱：<br>1. Equilibrium of a Particle  |    |

|     |   |  |
|-----|---|--|
|     | <ol style="list-style-type: none"> <li>2. Equilibrium of a Rigid Body</li> <li>3. Structural Analysis</li> <li>4. Friction</li> <li>5. Virtual Work</li> <li>6. Kinematics of a Particle</li> <li>7. Kinetics of a Particle: Force and Acceleration</li> <li>8. Kinetics of a Particle: Work and Energy</li> <li>9. Kinetics of a Particle: Impulse and Momentum</li> <li>10. Planar Kinematics of a Rigid Body</li> <li>11. Planar Kinetics of a Rigid Body: Force and Acceleration</li> <li>12. Planar Kinetics of a Rigid Body: Work and Energy</li> <li>13. Planar Kinetics of a Rigid Body: Impulse and Momentum</li> </ol>  |  |
| 材料學 | <p>參考用書：</p> <ol style="list-style-type: none"> <li>1. Materials Science and Engineering by William D. Callister, David G. Rethwisch, WILEY.</li> <li>2. The Science and Engineering of Materials by Donald R. Askeland, Pradeep P. Phule, International student edition, THOMSON.</li> </ol> <p>考試大綱：</p> <ol style="list-style-type: none"> <li>1. Atomic structure and interatomic bonding</li> <li>2. The structure of crystalline solids</li> <li>3. Imperfections in solids</li> <li>4. Diffusion</li> <li>5. Mechanical properties of metals</li> <li>6. Dislocations and strengthening mechanisms</li> <li>7. Failure</li> <li>8. Principles of solidification</li> <li>9. Phase diagrams</li> <li>10. Phase transformation: development of microstructure and alteration of mechanical properties</li> <li>11. Application and processing of metal alloys</li> </ol> |  |
| 熱力學 | <p>參考用書：</p> <p>Fundamental of Engineering Thermodynamics / Moran Shapiro</p> <p>考試大綱：</p> <ol style="list-style-type: none"> <li>1. Basic concept and definitions;</li> <li>2. Evaluating properties;</li> <li>3. Conservation of mass and energy – the first law of thermodynamics</li> <li>4. Fundamental concept of thermodynamic cycles</li> <li>5. Second law of thermodynamics and entropy</li> <li>6. Irreversibility and exergy analyses</li> <li>7. Application of gas and vapor cycles</li> </ol>  |  |
| 電子學 | <p>參考用書：</p> <ol style="list-style-type: none"> <li>1. Electronic Devices conventional current Version, Thomas L. Floyd</li> <li>2. Electronic foundational: Circuits, Devices, and Applications, Thomas L. Floyd</li> <li>3. Electronic Devices and Circuit theory, Robert L. Boylestad Louis Nashelsky</li> </ol> <p>考試大綱：</p> <ol style="list-style-type: none"> <li>1. Basic circuit (including, series circuit, parallel circuit, power calculation)</li> <li>2. Thevenin's theorem and Norton's theorem</li> <li>3. RC circuit (charge and discharge circuit)</li> <li>4. Concept of P Type and N type device structure</li> <li>5. Diode devices</li> <li>6. Concept and application of Transistor (including, IJBT or Mos FET control)</li> <li>7. Transistor on-off and power control circuit</li> </ol>   |  |

|      |  |                    |
|------|--|--------------------|
|      | 8. Basic OP-amp application<br>9. OP-amp circuits caculation (positive feedback and negative feedback)<br>10. Thyristor and basic application  |                    |
| 工廠管理 | 參考用書：<br>Operations Management, 11e, William Stevenson / 華泰圖書、滄海圖書<br>考試大綱：<br>1.競爭力、策略與生產力<br>2.預測<br>3.產品與服務設計<br>4.產品與服務之策略性產能規劃<br>5.製程選擇與設施佈置<br>6.工作設計與衡量<br>7.地點規劃與分析<br>8.品質管理與管制<br>9.總體規劃與主排程<br>10.MRP 與 ERP<br>11.存貨管理<br>12.JIT 與精實作業<br>13.供應鏈管理   | 102<br>學年起<br>新生適用 |
| 創新設計 | 參考用書<br>1. Creative design of mechanical devices by Hong-Sen Yan, Springer<br>考試大綱：<br>1.Mechanical devices<br>2.Creative problem solving techniques<br>3.A creative design methodology<br><br>參考用書<br>2. Hands-on systematic innovation for technical systems by Darrell Mann, IFR press<br>考試大綱<br>1. Process overview of TRIZ (Theory of inventive principle)<br>2.Problem Definition ( Problem / opportunity Explorer/ Function & Attribute Analysis)<br>3..Problem solving tools (Technical contradiction/ inventive principles)<br>4.Problem Solving Tools (physical contradiction)<br>5.Solution Evaluation | 102<br>學年起<br>新生適用 |