# Modified syllabus of 222LEE004 Advanced Control Lab

**At least twelve experiments should be conducted, with a minimum of two of them being hardware experiments from the specified list.**

**Choose a suitable system, and then design the following controllers and do the simulations (Nos. 1 to 10).**

1. Adaptive controller.
2. PID controller with gain scheduling.
3. Lyapunov based Controller
4. Sliding Mode Controller.
5. Model Predictive Controller.
6. Velocity/ altitude hold autopilot.
7. Roll/pitch/yaw autopilots.
8. Fuzzy Logic Controller.
9. Neural Network based controller.
10. Fractional order controller.

**Choose a suitable system, and then design the following estimators and do the simulations (Nos. 11 to 12).**

11. Speed estimator
12. Kalman filter or Extended Kalman Filter.

**Implement the following controllers and validate experimentally (Nos. 13 to 18)**

13. Hardware Implementation of P, PI and PID controllers for a typical system using an embedded processor.
14. Design and validation of a P, PI and PID controller for a typical process control system
15. Design and implementation of a controller for a torsional damper system
16. Speed/position control of DC servo motor using analog or digital PID controller.
17. Control of motor circuits using PLC.
18. Design and implementation of a controller for a MIMO system