Lesson Plan 1

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| **Title**: **Chapter 18: Temperature, heat and the first law of thermodynamics**  Book: Fundamentals of Physics (10th edition, Extended) by David Halliday, Robert Resnick and Jearl Walker (John Wiley & Sons) | | **Ref. No**: Week 1,  Day 1 | | |
| **Target Group/Population**: B. Sc students (CS, EEE and IPE) | | **Duration**: 90 min | | |
| **Aims/Rationale**: To give the students basic concepts of zeroth law of thermodynamics and absorption heat capacity, specific heat and molar specific heat | | | | |
| **Learning Outcomes**: At the end of the session, the students will be able to understand and analyze above topics and apply those to solve related problems. | | | | |
| **Contents:** 18-1: Temperature (temperature, the zeroth law of thermodynamics), 18-4: Absorption of heat (temperature and heat), The absorption of heat by solids and liquids (heat capacity, specific heat, molar specific heat) | Method or  Technique | | Resource  or Aid | Time |
| **Introduction**:   * Welcome address * Rapport building * Pre-assessment of student’s knowledge * Description of the course | Lecture  QA | | WB  MMP | 15 min |
| **Development**:  1. Explain the zeroth law of thermodynamics.  2. Formulate and explain the heat capacity, specific heat capacity and molar specific heat. Analyze above topics. | Lecture Discussion QA  Problem Solving | | WB  MMP | 60 min |
| **Conclusion**:   * Quick recap/summary * Feedback from the students * References * Forward planning |  | | WB  MMP | 15 min |
| Problems:  23. A small electric immersion heater is used to heat 100 g of water for a cup of instant coffee. The heater is labeled “200 watts” (it converts electrical energy to thermal energy at this rate). Calculate the time required to bring all this water from 23.0 0C to 100 0C, ignoring any heat losses.  24. A certain substance has a mass per mole of 50.0 g/mol. When 314 J is added as heat to a 30.0 g sample, the sample’s temperature rises from 25.0 0C to 45.0 0C. What are the (a) specific heat and (b) molar specific heat of this substance? (c) How many moles are in the sample? | | | | |