

Control & Guidance

2011

Enginyeria Tècnica d'Aeronàutica
esp. en Aeronavegació

Escola d'Enginyeria de Telecomunicació
i Aeroespacial de Castelldefels

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Control and Guidance

I. Aircraft Dynamics

1. Laplace transform
2. System modeling
3. Aircraft dynamics

II. Classical control

1. Parametric estimation
2. Steady state error
3. Root locus
4. Controllers
5. Frequency response
6. Bode diagrams

III. Digital control

1. Introduction to discrete systems
2. Z transform
3. Z transfer function
4. Digital control tools
5. Design method with dead beat response

IV. Auto-pilot

1. Longitudinal auto-pilot
2. Lateral auto-pilot
3. AP basic principles
4. Flight Management System

REFERENCES I

J. Blakelock, *Automatic Control of Aircraft and Missiles*, 2a Edició, John Wiley & Sons, 1991

G.F Franklin, J.D. Powell, A. Emani-Naeini, *Feedback Control of Dynamic Systems*, 4a Edició, Prentice-Hall, 2002

P. Lewis, *Sistemas de Control en Ingeniería*, Prentice Hall, 1999

W. Bolton, *Control Engineering*, 2ª Edició, Longman, 1998

D. Arzelier, D. Peaucelle, *Représentation et analyse des systèmes linéaires*, Tomes 1 et 2, Version 1, ENSICA, 1999

REFERENCES II

Ogata, K., *Modern Control Engineering* (4th Ed.), Prentice Hall, 2001

Kuo, B., *Automatic Control Systems*, Wiley and Sons, (8th Ed.), 2002

Dorf, R. and Bishop, R., *Modern Control Systems*, (10th Ed.), Prentice Hall, 2004

Kirk, D. E., *Optimal Control Theory: An Introduction*, 2004

Athans, M. A. and Falb, P. L., *Optimal Control*, McGraw-Hill, New York, 1966

Levine, W. S., *The Control Handbook*. New York: CRC Press, 1996

Anderson, D. F. and Eberhardt, S., *Understanding Flight*, (2nd Ed.), McGraw Hill, 2010