Electrical Engineering
Assessment Plan for the MS Program

Program Learning Outcomes
Students graduating with an MS degree from Electrical Engineering are expected to
1) have a good understanding of the fundamental concepts, theoretical principles, and methodological approaches in one of the three specializations enumerated below:
   i) Signals, Systems and Machine Intelligence (SSMI)
   ii) Nano-Materials and Devices (NMD)
   iii) Computer Engineering (CE)
2) have the ability to conduct independent work, which comprises of the abilities to
   i) gain in-depth knowledge by researching the literature on a problem of interest
   ii) implement algorithms, techniques, or methods
3) have the ability to write properly in technical English
4) have the ability to orally present technical results and/or surveys
5) have made timely progress
6) obtain a satisfactory job in their field of choice

Assessment
The following tools are used to assess the level at which the above outcomes are achieved by an MS student in Electrical Engineering:
1) **(Outcome 1)** Faculty evaluation of student performance (i.e., grades) on two selected courses from each specialization:
   i) SSMI: EE 215 Stochastic Processes
      EE 236 State and Parameter Estimation Theory
   ii) NMD: EE 201 Applied Quantum Mechanics
      EE 202 Fundamentals of Semiconductors and Nanostructures
   iii) CE: EE 213 Computer-Aided Electronic Circuit Simulation
      EE 221 Radio Frequency Integrated Circuit Design
2) **(Outcomes 1 and 5)** Faculty evaluation of student performance on the comprehensive exam, which consists of five courses from within one exam area.
3) **(Outcomes 1, 2, and 5)** Graduate Committee’s annual review of the student performance and status.
4) **(Outcomes 3, 4, and 5)** Writing and oral defense of the MS thesis (for Plan I students)
5) **(Outcome 6)** Exit survey conducted after graduation
Assessment Plan for the PhD Program

Program Learning Outcomes

Students graduating with an PhD degree from Electrical Engineering are expected to

1) have a broad and thorough understanding of the fundamental concepts, theoretical principles, and methodological approaches in one of the areas enumerated in Learning Outcome 1 for the MS degree.

2) have the ability to conduct independent research, which comprises of the abilities to

   i) gain in-depth knowledge by researching the literature on a problem of interest
   ii) identify new questions and research directions
   iii) implement algorithms, techniques, or methods
   iv) develop novel ideas, techniques, and approaches
   v) apply existing know-how (intra- or inter-discipline) to a new problem

3) have the ability to write properly in technical English, in a format suitable for publication in typical IEEE (Institute of Electrical and Electronics Engineers) journals or conference proceedings

4) have the ability to orally present technical results and/or surveys

5) have the skills to become effective teachers if an academic career is to be pursued

6) have made timely progress

7) obtain a satisfactory job in their chosen field

Assessment

The following tools are used to assess the level at which the above outcomes are achieved by a PhD student in Electrical Engineering:

1) (Outcome 1) Faculty evaluation of student performance on selected courses. The core courses for each specialization are as listed in the Assessment Tool 1 for the MS degree.

2) (Outcomes 1 and 6) Faculty evaluation of student performance on the preliminary exam. Students must choose 3 “basic” and 2 “advanced” courses from their area, and for each course either receive a high enough grade (A or A+) or pass the written exam at the PhD level.

3) (Outcomes 1, 2i, 2ii, 2iii, 3, 4, and 6) Committee evaluation on the oral PhD candidacy exam at the end of the first year. The oral presentation must be accompanied by a written report.

4) (Outcomes 2 and 6) PhD advisor’s annual review of the student performance and status.

5) (Outcomes 2, 3, 4, 5, and 6) Publication of research results in peer-reviewed journals and conferences.

6) (Outcomes 3, 4, 5, and 6) Writing and oral defense of the dissertation.

7) (Outcomes 7) Exit survey conducted before graduation