The study of human nutrition is dedicated to determining which nutrients man requires for proper growth, development and well-being. The scientific study of nutrition is a relatively new field -- begun approximately 100 years ago -- that draws heavily on the fundamentals of chemistry, biochemistry, microbiology, physiology, medicine, pathology, physics and cellular biology. By its nature, nutrition is an area that relies on the technological advances of these disciplines in order to demonstrate progress.

Determining which nutrients an individual needs is very difficult and complex, as marked differences exist from person-to-person. In the future, researchers with advanced technology will identify the roles of various nutrients in the biochemical processes of the body. Due to current limitations in technology, no one knows "exactly" what the body needs.

Proper nutrition is important because it provides fuel and lubrication for the body. Although you would never put heating oil in your gasoline tank (unless you had a diesel engine), many people constantly put the wrong "fuel" into their bodies by consuming devitalized, de-mineralized, over-processed, over-salted and over-sugared "foods.” The body has an “Inner Intelligence” that can compensate for improper care to some extent, but if excessively abused, the body begins to degenerate more rapidly than desired.

In order to delve into the study of nutrition, it is necessary to first consider the body’s requirements on the most basic level. The fundamental requirements of the human body can be consolidated into eight basic categories. In order of importance they are: air, water, carbohydrates, protein, fat, vitamins, minerals and fiber.

AIR

Without air, you can only live four to six minutes. Air brings oxygen, nitrogen and other elements into the body. Of these, nitrogen is the most plentiful, but oxygen is the most important because of its functions in the oxidative processes and biochemical reactions of the body. Red blood cells, via hemoglobin, transport oxygen to every cell of the body and then remove carbon dioxide -- the by-product of metabolism -- that the lungs excrete.

WATER

Pure water is vital to every cell in the body. The body is approximately 70% water and the body uses it in almost every biochemical reaction in the body. Water is essential for hydrolysis, which is important in the physiological functions of the body. Hydrolysis is the process by which a molecule is “split” using water. For example, a molecule of sucrose (table sugar) breaks down into its components, glucose and fructose, with the addition of water. You can only live four to six days without water.
MACRONUTRIENTS & MICRONUTRIENTS

Carbohydrate, proteins and fats constitute the macronutrients that provide fuel or energy for the body; whereas the vitamins and minerals constitute the micronutrients that are essential for the utilization of the macronutrients as building blocks of other elements of the body. The macronutrients provide fuel in the form of calories, which are actually units of heat. Fat provides more than twice the number of calories as carbohydrates and proteins, which is one reason dieters should reduce their intake of fats.

CARBOHYDRATES

Carbohydrates include starches and sugars, which provide the bulk of calories for most of the world's population. In the United States, the consumption of sugars is roughly the same as fats (40-50%). Most nutritionists would agree that carbohydrates play an important role in nourishing the body. However, the body does not need any refined carbohydrates to flourish or survive. The body needs sugars and starches that are unprocessed, unrefined or unaltered from their natural state. Fruit provides fructose, a natural sugar. Vegetables also provide calories and essential fiber. Whole grains such as brown rice or whole wheat, with the bran and germ intact, provide natural, unprocessed starches. These foods provide all the vitamins, minerals, enzymes and fiber nature intended, and all of these are healthy foods -- provided you are not allergic or sensitive to any of these foods.

PROTEIN

Proteins are vital to the proper functioning of the organisms. Proteins make up the basic structure of every living cell and are the essential life-giving and life-sustaining components of the diet. Human beings are 18-20% protein by weight; our muscles, skin, hair, nails, eyes, teeth, blood, organs and nerves are basically protein. It is the structural material that makes up our bodies. Amino acids are the "building blocks" of proteins; that is, when amino acids combine in the proper combination, a protein is formed. Of the approximately 300 different amino acids, only 20 are necessary for human metabolism and growth and the body can synthesize all but ten amino acids. These ten are called “essential amino acids” because they are necessary to produce the other “non-essential amino acids” and because these must be included in the diet daily, as the body cannot store them for more than four hours. When the essential amino acids combine properly, a complete“ protein is formed. All proteins from animal sources are complete proteins, but most foods of vegetable origin are not complete proteins and must be combined properly to form complete proteins.

There are many different sources of protein, but basically all protein comes from plants and animals, with the quality of protein varying with source. You can obtain adequate protein from vegetable sources by combining foods properly. (You can read Diet for a Small Planet by Frances Moore Lappe or Proteins for Vegetarians by Gary Null for more information.)

Proteins are necessary to synthesize many essential substances such as hormones and enzymes. Also, only proteins supply nitrogen, sulfur and phosphorus, all essential elements in the body.
**FATS**

Fats (lipids) are important in the diet for several reasons. First, you would be constantly hungry without some fat in the diet -- fats slow down the digestive processes, thus producing a feeling of satiation. Moreover, many hormones are dependent upon fats for their synthesis, and fats carry the fat-soluble vitamins -- A, D, E, F and K. So, if there is a deficiency of fat in the diet (highly unlikely), there may be a simultaneous deficiency of these vitamins and a problem with the production of the hormones.

**VITAMINS**

Vitamins, by definition, are substances needed in small amounts that cannot be manufactured by the body. They are generally co-enzymes, which means they work with other substances to create biochemical reactions in the body.

Vitamins are generally subdivided into two groups: fat-soluble vitamins (A, D, E, F & K) and water soluble vitamins (the B and C complexes). Each vitamin has specific functions in the body and is essential to many functions of metabolism and biochemical processes of growth, development and maintenance.

**MINERALS**

Although our bodies only need minerals small amounts, they are vital to the normal functioning of the body. Our bodies need minerals to maintain the acid-base and fluid balance, health and maintenance of the skeletal structure and teeth and as essential catalysts in the numerous biochemical reactions that keep the body functioning properly. Vitamins and most hormones, such as insulin, cannot function without minerals, nor can muscles and nerves operate without them.

**ENZYMES**

Biochemists classify enzymes as proteins that a properly functioning body manufactures, but we will discuss them separately from proteins to emphasize their importance in the body. Proper digestion of macronutrients and micronutrients requires enzymes and micronutrients to catalyze the biochemical reactions in the body. Excess heat, as in overcooking, destroys enzymes.
FIBER

Fiber serves as an intestinal broom aiding, elimination and maintaining the health of the bowel. In fact, there is sufficient evidence that an increased intake of dietary fiber can provide protection against constipation, diverticulitis and bowel cancer. In addition, fiber helps to maintain blood sugar levels and decrease cholesterol.

WHOLISTIC PERSPECTIVE

It is important to remember that nutrition is only one factor important to health Psychological health, exercise, relaxation, structural and energy balance are all necessary for well-being. Severe or chronic emotional problems can be even more poisonous than junk foods.

One of the fundamental principles of wholistic health is that you take responsibility for your health. Therefore, it is up to you to take the information presented here and think about it; see what makes sense and what doesn't. Don't take everything at face value. Question it intelligently and discuss it during your nutritional counseling session. You will then be better able to attain the goals you seek.