**Methodology:**

“A mixture of $N$-(substituted phenyl)-3-oxobutanamides (0.01 M), 4-(phenoxy methyl) benzaldehydes (0.01 M), urea derivatives (0.015 M) and catalytic amount of conc. hydrochloric acid (HCl) in ethanol (30 ml) will be heated under reflux condition for 8 to 10 hrs. The reaction mixture will be kept at room temperature for 24 hrs. The crystalline product will be obtained and recrystallized from ethanol”

The above methodology will be applied to carry out the reaction. Scheme and plausible reaction mechanism would give the novel series of compounds.

**Section-I :**
Above methodology will be used to prepare three novel series of 1,2,3,4-tetrahydro-$N$-(substitutedphenyl)-6-methyl-2-oxo-4-(4-(phenoxy-methyl)phenyl)pyrimidine-5-carboxamide (AB- 101 to 145) will be synthesized.

**Section-II:**
Above methodology will be used to prepare three novel series of 1,2,3,4-tetrahydro-6-isopropyl-$N$-(substitutedphenyl)-2-oxo-4-(4-(phenoxy-methyl)phenyl)pyrimidine-5-carboxamide (AB- 146 to 190) will be synthesized.

Melting points will be determined in open capillary tubes and are uncorrected. Formation of the compounds will be routinely checked by TLC on silica gel-G plates of 0.5 mm thickness and spots will be located by iodine.

IR spectra will be recorded shimadzu FT-IR-8400 instrument using potassium bromide (KBr) pellet method. Mass spectra will be recorded on shimadzu GC-MS-QP-2010 model using Direct Injection Probe technique. $^1$H NMR will be determined in DMSO-$d_6$ solution on a bruker Ac 400 MHz spectrometer.

Elemental analysis of the all the synthesized compounds will be carried out on elemental vario EL III Carlo erba 1108 model and the results will be noted in agreements with the structures assigned.
Section: - I

Reaction scheme

\[
\text{HNCCOOCH}_3 + \text{OCH}_2 \text{CHO} \xrightarrow{\text{Conc. HCl}} \text{OCH}_2 \text{CONH}_2
\]

AB-101 to AB-115

\[
\text{HNCCOOCH}_3 + \text{OCH}_2 \text{CHO} \xrightarrow{\text{Conc. HCl}} \text{OCH}_2 \text{SNH}_2
\]

AB-116 to AB-130

\[
\text{HNCCOOCH}_3 + \text{OCH}_2 \text{CHO} \xrightarrow{\text{Conc. HCl}} \text{OCH}_2 \text{CONHCH}_3
\]

AB-131 to AB-145
Section: - II

Reaction scheme
**Work plan:**
- In the first term literature search will be carried out and chemical abstracts for heterocyclic compounds will be find out.
- Reference books, journal reviews, articles and publications will be studied regarding heterocyclic compound.
- Characteristics of FT-IR, Mass spectra, $^1$H NMR and element analysis will be studied.
- In second term reaction will carried out in the lab on 1,2,3,4-tetra hydro pyrimidine.
- AB-101 TO AB-115 compounds will be synthesized.
- AB-116 TO AB-130 compounds will be synthesized.
- In third term AB-131 TO AB-160 compounds will be synthesized.
- In fourth term AB-161 TO AB-190 compounds will be synthesized.
- The above compounds will be checked on basis of biological activity.

- **All compounds are planned as under:**

The chemistry of pyrimidines and its derivatives has been studied for over a century due to their diverse biological activities against unrelated DNA and RNA viruses including antitubercular, antibacterial, immunodilator, antiallergic etc. The 1,2,3,4-tetrahydro pyrimidine ring system is of special biological interest because it has numerous pharmacological and medicinal applications.

![Chemical Structure](image)
Because of various biomedical applications and with a view to further assess the pharmacological profile of these class of compounds, Chapter 3 have two section I &II. In section I. three novel series of 1,2,3,4-tetrahydro pyrimidines (AB 101 to 145) will be synthesized. And in section II three novel series of 1,2,3,4-tetrahydro pyrimidines (AB 146 to 190) will be achieved by acid catalysed undergoing the Biginelli reaction of acetoacetamide, urea derivatives and the corresponding aldehydes. The products will be characterized by FT-IR, mass spectra, $^1$H NMR and elemental analysis. The newly synthesized compounds will be subjected to various biological activities viz., antimicrobial, antimycobacterial, anticancer and antiviral.