PHY 3513 Fall 2000 – Schedule for the Remainder of the Semester

Wednesday, November 29

Homework 9 will be assigned (due December 8). Information concerning the final (including a sample exam) will be distributed.

Friday, December 1, 5:00 p.m.

Deadline for submission of revised solutions to Exam 2 problems (optional assignment).

Monday, December 4

Exam 2 (old and new solutions) will be returned. Each student will receive a summary of course scores to date.

Wednesday, December 6

Last class.

Optional extra-credit assignment will be distributed (due December 15). Solution to sample final exam will be distributed.

Friday, December 8, 5:00 p.m.

Deadline for on-time submission of Homework 9.

Monday, December 11, noon

Deadline for late submission of Homework 9. Solutions to Homework 9 will be available for pick-up from 2162 NPB.

Friday, December 15, 12:30–2:30 p.m.

Final exam, held in 1220 NPB.

Friday, December 15, 5:00 p.m.

Deadline for submission of extra-credit assignment.

PHY 3513 Fall 2000 – Homework 9

Due at the start of class on Friday, December 8.

Answer all questions, including any additions to textbook problems. To obtain full credit, you must explain your reasoning and show all working. Please write neatly and include your name on the front page of your answers.

1. Callen Problem 5.3-2.

Addition: After you have obtained an expression for the Helmholtz free energy, find the equations of state by partial differentiation of the fundamental equation.

2. Callen Problem 6.2-2.

Hint: You should obtain a messy polynomial equation for V_1 , the equilibrium volume of subsystem 1. You should write out this equation, but there is no need to solve it explicitly. Just denote the solution by $V_1^*(V)$ and proceed.

3. Express $(\partial c_p / \partial P)_T$ in terms of a mixed second partial derivative of s. Reverse the order of differentiation, then use a Maxwell relation to replace the inner partial derivative, thereby expressing $(\partial c_p / \partial P)_T$ in terms of a partial derivative of $v\alpha$, where α is the coefficient of thermal expansion.