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University of Hawai'i
Code Request Form for Academic Programs

NEW OR MODIFIED SUBJECT CODE

Date: _____

Requestor Contact Information

Name	Terri Ota	Campus	University of Hawaii-West Oahu
Title	Academic Program/Faculty Affairs Spec	Email	tota@hawaii.edu
Office/Dept	Academic Affairs	Phone	689-2314

☒ **New Subject Code Use at Institution**
☐ **Modify Subject Code Use at Institution**

Institution: WOA Effective Term: Fall 2012 (201310)

For reporting purposes subject code is reported with MTVCOMP_EXTERNAL_CODE = Natural Sciences

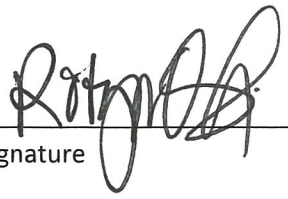
		Code (Max. Characters)	Description (30 characters max)	Check if requesting new code:
College	(2)	HM	Humanities	☐ See Banner form STVCOLL
Division	(4)	HUM	Humanities	☐ See Banner form STVDIVS
Department	(4)	HUM	Humanities	☐ See Banner form STVDEPT
Subject	(4)	BIOC	Biochemistry	☐ See Banner form STVSUBJ

Attachments

☐ Memo with appropriate campus approval (i.e. Campus Curriculum Committee, Vice Chancellor for Academic Affairs, etc.)

Verifications

Registrar:

Robyn Oshiro		09/15/2016
Print Name	Signature	Date

Financial Aid Officer:

Christina Padilla	CPadilla	9/16/16
Print Name	Signature	Date

For Community Colleges, verification of consultation with OVPCC Academic Affairs:

Print Name	Signature	Date

UHWO Form CC1

University of Hawai'i – West O'ahu
FORM FOR ADDITION OF COURSES

1. Please indicate the following:

   a. Proposed Course Alpha and Number: **BIOC 241**

   b. Proposed Course Title: **Fundamentals of Biochemistry**

   c. Proposed number of credits (if variable, give range): **3**

   d. Can the course be repeated for credit to be applied to degree/certificate requirements?
   x☐ No ☐ Yes (with a different alpha) **OR**
   ☐ Yes (please state reason):

e. Prerequisite: **Placement in ENG 100 or concurrent enrollment in ENG 22 and Intermediate Algebra or higher.**

f. Proposed Course Description (for catalog):
This course is a systematic study of the principles of general, organic, and biochemistry as they apply to living systems. It prepares students for technical training in life sciences.

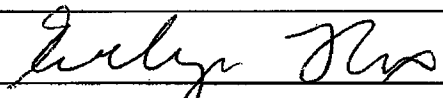
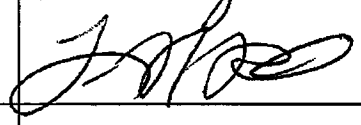
   g. Has the course previously been taught as a 496 Course?
   x☐ No ☐ Yes (please indicate alpha and term):

2. Justification or rationale for course action:
This course is required for students majoring in dental hygiene, nursing and allied health programs. It is taught at all campuses of the University of Hawaii.

3. Have all relevant personnel been consulted?
☐ No x☐ Yes

   If "yes," please obtain signatures:

Name	Concentration	Appr	Disappr	Signature
Dr. Danilo L. Licudine	Leeward Community College	x		See e-mail attachment.

Fenny Cox	Biology	x		
Linda Furuto	Math	x		

4. Is this a cross-listed course?
x☐ No ☐ Yes

If "yes," please obtain signatures of those who approve:

Course Alpha & Number	Approved by Faculty	Approved by Division Chair

5. Student Learning Outcomes (SLO) and alignment with Concentration Learning Outcomes (CLO), Division learning Outcomes (DLO) and Institutional Learning Outcomes (ILO). Please write the SLO in a measurable format and code the appropriate CLOs, DLOs and ILOs.

Student Learning Outcomes
• Utilize precise chemical language to effectively communicate chemical and biochemical concepts and data. (ILO 5)
• Analyze and apply appropriate procedures to solving chemical and biochemical-related calculations involving gases, liquids, solids, and solutions. (ILO 3 and ILO 5)
• Connect issues in human health, nutrition, and medicine with molecular structure and interactions. (ILO 3 and ILO 5)

Grading Criteria: Your final grade will be based on 500 points: 100 points for each of the three semester exams (with the lowest exam grade possibly replaced by your quiz score) and 200 points for the final exam. The final exam is cumulative with emphasis on the last two chapters. You must take the final exam and have at least 60% in lab to pass the class. Attendance at all exams is compulsory and there are no makeup exams. Only medical or emergency reasons with proper documentation may be accepted for missing an exam. In this case, the average of other semester exam grades will be used for the missed exam grade. The grading will be based on a total point basis. There is no curve. The performance of other students has no direct impact on your individual grade.

Three semester exams:	3@100 = 300 points
Final examination:	200 points.
Total	500 points

Grading Scale:

grade	A	B	C	D	F
score	100%-90%	89%-80%	79%-70%	69%- 50%	49% and less

6. **Course Outline**:

Week 1: Chapter 12 – Solutions.

Weeks 2 and 3: Chapter 13 – Chemical Kinetics.

Week 4: Review and **Exam I** (Chapter 12 and 13).

Weeks 5 and 6: Chapter 14 – Chemical Equilibrium.

Weeks 7 and 8: Chapter 15 – Acids and Bases.

Week 9: Review and **Exam II** (Chapter 14 and 15).

Weeks 10 and 11: Chapter 16 – Aqueous Ionic Equilibria.

Weeks 12: Review and **Exam III** (Chapter 16).

Week 13: Chapter 17 – Free Energy and Thermodynamics.

Weeks 14: Chapter 18 – Electrochemistry.

Week 15: Review and **FINAL EXAM.**

7. **Recommended Text(s):**

Author	Title	Year
Bettelheim et al.	Introduction to General, Organic and Biochemistry	2010

8. Addition requested by:
Faculty Member Signature: _____ Date 2/23/12

Division/Program Chair Signature _____ Date _____

9. Action approved by:

Curriculum Committee _____ Date 2/23/12

VCAA _____ Date 2/24/12

Required by the VCAA

10. Course Type (Lecture, Seminar, Fieldwork, Lab): Lecture

11. Effective Term (term course is added to the catalog): Fall 2012

12. Course frequency/rotation (ex. every other semester): Fall/Spring

13. Is Course a Core Requirements: Yes

14. Major Restriction:

x☐ No ☐ Yes (restricted to):

15. Is this course seeking General Education status?
☐ No X☐ Yes

If "yes," please make certain you have submitted an application to the Gen Ed committee.

16. Course Title (30 character limit): Fundamentals of Biochemistry

Action Approved by VCAA:

Vice Chancellor  Date: 2/24/12

University of Hawai'i-West O'ahu
Course Syllabus

BIOC 241 **Fundamentals of Biochemistry**

Joseph Bariyanga
E-mail: bariyang@hawaii.edu

Office Hours: 30 minutes before and after class or by appointment.

Rationale based on Institutional Learning Outcomes of UHWO, as stated below:

- **Quantitative Literacy:** Apply mathematical reasoning to obtain accurate results in solving problems.
- **Critical Thinking:** Demonstrate critical thinking skills by applying knowledge, technology, and information to solve problems and make decisions in socially responsible and ethical way.

Course Description

This course is a systematic study of the principles of general, organic, and biochemistry as they apply to living systems. It prepares students for technical training in life sciences.

Pre-requisites: Placement in ENG 100 or concurrent enrollment in ENG 22. MATH 25 or Higher.

Student Learning Outcomes:

At the end of this course, students will be able to:

- Utilize precise chemical language to effectively communicate chemical and biochemical concepts and data. (ILO 5)
- Analyze and apply appropriate procedures to solving chemical and biochemical-related calculations involving gases, liquids, solids, and solutions. (ILO 3 and ILO 5)
- Connect issues in human health, nutrition, and medicine with molecular structure and interactions. (ILO 3 and ILO 5)

Textbook.

Required: "Introduction to General, Organic and Biochemistry," 9th edition, by Bettelheim et al. (ISBN-13: 978-0-495-3910-3 ISBN-10: 0-495-39120-4). Published by Cengage Learning.

Requirements.

- Students must complete the following:

  Semester exams
  Final exam
  Quizzes
  Homework (not graded but encouraged to prepare quizzes)

- Class participation in this class is essential. Students will be required to participate in discussion groups and go to the blackboard for answering questions.
- Students are expected to attend class regularly and punctually. No unexcused absences are allowed.

- No food, drinks, or gum chewing is allowed. Cell phones, pagers, and beepers must be turned off.

Grading Policy.

Your final grade will be based on 500 points: 100 points for each of the three semester exams (with the lowest exam grade possibly replaced by your quiz score) and 200 points for the final exam. The final exam is cumulative with emphasis on the last seven chapters. You must take the final exam to pass the class. Attendance at all exams is compulsory and there are no makeup exams. Only medical or emergency reasons with proper documentation may be accepted for missing an exam. In this case, the average of other semester exam grades will be used for the missed exam grade. The grading will be based on a total point basis. There is no curve. The performance of other students has no direct impact on your individual grade.

Three semester exams:	3@100 =	300 points
Final examination:		200 points.
Total		500 points

The final grade will be calculated from the following breakdown:

grade	A	B	C	D	F
score	100%-90%	89%-80%	79%-70%	69%- 50%	49% and less

Simplified and Tentative Schedule of Topics.

Week 1: Chapter 1 – Matter, Energy and Measurements.

Weeks 2: Chapter 2 – Atoms

Week 3: Chapter 3 – Chemical Bonds.

Weeks 4: Chapter 4 – Chemical Reactions.

Week 5: Review of Chap. 1 – 3 and **Exam I** (1 – 3)

Week 6: Chapter 5 – Gas, Liquids, and Solids.

Week 7: Chapter 6 – Solutions and Colloids.

Week 8: Chapter 8 – Acids and Bases and **Exam II** (4 – 6)

Week 9: Chapters 10 – 13 – Alkanes, Alkenes, Alkynes and Benzene

Week 10: Chapters 14, 15 – Alcohols, Ethers, Thiols, and Chirality.

Weeks 11: Chapters 16 – 18 – Amines, Aldehydes, Ketones, and carboxylic Acids.

Week 12: Chapters 19, 20 – Esters, Amides, and Carbohydrates. **Exam III** (8 – 18)

Week 13: Chapter 21 – Lipids.

Week 14: Chapters 22, 23 – Proteins and Enzymes.

Week 15: Chapter 27, 28 – Bioenergetics and Specific catabolic Pathways and Review for Final Exam.

Week 16: **FINAL EXAM.**

General Course Information.

Chemistry and Biochemistry are interesting and relevant to every part of our lives. I am sure you will enjoy them as much as I do. They are also information packed subjects that always connect concepts from the atom to the most sophisticated structure in our body. Therefore here are summarized advices and policies that will guide you in this process.

- Success comes with regular study, attendance, completion of the notes, and problem solving after each lecture. Plan your time for study **each day and especially during week-ends.**

- **Plan to spend a minimum of 10-12 hours per week studying for this course outside the class time.**
- Chemistry and Biochemistry do not lend themselves to cramming the night before the exam. The information in many of the chapters is based on material covered earlier. So you should master a chapter before moving to the next.
- Read the book before the class to be familiar with the vocabulary and techniques of problem solving. Solve all **assigned problems at the end of this document.**
- This course is highly mathematical. You will need to refresh your math and possibly seek help from the Math and Writing Center.
- Seek help every time you are stuck on a particular concept or problem. I will be available during office hours, and appointment can be arranged. E-mail messages can be the fast way to contact me in hurry, especially if you need to verify an answer for a hard problem.
- During classes, focus on the job and avoid distraction as you may miss key tips for solving problems.
- It always boils down to motivation. If you are committed to your future career and you need this class to get there, motivation will not be an issue. Also remember, "Nothing is free in this world, hard work pays off all the time."
- Good luck!

HOMEWORK ASSIGNMENTS:

Chapter 1: 16, 17, 18, 20, 22, 24, 25, 26, 28, 30, 36, 48, 50, 56, 58, 66
Chapter 2: 10, 16, 24, 26, 28, 44, 46, 48, 52, 53, 55, 66, 78, 80, 84
Chapter 3: 18, 20, 24, 32, 34, 36, 38, 40, 42, 44, 46, 52, 54, 62, 83, 86, 114
Chapter 4: 18, 22, 28, 34, 46, 48, 52, 56, 58, 61, 62, 64, 72, 90, 96
Chapter 5: 18, 20, 30, 38, 40, 46, 52, 54, 56, 66, 68, 78, 84, 102, 110
Chapter 6: 24, 26, 28, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 68, 70
Chapter 8: 18, 20, 22, 24, 28, 34, 36, 42, 44, 52, 60, 62, 68, 80, 82, 84
Chapter 11-13: 11.14, 11.26 (a, b, c), 11.27 (a, b, c, d, f), 11.38, 11.48, 11.58, 11.59 (a, b, c, d, e, f), 12.18 (a, d, e, f), 12.20 (a, b, d, e), 12.23, 12.28 (a, b), 12.42, 12.46 (a, b), 13.14 (a, b, e, h), 13.15 (a, b, c, f), 13.18, 13.20, 13.40 (a, b)
Chapter 14-15: 14.10 (a, b, c, d), 14.11 (c, d, e), 14.16, 14.18, 14.20, 14.22, 14.24 (a, c, d),14.30, 14.42, 14.56, 14.58, 14.60, 15.16, 15.20, 15.22, 15.24
Chapter 16-18: 16.9, 16.10, 16.12, 16.16, 16.40 (a, b, e, f), 16.42, 17.17, 17.20 (b, c, d), 17.22, 17.28, 17.30, 17.36 (a, b, d), 17.50, 17.58, 18.6, 18.8 (a, b, c), 18.18, 18.24, 18.36, 18.38, 18.44
Chapter 19-20: 19.5 (b, c, d, e, f), 19.6, 19.34, 19.36, 20.15, 20.16, 20.18, 20.26, 20.28, 20.34, 20.38, 20.40, 20.44, 20.48.
Chapter 22-23: 22.8, 22.10, 22.16, 22.20, 22.37 (plus: Alanyltryptophan & Glycylalanylvaline), 22.38, 22.41 (plus: Thr-Leu-Phe), 22.53, 22.82, 23.8, 23.10, 23.14, 23.16, 23.18, 23.25, 23.70
Chapter 27-28: 27.2, 27.8, 27.18, 27.20, 27.22, 27.24, 27.30, 27.32, 27.44, 27.68, 28.2, 28.10, 28.12, 28.22 (a), 28.32, 28.34, 28.63