AMPR09 ADVANCED MACHINING PROCESS

UNIT-1 MECHANICS OF METAL CUTTING

1.1 Cutting tool angles- tool signature- orthogonal & oblique cutting- cutting forces, Merchant circle diagram- force & velocity relation.

UNIT-2 TOOL MATERIAL, TOOL WEAR AND TOOL LIFE

2.1 Requirement of tool materials- types of tool materials

2.2 Tool wear- Types, mechanism

2.3 Tool life Machinability- types of chips- cutting fluids.

UNIT-3 GEAR MANUFACTURE

3.1 Different methods of gear manufacture

3.2 Gear hobbling and gear shaping machines specifications- gear generation

3.3 Different methods- gear finishing and shaving- grinding and lapping of hobs and shaping cutters- gear honing- gear broaching.

UNIT-4 CNC MACHINES

4.1 NC, CNC & DNC- types of CNC- constructional features- drives and control systems- feedback devices

4.2 Interchangeable tooling system- preset & qualified tools- ISO specification- Machining center- Turning center- CNC wire cut EDM.

UNIT-5 CNC PROGRAMMING

5.1 Manual part programming- steps involved- sample program in lathe & milling.

5.2 Computer aided part programming- APT program- CAM package- canned cycles- Programming.

Reference Books:

1. Groover.M.P. "Automatic production systems and computer integrated manufacturing", Prentice Hall, 1990.
2. GE Thyer, "Computer Numerical Control of Machine Tools", BH. Newners, 1991
3. Hajra Choudhury C.J., “Elements of Workshop Technology”, Vol.I and Vol.II, Asia Publishing House, 1992.
4. Nagpal G.R., "Machine Tool Engineering", Khanna Publishers, 2002.