Key Concepts of Chapter 11:

- A drug is a natural or synthetic substance that is used to produce physiological or psychological effects in humans or other higher order animals
- Narcotic drugs are analgesics, meaning they relieve pain by a depressing action on the central nervous system
- The most common source for narcotic drugs is opium. Morphine is extracted from opium and used to synthesize heroin
- Opiates are not derived from opium or morphine, but they have the same physiological effects on the body. Examples of opiates include methadone and OcyContin (oxycodone)
- Hallucinogens cause marked changes in normal thought processes, perceptions, and moods. Marijuana is the most well-known drug in this class. Other hallucinogens include LSD, mescaline, PCP, psilocybin, and MDMA (Ecstasy)
- Depressants decrease the activity of the central nervous system, calm irritability and excitability, and may cause sleep. Depressants include alcohol (ethanol), barbiturates, tranquilizers, and various substances that can be sniffed, such as airplane glue or model cement
- Stimulants increase the activity of the central nervous system and are taken to increase alertness and activity. Stimulants include amphetamines, sometimes known as “uppers” or “speed” and cocaine, which in its free-base form is known as crack
- Club drugs are synthetic drugs that are used at nightclubs, bars, and raves. Some club drugs act as stimulants; others have depressant effects. Substances that are often used as club drugs include, but are not limited to, MDMA (Ecstasy), GHB, roofies, ketamine, and methamphetamine
- Anabolic steroids are synthetic compounds that are chemically related to the male sex hormone testosterone. Anabolic steroids are often abused by individuals who are interested in accelerating muscle growth
- Federal law establishes five schedules of classification for controlled dangerous substances on the basis of a drug’s potential for abuse, potential for physical and psychological dependence, and medical value
- Analysts employ screening tests to determine the identity of drugs present in a sample. These tests reduce the number of possible drugs to a small and manageable number
- A series of color tests produce characteristic colors for the more commonly encountered illicit drugs
- After preliminary testing, forensic chemists employ more specific tests to identify a drug substance to the exclusion of all other known chemical substances. Infrared spectrophotometry and mass spectrometry typically are used to specifically identify a drug substance

Key Concepts of Chapter 12:

- Toxicologists detect and identify the presence of drugs and poisons in body fluids, tissues, and organs
- Alcohol appears in the blood within minutes after it has been taken by mouth. It slowly increases in concentration while it is being absorbed from the stomach and the small intestine into the bloodstream.
- When all the alcohol has been absorbed, a maximum alcohol level is reached in the blood, and the post-absorption period begins. During post-absorption, the alcohol concentration slowly decreases until a zero level is reached.
- Elimination of alcohol throughout the body is accomplished through oxidation and excretion. Oxidation takes place almost entirely in the liver, while alcohol is excreted unchanged in the breath, urine, and perspiration.
- Many breath testers capture a set volume of breath and expose it to infrared light. The instrument measures blood-alcohol concentration in breath by measuring the degree of the interaction of the light with alcohol in the captured breath sample.
- Breath-testing devices operate on the principle that the ratio between the concentration of alcohol in deep-lung or alveolar breath and its concentration in blood is fixed.
- Law enforcement officers use field sobriety tests to estimate a motorist’s degree of physical impairment by alcohol and to determine whether an evidential test for alcohol is justified.
- The horizontal gaze nystagmus test, walk and turn, and the one-leg stand are all considered reliable and effective psychophysical tests for alcohol impairment.
- Gas chromatography is the most widely used approach for determining blood alcohol levels in a forensic laboratory.
- The forensic toxicologist must devise an analytical scheme to detect, isolate, and specifically identify toxic drug substances extracted from biological fluids, tissues, and organs.
- A screening test provides the analyst with quick insight into the likelihood that a specimen contains a drug substance. Positive results from a screening test are considered tentative at best and must be verified with a confirmation test.
- The most widely used screening tests are thin-layer chromatography, GC, and immunoassay. GC/MS is generally accepted as the confirmation test of choice.
- Once a drug is extracted and identified, a toxicologist may be required to determine the drug’s effect on an individual’s natural performance or physical state.
- The DRE program uses standardized methods to examine vehicle drivers who are suspected of being under the influence of drugs.
- Because the DRE program usually cannot determine which specific drug was ingested, reliable data from a forensic toxicologist is also required to prove drug intoxication.

**REFERENCE**