**Unit 1 (Weeks 1-4) Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Week 1 – Gas Laws**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Significant gaps** | **Some guessing** | **Great command** |
| Equations of state for real gases |  |  |  |
| E-format convention for scientific notation |  |  |  |
| Common pressure units |  |  |  |
| Unit conversions with Pint |  |  |  |

**Week 2 – Thermodynamic surfaces**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Significant gaps** | **Some guessing** | **Great command** |
| Isochoresandisotherms |  |  |  |
| Boyle isotherms |  |  |  |
| Visualizing derivative thermodynamic surfaces |  |  |  |
| Choosing the right numerical method |  |  |  |
| No-brainers |  |  |  |
| Analytical partial derivatives |  |  |  |

**Week 3 – Probability density functions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Significant gaps** | **Some guessing** | **Great command** |
| The kinetic-molecular theory of gases |  |  |  |
| Probability distribution functions |  |  |  |
| Probabilities from distribution functions |  |  |  |
| Numerical moments of the speed |  |  |  |
| Analytical moments of the speed |  |  |  |

**Week 4 – Internal energy**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Significant gaps** | **Some guessing** | **Great command** |
| Principle of equipartition |  |  |  |
| Heat capacities in the classical limit |  |  |  |
| Interpreting |  |  |  |
| Intermolecular potential energy |  |  |  |
| Analytical |  |  |  |