

**MPhil**

**Semester-II**

**Paper: Eco-121**

**Advanced Micro Economics: Theory and Applications**

**Group-B**

**Lecture-III**

**NORMAL FORM GAMES AND EXTENSIVE FORM GAMES**

### **Dominated Strategies**

#### **Definition**

Pure strategy  $s_i$  is strictly dominated for player  $i$  if there exists  $\sigma'_i \in \Sigma_i$  such that

$$u_i(\sigma', s_{-i}) > u_i(s_i, s_{-i}) \forall s_{-i} \in S_{-i} \quad (1)$$

The strategy  $s_i$  is weakly dominated if there exists a  $\sigma'_i$  such that inequality (1) holds with weak inequality, and the inequality is strict for at least one  $s_{-i}$ . Note that, for a given  $s_i$ , strategy  $\sigma'_i$  satisfies inequality-1 for all pure strategies  $s_{-i}$  of the opponents if and only if it satisfies inequality-1 for all mixed strategies  $\sigma_{-i}$  as well, because player  $i$ 's payoff when his opponents play mixed strategies is a convex combination of his payoffs when opponents play pure strategies.

**Note: Will discuss in details during online classes.**

**Ref: A Course in Game Theory: Martin J Osborne and Ariel Rubinstein**