



## CHEMISTRY IMAT PROGRAMME (update 08/06)

### Lecturer

tbc

### Teaching Hours

15

### Analytical Syllabus

| Date                      | Topics   | Hours         |
|---------------------------|--|---------------|
| September 4 <sup>th</sup> | The components of Matter: elements, compounds and mixtures definition.; atomic theory (structure of atom, atomic number, mass number, isotopes). Periodic Table; Depicting Molecules and Ions with Lewis structure; Chemical Bond (ionic and covalent compounds).  | 10 - 11.30am  |
|                           | Writing formulas, names and masses of compounds. Stoichiometry of formulas and Equations : determining the formula of an unknown compound; writing and balancing chemical equations; calculating quantities of reactant and product; definition of mole; expressing concentrations in terms of molarity, molality , normality. | 11.30am - 1pm |
| September 5 <sup>th</sup> | Examples of solving problems: calculating the concentration of a solution; interconverting concentration terms; calculating mass of solute in a given volume of solution; preparing a dilute solution from a concentrated solution.  | 10am - 12pm   |
|                           | An overview of physical state of matter. Properties of Ideal gas and ideal gas law. The role of water as solvent   | 12am - 1pm    |
| September 6 <sup>th</sup> | The properties of mixtures: solutions and colloids. Elements of colligative  | 10 - 11am     |

|                           |   |               |
|---------------------------|---|---------------|
|                           | properties of solutions.  |               |
|                           | Acid-base equilibria: acid and bases in water; autoionization of water; pH scale; buffer solution. Solving basic problems involving strong or weak acid/bases and buffer solutions.               | 11am - 1pm    |
| September 7 <sup>th</sup> | Oxidation-reduction (redox) reactions: movement of electron between reactants; essential redox terminology; oxidation number to monitor electron exchange, elements in balancing redox reactions. | 10 -11.30am   |
|                           | Organic compound and atomic properties of carbon: the structures and classes of hydrocarbons (alkanes, alkenes; alkynes; aromatic hydrocarbons). Properties of common functional groups           | 11.30am - 1pm |
| September 8 <sup>th</sup> | Elements of biochemistry: definition and properties of proteins, carbohydrates and fatty acids.   | 10 - 12.00pm  |
|                           | Definition and cellular function of glycolysis, Krebs cycle, photosynthesis. Representative quiz solutions  | 12.00 - 1pm   |
|                           |   |               |