HIV Infection Project Grading Notes

This project will be graded out of a total 50 points, with 25 points for the mathematical analysis and 25 communication points. (See the document *M442 as an Oral Communications (C) Course*, available on the course web site, for more information about the communication grade.) Each project can be resubmitted once to be re-graded on communication.

Group Members:

Analysis points

1. **2 points.** Description and discussion of equations (1)-(2) and (3)-(4)-(5) in reference [PNMLH] of the project assignment.
2. **3 points.** Clear, step-by-step derivation of equation (6) in reference [PNMLH].
3. **3 points.** Linear regression analysis to find values for c, δ, and V_0.
4. **2 points.** Determination of the number of virions produced per day in the entire body for Patient 107, and a discussion of how this changed the way we view HIV infection.
5. **1 point.** Values for: (1) the average life-span of a virion; (2) the average life-span of an infected T-cell (productively infected T-cell); and (3) the average viral generation time.
6. **1 point.** Identification of an equilibrium point from Table 1 in reference [PNMLH].
7. **3 points.** Development of a model of HIV infection including a dynamic equation for the number of healthy T-cells. Discussion of units and parameter values for each parameter in this model.
8. **3 points.** Identification of each equilibrium point for the model in 7, and classification of each as stable or unstable.
9. **2 points.** Stacked plots of healthy T-cells and virions for the model in 7.
10. **1 point.** Determination of the number of T-cells created in the body per day during phase 2 of infection.
11. **2 points.** Analysis and plots associated with incorporating T-cell production fatigue into the model in 7.
12. **2 points.** Development and analysis of full model with medication.

Communication points

1. **10 points.** Clarity of discussion, including a thorough introduction, systematic development of the analysis with no sizeable omissions (such as leaving out an important M-file), and thorough conclusion.
2. **5 points.** Typesetting of the mathematics, including the appearance of variables both in the prose and in displayed equations and the appearance of mathematical structures such as (properly aligned) systems of equations, matrices or summations.

3. **5 points.** Figures, tables and files, including layout and appropriate sizing (inside text columns, but not too small).
4. **5 points.** Grammar and typographical issues, including sentence fragments and illogical sentence constructions, misspelled words, and subject-verb agreement.