**FSC 624-101**

**COURSE OUTLINE**

**Fall 2018**

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| Title/Number | Biochemistry: Forensic Science FSC 624-101 |
| Semester/Year Credit hours | Fall 2018 4 |
| Days/Time | Section 101 MWF 3pm-5 pm |
| Location | Forensic Science Center Annex 115 |
| Instructor  Textbooks | Menashi Cohenford, BSc., MT, Ph.D.  The required textbooks for the course include:   1. Biochemistry “The Molecular Basis of Life” by Trudy McKee and James R. McKee 5th Edition Oxford University Press.   ISBN 978-0-19-973084-1   1. Biochemistry Lippincott’s Illustrated Reviews 6th Edition (2013) **ISBN-10:** 8184739141, **ISBN-13:** 978-8184739145. |
|  | Marshall University, Byrd Biotech Science Center, Room 241 H |
| Phone | 304-696-2697 |
| Instructor’s E-Mail address: | Cohenford@marshall.edu |
| \*Office/Hours | TBA Or preferably by Appointment |

**Course Objectives:** The lectures in this course cover a wide range of topics focusing primarily on; the structure and function of cellular components such as proteins, carbohydrates, lipids, and nucleic acids; enzymes and the chemistry of enzyme catalyzed reactions; metabolism of DNA and RNA; protein synthesis; cell membrane transport; and signal transduction.

**Grades:** Student gradeswill be calculated as follows:

Exam 1: 25% Exam II: 25% Exam III (Hardman/Cohenford) 12.5% Exam IV 12.5% Exam V (Kelly Beatty): 25%

**Final grade** in the class will be based on the following criteria:

A: 90-100 B: 80-89 C: 70-79 D: 60-69 F: Below 60

**Exams:** The exams will focus on materials presented in class. All PowerPoint presentations will be provided on Blackboard. Each exam will be based on multiple choice questions and/or descriptive essays. These essays are at times thought provoking requiring you to apply learned concepts in simulated situations.

**Make-up Exams and Penalty***:* Make-up exams will be granted only in cases recognized by the University through an excused absence; the policy on excused absences can be found in the University’s catalog.

**Other Policies:** The use of cell phones is prohibited in class. Any student using a cell phone will be asked to leave the classroom.

**\*Fall 2018 Fsc 624 Biochemistry Course Schedule**

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| **DATE** | **DAY** | **TIME** | **TOPIC** | **LECTURER** |
| **WEEK 1** | | | | | |
| 8/20 | M | 3pm– 5pm | PPTs: Water Part 1  Water Part II  PPTs: Water Part II (cont.)  PPTs: Amino Acids Part I  PPTs: Amino Acids, Peptides, Proteins Part II | Dr. Cohenford  Required Reading: In Biochemistry: The Molecular Basis of Life by McKee and McKee Fifth Edition    **Chapters entitled:**   1. Water 2. Amino Acids Peptides Proteins |
| 8/22 | W | 3pm– 5pm |  |
| 8/24 | F | 3pm– 5pm |  |
| **WEEK 2** | | | | | |
| 8/27 | M | 3pm– 5pm | PPTs: Amino Acids, Peptides, Proteins Part II (cont).  PPTs: Amino Acids, Peptides, Proteins Part III  PPTs: Amino Acids, Peptides, Proteins Part III (cont.)  PPTs: Enzymes Part I  PPTS: Enzymes Part II | Dr. Cohenford  Required Reading: In Biochemistry: The Molecular Basis of Life by McKee and McKee Fifth Edition    **Chapter entitled:**  Amino Acids Peptides Proteins |
| 8/29 | W | 3pm– 5pm | Required Reading: In Biochemistry: The Molecular Basis of Life by McKee and McKee 5th Edition  **Chapter(s) entitled:**  Enzymes |
| 8/31 | F | 3pm– 5pm | PPTs: Enzymes Part II (cont.)  PPT: Enzymes Part III | Required Reading: In Biochemistry: The Molecular Basis of Life by McKee and McKee 5th Edition  **Chapter(s) entitled:**  Enzymes |
| **WEEK 3** | | | | | |
| 9/3 | M |  | **Labor Day Holiday** | **LECTURER** |
| 9/5 | W | 3pm– 5pm | PPT: Enzymes Part III (cont.)  PPT: Carbohydrates Part 1  PPT: Carbohydrates Part 1 (Cont.)  PPT: Carbohydrates Part II  PPT: Carbohydrates Part III | Dr. Cohenford  Required Reading:In Biochemistry: The Molecular Basis of Life by McKee and McKee 5th Edition  **Chapter(s) entitled:**  Enzymes |
| 9/7 | F | 3pm– 5pm | Carbohydrates |
| **WEEK 4** | | | | | |
| 9/10 | M | 3pm– 5pm | **EXAM I**  Water and Buffers’, ‘Amino Acids, Peptides and Proteins’, and ‘Enzymes’,  PPT: Carbohydrates Part III  PPT: Carbohydrates Part IV  An Overview of Glycolysis  An Overview of Glycolysis (cont.)  PPT: An Overview of Gluconeogenesis |  |
| 9/12 | W | 3pm– 5pm | Dr. Cohenford  Required Reading:In Biochemistry: The Molecular Basis of Life by McKee and McKee 5th Edition  **Chapter(s) entitled:**  1. Carbohydrates |
| 9/14 | F | 3pm– 5pm | 2. Carbohydrate Metabolism |
| **WEEK 5** | | | | | |
| 9/17 | M | 3pm– 5pm | PPT: An Overview of Gluconeogenesis (Cont.)  PPTs: An Overview of the Pentose Pathway  PPTs: An Overview of the Pentose Pathway (Cont.)  PPTs: An Overview of Glycogenesis and Glycogen Lysis  PPTs: An Overview of the Metabolism of Monosaccharides & Disaccharides    PPTs: An Overview of the Metabolism of Monosaccharides & Disaccharides  (cont.)  PPTs: TCA Cycle | Dr. Cohenford  Required Reading: In Biochemistry: The Molecular Basis of Life by McKee and McKee Fifth Edition  **Chapter(s) entitled:**  1. Carbohydrates |
| 9/19 | W | 3pm– 5pm | 1. Carbohydrate Metabolism 2. Aerobic Metabolism 1: The Citric Acid Cycle |
| 9/21 | F | 3pm– 5pm | *Required Reading:* ***In Biochemistry Lippincott’s Illustrated Reviews edition 6 or 7***  ***Chapter(s) entitled:***   1. *Metabolism of Monosaccharides and Disaccharides*   *Pentose Phosphate Pathway and Nicotinamide Adenine Dinucleotide* |
| **WEEK 6** | | | | | |
| 9/24 | M | 3pm– 5pm | **EXAM II**  Covers all the PPTS on the Review of Carbohydrates (Part 1, II, III and IV), Glycolysis, Gluconeogenesis, the Pentose Pathway, Glycogen Synthesis & Degradation, Monosaccharides and Disaccharides, plus the TCA Cycle  **Lipids**  **Lipids** | Dr. Cohenford |
| 9/26 | W | 3pm– 5pm |
| 9/28 | F | 3pm– 5pm | Dr. Hardman |
| **WEEK 7** | | | | | |
| 10/1 | M | 3pm– 5pm | **Lipids**  **Lipids**  PPT: Bioenergetics | Dr. Hardman |
| 10/3 | W | 3pm– 5pm | Dr. Hardman |
| 10/5 | F | 3pm– 5pm | Dr. Cohenford |
| **WEEK 8** | | | | | |
| 10/8 | M | 3pm– 5pm | PPTs: Amino Acid Disposal of Nitrogen & the Urea Cycle  PPT: DNA the Genetic Material-Its Structure & Chemistry Part 1  PPT: DNA the Genetic Material-Its Structure & Chemistry Part 1 (Cont.)  **Exam III**  Covers Lipid Section and PPTs on Bioenergetics and Amino Acid Disposal of Nitrogen & the Urea Cycle | Cohenford  Required Reading: **In Biochemistry Lippincott’s Illustrated Reviews edition 6 or 7**  **Chapter(s) entitled:**     1. Amino Acids: Disposal of Nitrogen   2. DNA Structure, r Replication and Repair |
| 10/10 | W | 3pm– 5pm |  |
| 10/12 | F | 3pm-5pm |  |
| **WEEK 9** | | | | | |
| 10/15 | M | 3pm– 5pm | PPT: DNA Replication Part II  PPT: RNA Structure, Synthesis, and Processing Part I  PPT: RNA Structure, Synthesis, and Processing Part I (cont.)  PPT: RNA Structure, Synthesis, and Processing Part II (31)  PPT: Protein Synthesis Part I  PPT: Protein Synthesis Part I (Cont.) PPT: Protein Synthesis & Post Translational Modification of Proteins Part II | Dr. Cohenford |
| 10/17 | W | 3pm– 5pm | Required Reading:**In Biochemistry Lippincott’s Illustrated Reviews edition 6 or 7**  **Chapter(s) entitled:**  DNA Structure, Replication, and Repair |
| 10/19 | F | 3pm– 5pm |  |
| **WEEK 10** | | | | | |
| 10/22 | M | 3pm– 5pm | PPT: Protein Synthesis & Post Translational Modification of Proteins Part II (Cont.)   PPT: An Overview of PCR and DNA Sequencing Methods  PPT: An Overview of PCR and DNA Sequencing Methods PPT: Regulation of Gene Expression PT1  PPT: Regulation of Gene Expression PT1 (Cont.)  PPT: Regulation of Gene Expression Part II | Dr. Cohenford  Required Reading: **In Biochemistry Lippincott’s Illustrated Reviews edition 6 or 7**  **Chapter(s) entitled:**   1. RNA Structure, Synthesis and Processing 2. Protein Synthesis 3. Regulation of Gene Expression |
| 10/24 | W | 3pm– 5pm |
| 10/26 | F | 3pm– 5pm |
| **WEEK 11** | | | | | |
| 10/29 | M | 3pm– 5pm | PPT: Regulation of Gene Expression Part II (Cont.)  PPT: A Brief Overview of Hemostasis  FORENSICS Biochemistry  **EXAM IV**  Includes all PowerPoints pertinent to nucleic acids, DNA, RNA, protein synthesis and gene regulation and hemostasis not covered on Exams I, II, and III. | Dr. Cohenford  **Suggested Reading Material:** Gary Walsh, ‘**Proteins-West** Biochemistry and Biotechnology’ 2004 John Wiley & Sons Ltd., West Sussex, England pages 214-220.  Beatty  Dr. Cohenford |
| 10/31st | W | 3pm– 5pm |
| 11/2 | F | 3pm– 5pm |
| **WEEK 12** | | | | | |
| 11/5 | M | 3pm– 5pm | FORENSICS Biochemistry | Beatty |
| 11/7 | W | 3pm– 5pm | FORENSICS Biochemistry  FORENSICS Biochemistry | Beatty |
| 11/9 | F | 3pm– 5pm | ‘ |
| **WEEK 13** | | | | | |
| 11/12 | M | 3pm– 5pm | Forensic Biochemistry  Forensic Biochemistry  Forensic Biochemistry | Beatty |
| 11/14 | W | 3pm– 5pm |  |
| 11/16 | F | 3pm– 5pm |  |
| **WEEK 14** | | | | | |
| 11/19 | M |  | Thanksgiving Break |  |
| 11/21 | W |  | Thanksgiving Break |  |
| 11/23 | F |  | Thanksgiving Break |  |
| **WEEK 15** | | | | | |
| 11/26 | M | 3pm– 5pm | Forensic Biochemistry | Beatty |
| 11/28 | W | 3pm– 5pm | Forensic Biochemistry | Beatty |
| 11/30 | F | 3pm– 5pm | Forensic Biochemistry | Beatty |
| **WEEK 16** | | | | | |
| 12/3 | M | 3pm– 5pm | Forensic Biochemistry | Beatty |
| 12/5 | W | 3pm– 5pm | Forensic Biochemistry |
| 12/7 | F | 3pm– 5pm | Forensic Biochemistry |
| **FINALS WEEK** | | | | | |
|  |  |  | Exam V date to be determined | Beatty |
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\* Denotes that the above course schedule is presented as a guide only and may be changed at any time by the instructors.