**Lecture 1:**

**Title:** Some new results on real valued continuous functions on a space $X$ whose support lie on ideals of closed sets in $X$.

**Abstract:** Given an ideal $\mathcal{P}$ of closed sets in $X$, let $C_{\mathcal{P}}(X)$ stand for the set of all those $f$ in $C(X)$, whose support lie on $\mathcal{P}$. Suppose further that $C_\infty^{\mathcal{P}}(X) = \{f \in C(X) : \textit{ for each } \epsilon > 0, \{x \in X : |f(x)| \geq \epsilon\} \in \mathcal{P}\}$. It turns out that $C_{\mathcal{P}}(X)$ is a free ideal/essential ideal of $C(X)$ if and only if $C_\infty^{\mathcal{P}}(X)$ is a free ideal/essential ideal of $C_\infty^{\mathcal{P}}(X) + C^*(X)$ if and only if $X$ is locally $\mathcal{P}$/ almost locally $\mathcal{P}$. We record some interesting special cases of this proposition. Also we address the problem: When does $C_{\mathcal{P}}(X)/C_\infty^{\mathcal{P}}(X)$ become equal to the intersection of all essential ideals of $C(X)$-the solution is seen to involve the condition of finiteness of interior of members of $\mathcal{P}$.

**Lecture 2:**

**Title:** Relation between $z$-ideal and $z^\circ$-ideals in intermediate ring of continuous functions.

**Abstract:** An ideal $I$ in a commutative ring $R$ with identity is called a $z$-ideal/ $z^\circ$-ideal if for each $a \in I, M_a \subseteq I/P_a \subseteq I$, where $M_a/P_a$ is the intersection of all maximal/ minimal prime ideals of $R$ containing $a$. $X$ is a $P$-space if and only if every ideal of $C(X)$ is a $z^\circ$-ideal and if $A(X)$ is an intermediate ring properly contained in $C(X)$, then there exists at least one ideal of $A(X)$ which is not a $z^\circ$-ideal. It is further realized that $X$ is an almost $P$ space when and only when every $z$-ideal of $C(X)$ is a $z^\circ$-ideal, equivalently every maximal ideal of $C(X)$ is a $z^\circ$-ideal. In the class of almost $P$-spaces both these properties individually characterize $C(X)$ amongst the intermediate rings. Finally on using some properties of $z^\circ$-ideals, an alternative proof of the fact that each intermediate ring $A(X) \neq C(X)$ contains a non-maximal prime ideal is given.