Assessment **ET161 Linear Electronics** **J Fiore**

Student Learning Outcomes (from Course Outline)

1. The student will demonstrate familiarity with the operating principles and linear applications of bipolar and field effect transistors.

2. The student will demonstrate a working knowledge of the basic theory of device operation, how to properly bias devices, and have an understanding of common circuit applications including small and large signal audio amplifiers.

3. The student will use a mathematical and problem solving approach for design and analysis, based on fundamental DC and AC circuit principles and math concepts. This will include the use of computer simulations.

4. The student will demonstrate facility at constructing and trouble shooting transistor circuits in the laboratory with proper use of test equipment.

5. The student will demonstrate appropriate communication skills, particularly technical reports through the laboratory.

6. The student will demonstrate the ability to work as part of a technical team, particularly in the laboratory.

Measurement:

For items 1 through 3, the student's grades on in-class tests and/or the final exam will be used with regard to transistor circuit problems. Problems will be taken from representative areas addressed in the course outline. A passing grade will be considered minimum acceptable performance.

For items 4 and 5, the student will be given at least one assignment in the laboratory that will involve the construction and test of transistor circuits, with use of standard laboratory equipment such as DC power supplies, digital multimeters and oscilloscopes. The student is expected to build the circuit(s) from an existing schematic and record appropriate data reflecting circuit operation and performance (item 4). The student will also present a written technical report detailing the objectives, analysis and conclusions of this exercise (item 5). Construction and trouble shooting will be observed by the instructor during the laboratory and verified as part of the data section of the accompanying technical report. Examples of technical report grading include:

Grade of A: The report meets or exceeds the assignment particulars. The report is neat and professional in appearance, including proper spelling and syntax. The analysis is at the appropriate level and of sufficient detail. Data tables and graphical data are presented in a clear and concise manner. Problem solutions are sufficiently detailed and correct. Diagrams have a professional appearance.

Grade of B: The report is close to the ideal although it suffers from some minor drawbacks which may include some spelling or grammatical errors, analyses which may lack sufficient detail, minor omissions in tabular or graphical data, and the like. In general, the report is solid but could use refinement or tightening.

Grade of C: The report is serviceable and conveys the major ideas, although it may be vague in spots. Spelling and grammatical errors may be more numerous than those found in a grade A or B report. Some gaps in data or omissions in explanations may be seen.

Grade of D: Besides typical grammatical errors, the report suffers from logical errors such as conclusions which are not supported by laboratory data. Analyses tend to be vague and possibly misleading. Graphs and diagrams are drawn in an unclear manner.

Grade of F: The report exhibits many of the following deficiencies: Excessive spelling and grammatical errors, missing sections such as graphs, tables, and analyses, blatantly incorrect analyses, wayward or incomprehensible data, problem solutions tend to be incorrect or missing, and graphical data or diagrams are presented in a shoddy manner.

Note that a report may receive a reduced grade for being turned in after the due date. It is felt that meeting time requirements is a valid aspect of report assessment.

For item 6, the student will be observed during the laboratory with regard to performance as part of a technical team, namely, their work with a partner while performing lab exercises. Grading will be on an acceptable/unacceptable basis. Acceptable performance indicators include: Sharing the responsibilities of obtaining components, building circuits, obtaining proper readings from test equipment and performing theoretical analyses of the circuits under test. Further, efficient communication between the lab partners is expected as is professional courtesy and conduct.