COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	Scientific Concepts
COURSE NUMBER	NAIL 0101
DIVISION	Career and Technical Education
DEPARTMENT	NAIL
CIP CODE	12.0410
CREDIT HOURS	3
CONTACT HOURS/WEEK Class: 1 Lab: 4	
PREREQUISITES	None
	Students must meet the correct place

COURSE PLACEMENT Students must meet the correct placement measure for this course. Information may be found at: <u>https://www.kckcc.edu/admissions/information/mandatory-evaluation-placement.html</u>

COURSE DESCRIPTION

This course will provide the student with a practical knowledge of public sanitation and an understanding of the general concepts of chemistry, the chemical composition of professional nail products, chemical safety and OSHA regulations applicable in the professional beauty industry. The student will be provided with an understanding of basic anatomy, physiology and histology of the human body. This course will also provide the student with a working knowledge of the structure, composition, growth, regeneration, irregularities, and diseases of the natural nail and the structure, functions, growth, regeneration and disorders of the skin as well as an understanding of the muscles, nerves and blood, their structure and function.

PROGRAM LEARNING OUTCOMES

- 1. Demonstrate safety and sanitation procedures required for professional license in the cosmetology industry
- 2. Utilize chemicals and implements to perform nail services including analysis and application.
- 3. demonstrate customer service skills
- 4. Perform a variety of nail services in compliance with the appropriate state requirements.

TEXTBOOKS

http://kckccbookstore.com/

METHOD OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

- I. Nail Salon Ecology
 - A. Microbiology
 - B. Infection control
 - C. Safety and first aid
- II. Anatomy
 - A. Building blocks of human anatomy
 - B. Basic body systems
- III. Chemistry
 - A. Fundamentals of Chemistry
 - B. Chemistry of nail products
 - C. Chemistry of artificial nail systems
- IV. Nail and skin physiology
 - A. Nail physiology
 - B. Skin physiology

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

- A. Recognize the structure and function of bacteria and viruses by types,
 - classifications, growth and reproduction patterns and relationship to the spread of infection.
 - 1. Describe the structure and function of the 3 types of pathogenic bacteria.
 - 2. Identify the stages of growth and reproduction of bacteria.
 - 3. Define viruses in general and specifically HIV, HBV, AIDS and tuberculosis.
 - 4. Define external parasites and identify 3 external parasites that cause disease.
 - 5. Define infection and identify the common means of spreading infection in a salon.
 - 6. Define and identify the 2 types of infection.
 - 7. Define immunity, and identify the 2 types of immunity
- B. Describe the 3 levels of infection control and explain the procedures and precautions for each level.
 - 8. Define and demonstrate infection control, decontamination, sanitation, disinfection and sterilization.
 - 9. Define antiseptics and disinfectants and identify the differences.
 - 10.Understand and demonstrate universal precautions, proper handwashing and blood spill procedures.
 - 11.Describe OSHA's bloodborne pathogen standard.
- C. Identify two regulating agencies that enforce safety and health standards in the workplace and describe their specific functions.
 - 12. Understand the purpose and function of OSHA and EPA.
 - 13. Understand the purpose and function of MSDS.
- D. Explain how infection control equipment works to prevent cross-contamination.
 14. Define iodophor germicidal detergent solution, phenolic germicidal detergent

solution, ethyl alcohol, isopropyl alcohol, stabilized hydrogen peroxide, quaternary ammonium germicidal detergent solution, glutaraldehyde based formulations, sodium hypochlorite, demand-release chlorine dioxide, heat sterilization and ethylene oxide gas.

- 15. Describe and understand the purpose and function of an autoclave, chemiclave and UV light sterilizer.
- E. Describe basic electrical and chemical safety precautions when working in the nail salon or spa.
 - 16. Describe and demonstrate electrical outlet, cord and plug inspection procedure.
 - 17. Describe and demonstrate precautions for electrical appliance use near water source.
 - 18. Understand the purpose and function of UL.
 - 19. Describe acceptable ventilation methods for working with artificial nail products.
 - 20. Describe acceptable disposal methods for hazardous chemicals.
 - 21. Identify at least five safety precautions that must be followed when working with artificial nail products.
- F. Identify the symptoms and effects of overexposure.
 - 22. Define overexposure and identify the symptoms associated with overexposure.
 - 23. Define sensitivity, inflammation, contact dermatitis, and allergic reaction.
 - 24. Describe the techniques necessary to avoid overexposure.
 - 25. Describe and demonstrate the state approved procedure for blood spills.
- G. List simple safety and first-aid applications for cuts, minor burns, choking, fainting and eye injury.
 - 26. Describe and demonstrate first aid procedure for first-degree burns, seconddegree burns, and third-degree burns.
 - 27. Describe and demonstrate first aid procedure for chemical burns, heat burns and electrical burns.
 - 28. Describe and demonstrate first aid for choking Heimlich Maneuver.
 - 29. Describe and demonstrate first aid for fainting.
 - 30. Describe and demonstrate first aid for eye injuries.
- H. Explain the relationship and function of cells, tissues and primary organs within the human body.
 - 31. Define anatomy, physiology and histology.
 - 32. Identify the four building blocks of the human body.
 - 33. Define cell, nucleus, cytoplasm and cell membrane.
 - 34. Define tissues and identify the 5 tissue types and understand their purpose and function.
 - 35. Define organ and identify and understand the purpose and function of the brain, the eyes, the heart, the lungs, the stomach, the intestines, the liver, the kidneys, and the skin.
- I. Identify the structure and function of the ten major body systems.
 - 36. Define body systems and identify and understand the purpose and function of the 10 major body systems.

- 37. Identify and understand the purpose and function of the skeletal system.
- 38. Identify and understand the purpose and function of the muscular system.
- 39. Identify and understand the purpose and function of the cardiovascular system and the lymph vascular system.
- 40. Define the nervous system, neurology, cerebrospinal nervous system, peripheral nervous system and the autonomic nervous system.
- 41. Define and describe the function of the digestive system.
- 42. Define and describe the function of the excretory system.
- 43. Define and describe the function of the respiratory system, inhalation and exhalation.
- 44. Define and describe the function of the endocrine system.
- 45. Define and describe the function of the reproductive system.
- 46. Define and describe the function of the integumentary system.
- J. Describe the three basic forms of matter and the differences between elements, atoms, molecules and compounds.
 - 47. Define matter and identify the three basic forms of matter.
 - 48. Describe a physical change, a chemical change and the difference between them.
 - 49. Define elements, atoms, molecules and compounds, and identify the common elements found in nails.
 - 50. Describe and demonstrate a chemical reaction.
- K. Explain how initiators and catalysts cause polymerization.
 51. Describe and demonstrate polymerization, and define initiator catalyst.
- L. Name the common uses of solvents in the nail industry.
 - 52. Define solvent and identify the solvents used in the nail profession and describe the safe use and handling of these chemicals.
- M. List the different ingredients that make up nail polish.
 - 53. Identify the common ingredients in nail polish and their function and purpose, i.e. solvents, plasticizers, UV stabilizers, pigments and dispersants.
- N. Explain how a nail plate and a nail product are able to adhere to each other.
 - 54. Define adhesion and adhesives and describe the difference between adhesive and glue and identify the ingredients in each.
 - 55. Identify the composition, function and physics of priming agents both methacrylic acid and non-acid formulations.
- O. Describe how monomers and polymers relate to each other.56. Define monomer, polymer, cross-linked polymer and simple polymer.
- P. Compare the differences of the three artificial nail systems.
 - 57. Describe the composition and use of nail wrap resins, fibers and accelerators.
 - 58. Define and describe the use of ethyl methacrylate, methyl methacrylate, methoxyethoxy ethyl methacrylate, urethane acrylate oligomers, diacrylates and

dimethacrylates.

- 59. Describe the composition and use of liquid and powder cold cure acrylics.
- 60. Describe the composition and use of UV light cured gel systems.
- Q. Describe the structure of the nail.
 - 61. Identify, locate and describe the function of the free edge, onychodermal band, nail plate, nail wall, lunula, eponychium, cuticle, nail matrix, nail root, mantle, nail bed, nail folds, perionychium, bed epithelium and hyponychium.
- R. Identify and describe common nail diseases and disorders
 - 62. Define onyx and onychology.
 - 63. Recognize, identify the cause and describe the safe and correct course of action for onychomycosis, paronychia, onychia, onychopotosis, onychomadesis, onychatrophia, onycholysis, blue nails, eggshell nails, corrugations, kolionychia, furrows, pterygium, onychogryposis, onychocryptosis, tile-shaped nails, pincer nails, plicatured nails, onychauxis, onychophyma, agnails, bruised nails, onychophagy, onychorrhexis, leuconychia, and melanonychia.
 - 64. Define and describe the difference between bacterial infections and fungal infections of the nail.
- S. List the six primary functions of the skin.65. Describe the purpose and functions of the skin.
- T. Describe the basic physiology of the skin.
 - 66. Identify, locate and describe the function of the epidermis, dermis, subcutaneous layer, papillary dermis, reticular dermis, stratum corneum, stratum lucidum, stratum granulosum, and stratum spinosum and stratum germinativum.
 - 67. Define and describe the purpose and function of collagen, elastin, melanin, melanocytes and keratin.
- U. Recognize common diseases and disorders of the skin.
 - 68. Define dermatology and dermatologist.
 - 69. Recognize, identify the cause and describe the safe and correct course of action for a macule, papule, vesicle, bulla, pustule, wheal, tumor or nodule, cyst, scale, crust, excoriation, fissure, scar, ulcer, verruca, herpes simplex, tinea manus, tinea pedis, contact dermatitis, psoriasis, eczema, hyperkeratosis, callus, corn, melanoderma, chloasma, mole, naevus, leukoderma, albinism, and vitiligo.
 - 70. Recognize and describe the four signs of melanoma.

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf College Policies and Statements https://www.kckcc.edu/about/policies-statements/index.html

Accessibility and Accommodations

https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html.