# SAM GLOBAL UNIVERSITY

**Established under Govt. of M.P. & Recognized by UGC**

Address: Gram- Agariya Chopda, Dist. Raisen (M.P.)

Website: www.samglobaluniversity.ac.in E-Mail:kundandr@gmail.com


## Syllabus for entrance examination for admission in Ph.D
## SOIL SCIENCE

### Syllabus

Physical Behaviour: Soil consistence. Soil compaction and consolidation. Soil crusting. Puddling. Energy state of soil water, moisture characteristics. Water flow in saturated and unsaturated soils. Soil water movement, infiltration, redistribution, drainage and evaporation. Soil aeration. Modes of energy transfer in soils. Soil Chemistry: Chemistry of acid, salt affected and submerged soils and management aspects. Equilibrium thermodynamics, chemical equilibria, electrochemistry and chemical kinetics. Inorganic and organic colloids. Cation exchange. Potassium, phosphate and ammonium fixation in soils and management aspects. Soil Fertility and Fertilizer Use: Nutrient sources-fertilizers and manures. Soil N-sources and N transformations and biological nitrogen fixation. Nitrogenous fertilizers – their fate in soils and enhancing N use efficiency. Soil Phosphorus and Potassium forms. Management of P and K fertilizers. Sulphur, Ca and Mg-source, forms, fertilizers and their behavior in soils and management. Micronutrients-critical limits in soils and plants, factors affecting their availability. Integrated nutrient management. Soil Mineralogy, Genesis, Classification and Survey: Genesis and transformation of crystalline clay minerals. Clay minerals in Indian soils. Soil formation-factors, models, processes. Weathering of rocks and mineral transformations. Soil profile. Soil survey-characterization, bench mark soils and correlation. Soil classification systems. Soil survey-types, techniques and interpretations. Landform, evaluation and land use type. Soil biology and biochemistry: Soil biota, microbial ecology and types of organisms. Soil enzymes and soil characteristics influencing growth and activity of micro-flora. Microbial transformations of N, P, S, Fe and Mn in soil. Humus formation- biochemical composition and biodegradation. Biodegradation of pesticides, organic wastes and their use for production of biogas and manures. Biotic factors and bio-fertilizers in soils.