



Biochemistry (1111@nur11) – First Stage



First Lecture

Introduction

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Course Outline

The Theoretical Content

- 1- Course Description.**
- 2- Course Goals.**
- 3- Biochemistry and Clinical Medicine.**



Course Outline

The Theoretical Content

Unit 1: Chemistry of Carbohydrates

- ❖ Definition
- ❖ Classification
- ❖ Properties
- ❖ Metabolism
- ❖ Metabolic Disorders of Carbohydrates Metabolism



Course Outline

The Theoretical Content

Unit 2: Chemistry of Lipids

- ❖ Definition
- ❖ Classification
- ❖ Properties
- ❖ Metabolism
- ❖ Metabolic Disorders of Lipids Metabolism

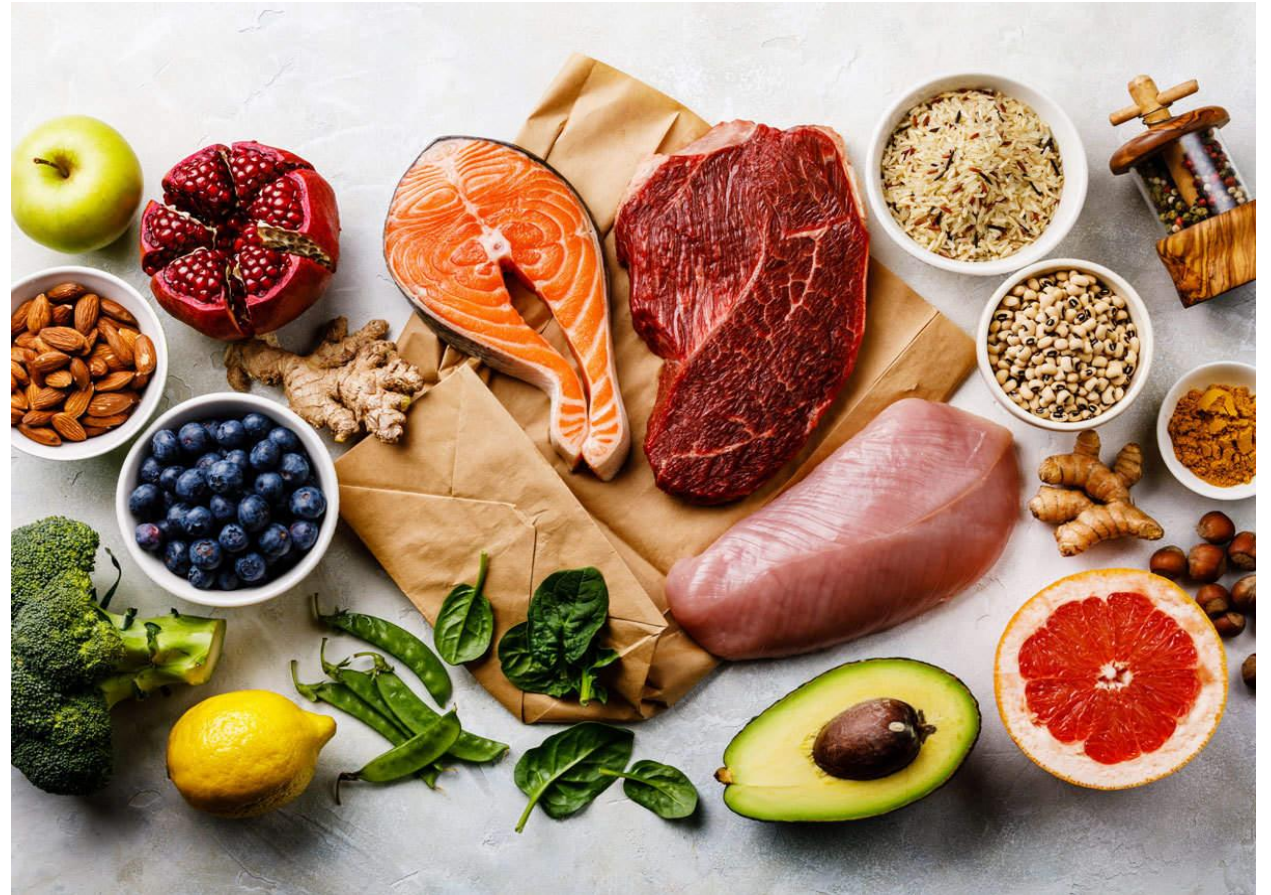


Course Outline

The Theoretical Content

Unit 3: Chemistry of Amino Acids & Proteins

- ❖ Definition
- ❖ Classification
- ❖ Properties
- ❖ Metabolism
- ❖ Metabolic Disorders of Proteins Metabolism
- ❖ Blood Proteins
- ❖ Nitrogen Products



Course Outline

The Theoretical Content

Unit 4: Chemistry of Enzymes

- ❖ Definition
- ❖ Classification
- ❖ Properties



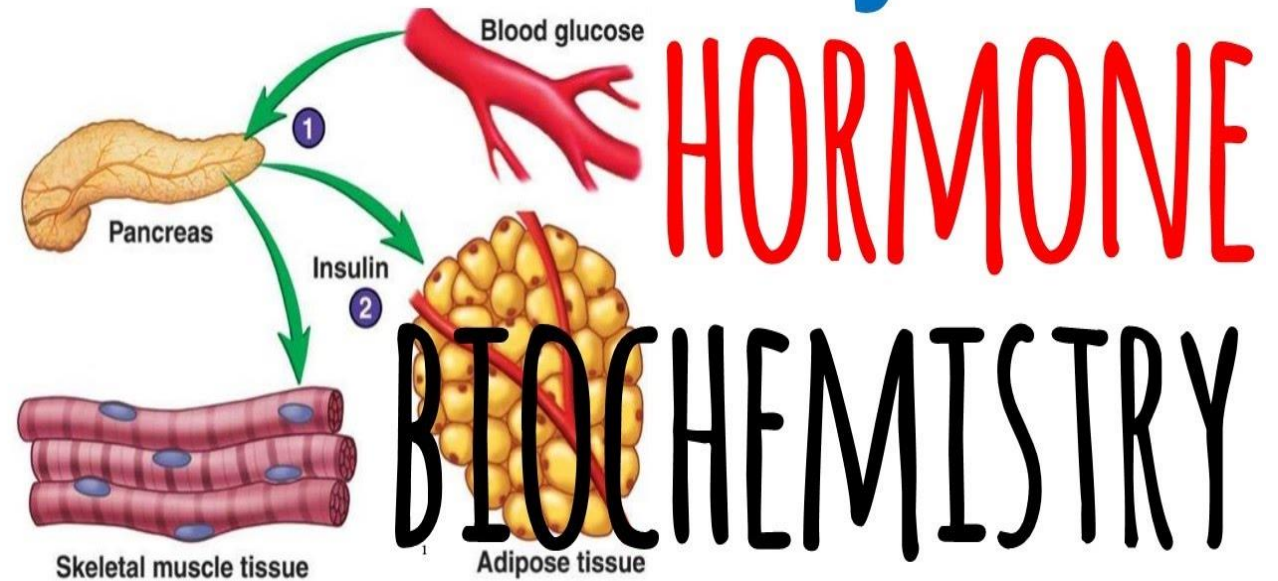
Course Outline

The Theoretical Content

Unit 5: Chemistry of Hormones

- ❖ Definition
- ❖ Classification
- ❖ Properties

Endocrine System



Course Outline

The Theoretical Content

Unit 6: Chemistry of Vitamins

- ❖ Definition
- ❖ Classification
- ❖ Properties

vitamins

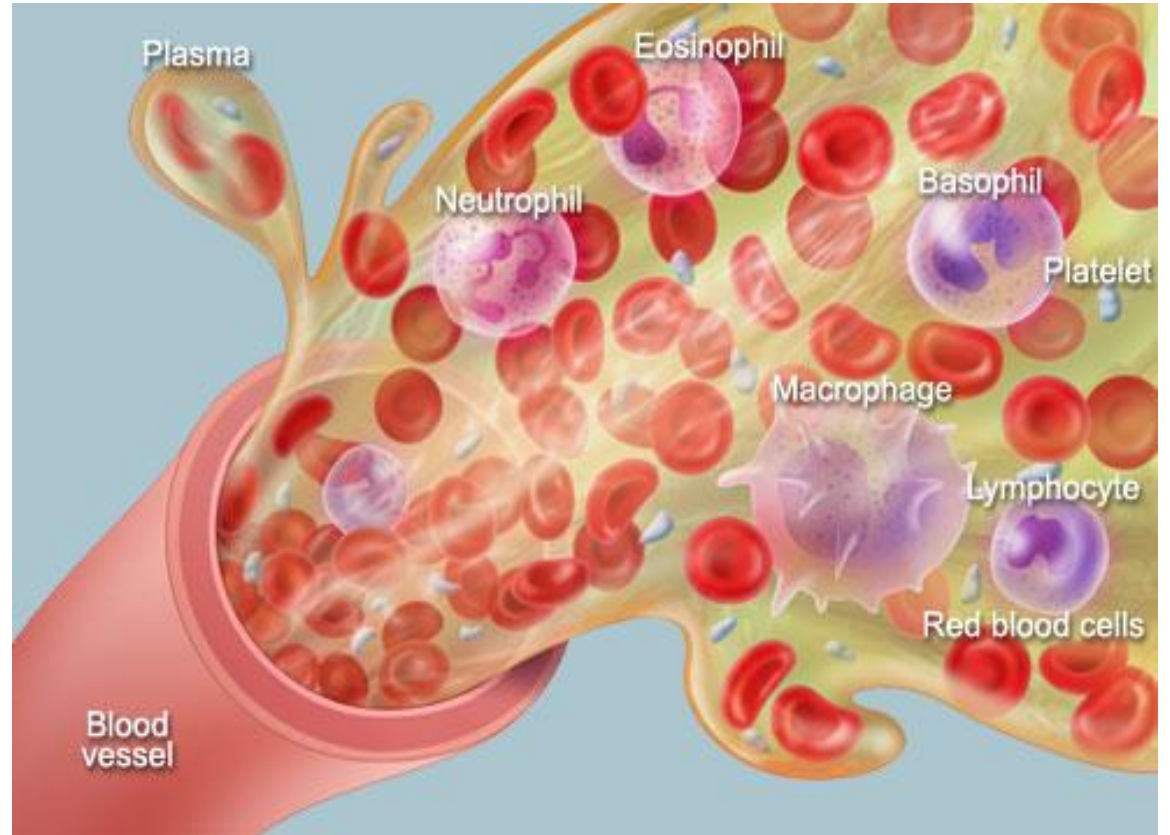


Course Outline

The Theoretical Content

Unit 7: Chemistry of Blood & Urine

- ❖ Blood Composition
- ❖ Blood Functions
- ❖ Blood Storage
- ❖ Urine Composition
- ❖ Urine Characteristics



Course Outline

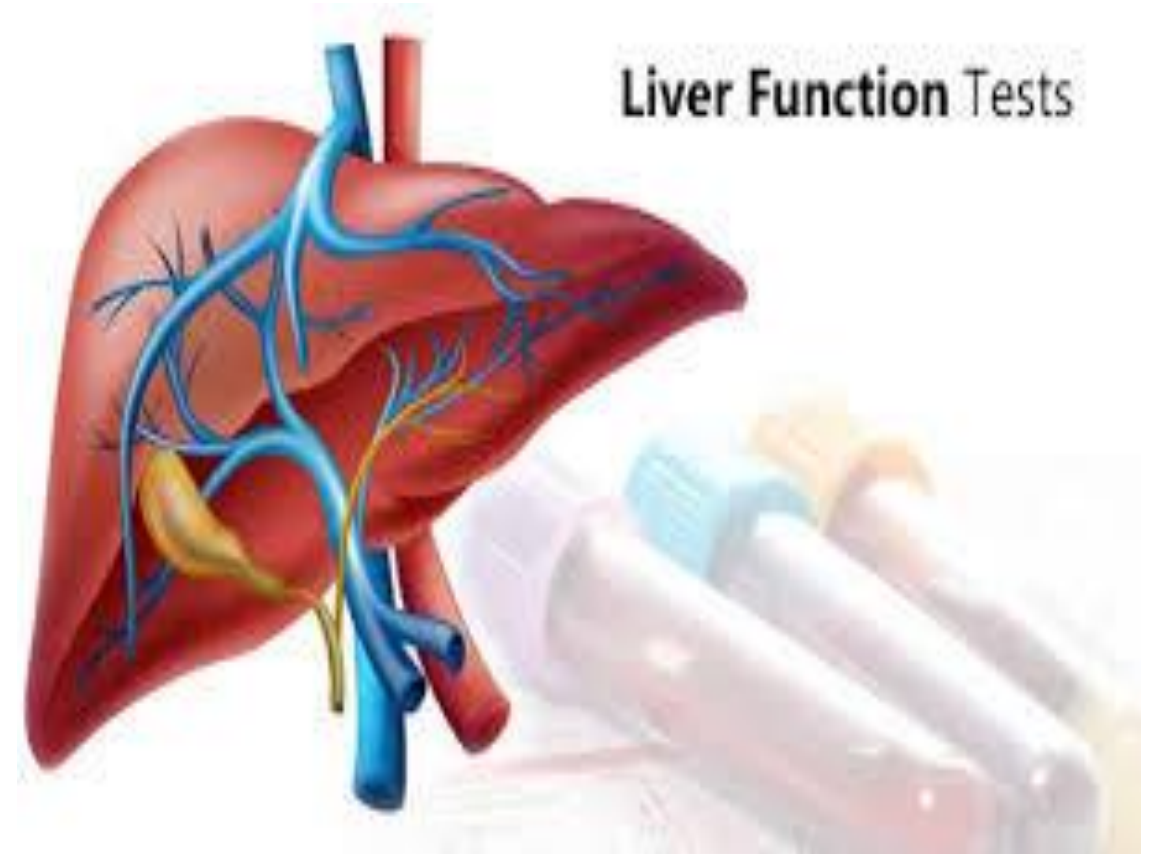
The Theoretical Content

Unit 8: Liver Function Test

❖ Liver Function Test

Classification

- ❖ Usage of various tests to evaluate Liver dysfunction.

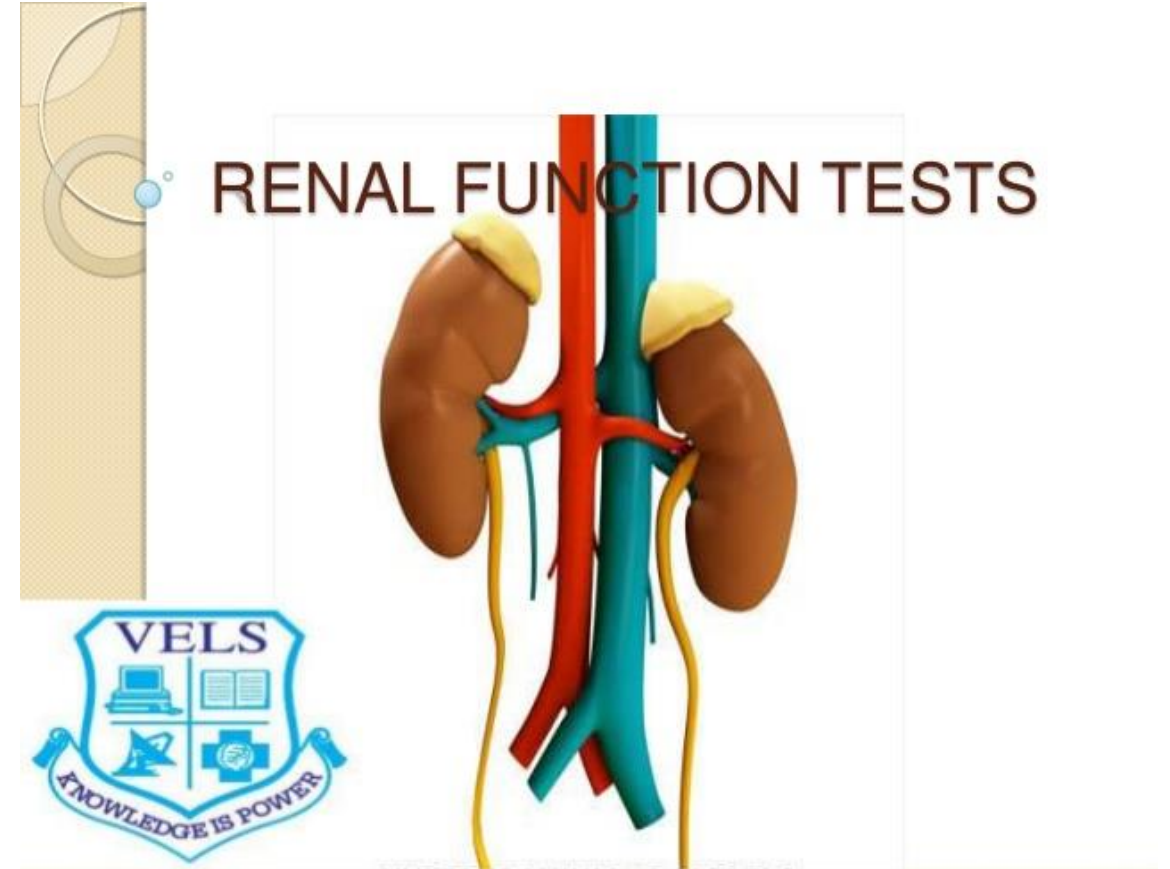


Course Outline

The Theoretical Content

Unit 9: Renal Function Test

- ❖ Kidney Function
- ❖ Usage of various tests to assess Renal function.



Course Description

The biochemical studies introduce students to the fundamental compounds of biochemistry. The students look at both structure and role of abnormal carbohydrates, lipids, fatty acids, amino acids, proteins, hormones and enzymes with diseases. They also acquire the necessary basic skills for medical laboratory analysis and operating, maintaining and cleaning laboratory equipment.



Course Goals

After successfully completing this course, the students will be able to:

- 1- Define properties and classification of nutrients.
- 2- Illustrate biochemical changes of nutrients and its metabolic pathways in human body.
- 3- Realize some important body constituents and their chemical changes in the laboratory.
- 4- Differentiate the biochemical functions of different human organs in normal and abnormal conditions.
- 5- Understand the human biochemical reactions in normal situation and in case of disease.
- 6- Use laboratory methods for monitoring biochemical reactions in biological samples.
- 7- Handle the laboratory equipment properly.



Biochemistry and Clinical Medicine

Biochemistry provides a foundation for understanding the action of new drugs, such as antidepressants, drugs used to treat diabetes, hypertension and heart failure, and those that lower blood lipids. By providing insight into nutrition and exercise, and metabolic stress, it contributes to understanding how diet and lifestyle influence our health and performance, as well as how the organism ages. It describes how cellular signaling and communications systems respond to endogenous and environmental stress. It also incorporates enormous progress made in recent years in understanding human genetics, and links it to the emerging fields of nutrigenomics and pharmacogenomics, that will hopefully create a basis for therapies customized to an individual's genetic make-up.



Biochemistry and Clinical Medicine

The human organism is, on the one hand, a tightly controlled, integrated and self-contained metabolic system. On the other, it is a system that is open and communicates with its environment. Despite these two seemingly contradictory characteristics, the body manages to maintain its internal environment for decades. We regularly top up our fuel (consume food) and water, and take up oxygen from inspired air to use for oxidative metabolism (which is in fact a chain of low-temperature combustion reactions). We then use the energy generated from metabolism to perform work and to maintain body temperature. We get rid of (exhale or excrete) carbon dioxide, water and nitrogenous waste. The amount and quality of food we consume have significant impact on our health – malnutrition on the one hand and obesity and diabetes on the other, are currently major public health issues worldwide.