

## NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Chemistry and Biochemistry - NOC:Quantitative Methods in Chemistry

Subject Co-ordinator - Prof. Aasheesh Srivastava, Prof. Bharathwaj Sathyamoorthy

Co-ordinating Institute - IIT - Madras

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - A brief history of the beginnings of quantitation in Chemistry, defining chemical stoichiometry and
- Lecture 2 - Defining Molality and Normality, relationship with Molarity
- Lecture 3 - Defining other parameters for concentration (% , ppm/ppb, p-value)
- Lecture 4 - Relationship between various concentration parameters
- Lecture 5 - Problems on acid-base equilibria, calculation of pH of strong and weak acids
- Lecture 6 - Brief introduction to normal distribution and statistical analysis
- Lecture 7 - Using a spreadsheet towards basic statistical analysis, exact equation of error propagation, accuracy
- Lecture 8 - Error propagation and its application to a few examples, significant figures
- Lecture 9 - Introduction to use spreadsheets to analyze errors, reiteration of significant figures, repeats accuracy
- Lecture 10 - Classification of errors
- Lecture 11 - A look at uncertainties in a measurement taking an example
- Lecture 12 - A comprehensive and step-wise look at an experimental protocol towards understanding systematic errors
- Lecture 13 - Introductory Statistics - Part 1
- Lecture 14 - Introductory Statistics - Part 2
- Lecture 15 - Hypothesis testing and Finding Outliers - Part 1
- Lecture 16 - Hypothesis testing and Finding Outliers - Part 2
- Lecture 17 - Pooling of data
- Lecture 18 - Introduction to Analysis of Variance (ANOVA) and comparing precisions
- Lecture 19 - Protocol for undertaking ANOVA - Part 1
- Lecture 20 - Protocol for undertaking ANOVA - Part 2
- Lecture 21 - ANOVA and Least Significant Difference (LSD)
- Lecture 22 - ANOVA and solved Least Significant Difference example
- Lecture 23 - Using spreadsheet software to perform data analysis towards calibrating a burette
- Lecture 24 - Using spreadsheet to analyze linear dependence between two variables
- Lecture 25 - Using spreadsheet and MATLAB towards data analysis with example of rate kinetics
- Lecture 26 - Simulating simple straight lines and kinetic curves using MATLAB
- Lecture 27 - Simulating the Michaelis Menten kinetics using MATLAB
- Lecture 28 - Curve fitting and simulating with variance for the Michaelis Menten kinetics using MATLAB
- Lecture 29 - Standards and Volumetric/Gravimetric titrations - Part 1

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- Lecture 30 - Standards and Volumetric/Gravimetric titrations - Part 2
- Lecture 31 - Standards and Volumetric/Gravimetric titrations - Part 3
- Lecture 32 - Standards and Volumetric/Gravimetric titrations - Part 4
- Lecture 33 - Standards and Volumetric/Gravimetric titrations - Part 5
- Lecture 34 - Analytical Separations - Multistage extractions - Part 1
- Lecture 35 - Analytical Separations - Multistage extractions - Part 2
- Lecture 36 - Analytical Separations - Chromatography - Part 1
- Lecture 37 - Analytical Separations - Chromatography - Part 2
- Lecture 38 - Analytical Separations - Electrophoresis, Capillary electrophoresis, Isoelectric Focusing
- Lecture 39 - Basics of Chromatography - Part 1
- Lecture 40 - Basics of Chromatography - Part 2
- Lecture 41 - Chromatography - Concept of Theoretical plates
- Lecture 42 - Chromatography - Rate Theory
- Lecture 43 - Practice of Chromatography - HPLC
- Lecture 44 - Practice of Chromatography - Gas Chromatography
- Lecture 45 - Supercritical Fluid Chromatography
- Lecture 46 - Detectors employed during chromatographic separations
- Lecture 47 - Course Revision
- Lecture 48 - Course Revision - Week 1 to 3
- Lecture 49 - Course Revision - Week 4 and 5
- Lecture 50 - Course Revision - Week 6 and 7
- Lecture 51 - Course Revision - Week 8 to 11