Work Plan and Methodology

The C Programming Language, effectively setting the standard for C. This standard became ANSI C after some modifications. C itself has spawned other languages - Concurrent C, Objective C, and in 1986, C++. All of these languages accept most elements of ANSI C, but provide extra facilities’ language is a simple computer language designed to enable sophisticated object-oriented programming. This course attempts to teach some aspects of C programming, and programming methodology. At the end of the course a student should know many of the useful features of the C language, and be able to produce a program using professional programming techniques.

We investigated the velocity, streamline, path line, velocity potential, and stream function, complex potential of steady and unsteady incompressible fluid through porous medium.

We have study a direct method proposed by Wilde and Beightler for solving non-linear optimization problems subject to equality constraints. An example is given for illustration of the method and the identity of stationary points obtained is checked by considering the sufficiency conditions.

The Maxwell-Boltzmann an approach to nuclear reaction rate theory is extended to cover Tsallis statistics (Tsallis [1988]) and more general cases of distribution functions. An analytical study of respective thermonuclear functions is being conducted with the help of statistical techniques. The pathway model, recently introduced by Mathai [1993], is utilized for thermonuclear functions and closed-form representations are obtained in terms of $H$-functions and $G$-functions. Maxwell-Boltzmannian thermonuclear functions become particular cases of the extended thermonuclear functions. A brief review on the development of the theory of analytic representations of nuclear reaction rates is given.

We solve an integral equation of convolution from having the $I$-function of two variables as its kernel. Some special cases are also given in the end.

We establish one single integral and two multiple integrals involving product of extended Jacobi polynomials, general class of polynomials and $I$-function. These integrals are unified in nature and act as a key formula from which we can derive as its particular cases, integrals involving a large number of simpler special functions and polynomials. For the sake of illustration, we give here one particular case of our first integral which is of interest by itself. At the end, we give an application of our first integral by inner-connecting them with the Riemann-Liouville type of fractional integral operator.

We establish some generalization results of $K$-transform by using chain of this transform. Some examples of the results are also given.

We obtain three fractional derivative formulae (FDF). The first involves the product of a general class of polynomials and the multivariable $I$-function. The second of a general class of polynomials and two multivariables’s $I$-functions and has been obtained with the help of the
generalized Leibnitz rule for fractional derivatives. The last FDF also involves the product of a general class of polynomials and the multivariable $I$-function but it is obtained by the application of the first FDF twice and it involves two independent variables instead of one.

We established four interesting theorems exhibiting interconnections between images and originals of related functions in the Laplace transform. We will also derive six corollaries of the theorems. Further, we will obtain some new and general integrals by the application of the theorems. The importance of our findings lies in the fact that they involve the $I$-function which are very general in nature and are capable of yielding a large number of simpler and useful integrals merely by specializing the parameters in them. These results may find applications in solving certain problems of applied mathematics.

In statistics, cumulative distribution functions (integrals of density functions) and their inverses are special functions that form the basis of successful statistical analysis.

We conclude from the foregoing that the place of special functions in fixed precision floating-point computing is firmly established in general scientific computation. Variable-precision floating-point and non-floating-point computing are not so clearly associated with scientific computing except in their connection to symbolic computing, that is, using the computer to do mathematics by manipulating symbols.

We say symbolic computing is interactive whereas numerical computing is (relatively) non-interactive. A modern trend is for all computing to be more interactive, except possibly for very long numerical simulations done by supercomputers.

A study of the transformation theory and properties of the generalized hyper geometric function enable one to derive the properties of a large class of Special functions in a unified manner.