QEM Optimization

[222151-0999 Mathematical economics and optimal control theory]

LECTURE PLAN

Grzegorz Koloch

04-10-2016 **I.1 Topology** (with an extension to infinite dimensional spaces)

06-10-2016 **I.2 Continuity + I.3 Differentiability**

11-10-2016 **II.1 Static Optimization – Introduction,** Stationary points – Definition and characterization

13-10-2016 **II.2 Static Optimization – Classical Programming, incl. Lagrange Theorem**

18-10-2016 **II.3 Non-Linear Programming, incl. Kuhn-Tucker Theorem**

20-10-2016 **II.4 Linear Programming**

25-10-2016 Quasi- and pseudo-convexity, coercivity, sub-derivatives

Jakub Growiec

27-10-2016 **III.1 Differential Equations**

03-11-2016 **III.2 Difference Equations**

08-11-2016 **IV. Dynamic Optimization** (part I) Backward induction. Lagrangeans & Hamiltonians

15-11-2016 **IV. Dynamic Optimization** (part II) Optimal control theory. Phase diagrams

17-11-2016 Dynamic programming with finite and infinite planning horizon, Banach fixed point theorem

22-11-2016 Existence of the value function. Euler equation. Applications to economics

24-11-2016 *Review and summary*