Unless otherwise stated, all problems are from the text Reid: *Undergraduate Commutative Algebra*.

**Assignment 1, due Wednesday January 20:** # 1.5, 1.10, 1.13, 1.18, 1.19.

**Assignment 2, due Monday January 25:** # 2.3, 2.6, 2.7, 2.9, 2.15, 2.16.

**Assignment 3, due Monday February 1:** # 3.3, 3.4, 3.6, 3.10, 3.11.

**Assignment 4, due Monday February 8:** # 4.4, 4.5, 4.7, 4.12(i).

**Assignment 5, due Monday February 15:** # 5.2, 5.8, 5.9, 5.11.

**Assignment 6, due Monday February 22:** # 6.2, 6.4, 6.8, 6.9.

**Assignment 7, due Wednesday March 3:** # 7.2, 7.4, 7.7.

**Midterm Exam, Friday March 5:** Covers Chapters 1 through 7 of Reid.

**Assignment 8, due Monday March 22:** # 7.8, 7.10, 8.1, 8.2.

**Assignment 9, due Friday April 2:** # 8.3, 8.4, 8.6, 8.7.

The following problems are from Atiyah and MacDonald: *Introduction to Commutative Algebra*.

**Assignment 10, due Friday April 9:** # 2.1, 2.3, 2.4, 2.8.

**Assignment 11, due Friday April 16:** # 6.1(ii), 6.3(Artinian), 8.2.

**Assignment 12, due Monday April 26:**

1. Let $A$ be a topological abelian group with the discrete topology. Show that $\phi : A \to \hat{A}$ is an isomorphism.

2. Let $A$ be a ring with an ideal $I$, and let $M$ be an $A$-module. Consider the $I$-adic topologies on $A$ and $M$. Show that $\hat{M}$ is an $\hat{A}$-module.

3. Let $A$ be a ring with an ideal $I$, and let $M$ be an $A$-module. Consider the $I$-adic topologies on $A$ and $M$. Investigate the relationship between $\hat{M}$ and $\hat{A} \otimes_A M$. 