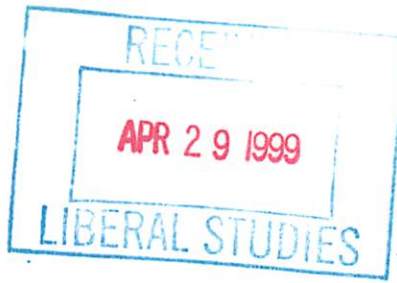


LSC Use Only
Number: _____
Submission Date: _____
Action-Date: _____



UWUCC USE Only
Number: 99-35
Submission Date: _____
Action-Date: UWUCC App 10/12/99
Senate App 2/1/00

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. CONTACT

Contact Person Jon Southard Phone 72210

Department Biochemistry Program (Cooperative Program involving Biology & Chemistry)

II. PROPOSAL TYPE (Check All Appropriate Lines)

_____ **COURSE** _____
Suggested 20 character title

_____ **New Course*** _____
Course Number and Full Title

_____ **Course Revision** _____
Course Number and Full Title

_____ **Liberal Studies Approval+** _____
for new or existing course Course Number and Full Title

_____ **Course Deletion** _____
Course Number and Full Title

_____ **Number and/or Title Change** _____
Old Number and/or Full Old Title

_____ **New Number and/or Full New Title**

_____ **Course or Catalog Description Change** _____
Course Number and Full Title

PROGRAM: _____ Major Minor _____ Track

New Program* Minor in Biochemistry
Program Name

_____ **Program Revision*** _____
Program Name

_____ **Program Deletion*** _____
Program Name

_____ **Title Change** _____
Old Program Name

_____ **New Program Name**

III. Approvals (signatures and date)

Arthur J. Hulce 10-21-99
Department Curriculum Committee (Biology)

Boyd Butte 4/22/99
Department Chair (Biology)

[Signature] 04/27/99
College Curriculum Committee

John D. Eck 4/27/99
College Dean

+ Director of Liberal Studies (where applicable)

*Provost (where applicable)

Robert M. Eddy 4/26/99
Department Curriculum Committee (Chemistry)

Dothen Varughese 4/22/99
Department Chair (Chemistry)

DESCRIPTION OF CURRICULUM CHANGE

1. Complete catalog description for minor

Minor-Biochemistry

17-20 sh

Required courses:

BC301-302	Biochemistry I and II	6 sh
BC311-312	Biochemistry Laboratory I and II	2 sh

Other requirements:

At least three controlled electives from following list (1):	9-12 sh
BC480, 481, 490	
BI250, 263, 350, 352, 364, 401, 453	
CH232, 322, 323	

(1) Or other 200-level or higher Biology or Chemistry courses with permission of chairperson of offering department. A minimum of 9 sh is required.

2. Detailed description for the minor

A. Rationale/justification for the new program

One perspective of the field of biochemistry is that it occupies a ‘middle ground’ on a continuum of subdisciplines in the natural sciences whose inquiries range from studies of the elemental particles of matter to the behavior of ecosystems. In establishing the Biochemistry Program in 1984, IUP and SSHE recognized the fundamental importance of biochemistry as a field of study in its own right.

The structure of the curriculum for the Biochemistry Major reflects the high degree of interdependence and complementarity among the fields of biology, chemistry, and biochemistry. Thus, biochemistry majors begin with a foundation in biology and chemistry and then take specialized courses in biochemistry. The core of this specialized curriculum is a two semester lecture/lab series, BC301-302 and BC311-312. In these courses, students gain an understanding of the current knowledge and theoretical underpinnings of biochemistry and hands-on practice in basic methods employed in biochemical research. This background is essential for anyone wishing to pursue a career in biochemistry.

The rationale for the development of a Minor in Biochemistry is that the knowledge, theory, and laboratory tools of biochemistry are now relevant in an expanding array of other fields. These range from closely-related or overlapping fields (i.e., medicinal chemistry, molecular biology, genetics, immunology) to developing interdisciplinary fields (i.e., neuroscience, behavioral science, studies of global change) to distantly-related fields (i.e., archeology, criminology). Biologists and chemists in virtually all areas of specialization utilize the theory and skills taught in biochemistry. The goal of this proposal is to make the core biochemistry courses more available and attractive to students whose primary interests are in fields other than biochemistry. A Minor in Biochemistry will provide these students with a background that will allow them to apply biochemistry in their chosen fields.

We recognize that the Minor in Biochemistry will probably be most attractive to Biology and Chemistry majors. These students will be able to use major’s courses to fulfill part of the elective requirements for the minor. Also, a Minor in Biochemistry will be an asset to any of these students seeking admission to graduate and professional schools. The growing importance of biochemical approaches in chemistry is reflected in the recent recommendation of the American Chemical Society that chemistry majors in ACS-certified B.S. programs should have coursework in biochemistry. The Biochemistry Minor may also be attractive to majors in such complementary fields as Food and Nutrition Science, Nursing and Allied Health Professions, and Safety Science. Given the relevance of biochemistry and the widespread use of biochemical laboratory methods in these areas, a Minor in Biochemistry could be an advantage to students entering the job market in any of these fields. The continuing growth of medical and agricultural biotechnology and biopharmaceutical industries will provide excellent career opportunities for graduates with a Minor in Biochemistry.

B. Credit requirements

Minor in Biochemistry

total of 17-20 sh

The total sh will depend on the controlled electives used (9 sh minimum required to 12 sh for three 4 sh electives).

Required courses:

BC301	Biochemistry I ^a	3 sh
BC302	Biochemistry II	3 sh
BC311	Biochemistry Laboratory I ^a	1 sh
BC312	Biochemistry Laboratory II	1 sh

Other requirements:

At least three controlled electives from following list (1): 9-12 sh

BC480	Biochemistry Seminar I	1 sh
BC481	Special Topics in Biochemistry	1-3 sh
BC490	Biochemistry Seminar II	1 sh
BI250	Principles of Microbiology ^{b, d}	3 sh
BI263	Genetics ^b	3 sh
BI350	Cellular Physiology	3 sh
BI352	Comparative Animal Physiology ^d	3 sh
BI364	Immunology ^d	3 sh
BI401	Laboratory Methods in Biology and Biotechnology ^d	3 sh
BI453	Plant Physiology ^d	3 sh
CH232	Organic Chemistry II ^c	4 sh
CH322	Instrumental Analysis ^{c, d}	4 sh
CH323	Analytical Methods	4 sh

(1) Or other 200-level or higher Biology or Chemistry courses with permission of chairperson of offering department. A minimum of 9 sh is required.

^a BI111, Principles of Biology I and CH232, Organic Chemistry II are prerequisites.

^b Required for Biology major.

^c Required for Chemistry major.

^d These courses have prerequisites not needed for the required courses.

C. Sequencing and restrictions

1. BC301, Biochemistry I and BC311, Biochemistry Laboratory I are offered only in the Fall semester.

BC302, Biochemistry II and BC312, Biochemistry Laboratory II are offered only in the Spring semester.

Biochemistry majors normally take these courses in their junior year. Biochemistry minors could take them in either their junior or senior year.

2. Chemistry majors would need to complete BI111, Principles of Biology I before taking the BC courses. They normally complete the other prerequisite, CH232, Organic Chemistry II in their sophomore year.

3. Biology majors would need to complete CH232, Organic Chemistry II before taking the BC courses. They normally complete the other prerequisite, BI111, Principles of Biology I in their freshman year.

4. BC480 and BC490, Biochemistry Seminar I and II, are taught as a two-semester sequence. Taken together, they constitute the required "W" course for the Biochemistry major.

IMPLEMENTATION

The proposed minor is not expected to affect faculty teaching loads and no additional faculty complement is required. Historically, enrollment in BC courses has been below ten students. The lecture courses are taught in rooms that can accommodate 40 or more students. The laboratory for BC311-312 can accommodate up to 24 students. It is unlikely that this capacity will be exceeded by the addition of students seeking a minor in biochemistry in the near future. If the number of students increases much above 10-12 students, some additional equipment and supplies will be required for the laboratory courses.

A modest increase in the number of students enrolled in BC courses is expected. It is anticipated that the Minor in Biochemistry will be most attractive to Biology and Chemistry Majors. From this pool of students, a reasonable guess is that two to ten students per year may pursue a Minor in Biochemistry. Total enrollments in the two cooperating departments will not be significantly affected by this revision. For the Biochemistry Program, an increase in enrollment is viewed as essential to ensure the viability of the program.

COURSE PROPOSALS

No new courses are proposed.

LETTERS OF SUPPORT

Letters of support from the Biochemistry faculty, the Biology & Chemistry Chairs, and the Dean of the College of Natural Sciences and Mathematics are attached.

To: Whom It May Concern
From: Biochemistry Program Faculty
Date: November 5, 1998

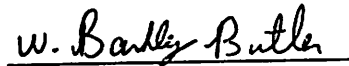
Re: Proposed Minor in Biochemistry

We fully support the proposed Minor in Biochemistry. As the faculty involved in teaching the courses for the Biochemistry Major, we see no conflict in having non-major students participating in these courses. Biochemistry courses have low enrollments and thus addition of non-major students will not cause a hardship. Further, Biochemistry Minor students will bring other perspectives to the Biochemistry courses. The addition of a Biochemistry Minor can only lead to more student interest and participation in all Biochemistry courses and activities. A larger number of students taking Biochemistry courses will lead to more discussion among students and with faculty and thus enhance the discipline at IUP even more.

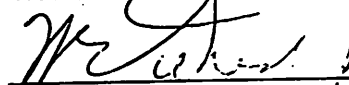
Sincerely,



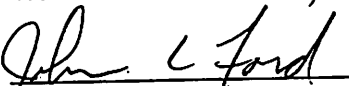
N. Bharathan



W. B. Butler



W. E. Dietrich



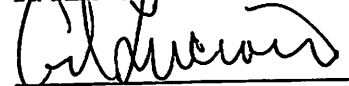
J. C. Ford



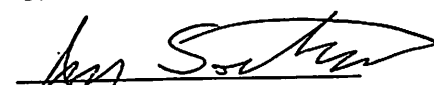
R. W. Harding



R. Hinrichsen



C. S. Luciano



J. N. Southard



S. Sowa

To: Curriculum Committee
The University Senate
IUP

From: Dr. Barkley Butler, Chair *Barkley Butler*
Department of Biology
IUP

Date: March 15, 1999

Subject: Proposal for Minor in Biochemistry

I am writing to support the "Minor in Biochemistry" submitted by Dr. Jon Southard for the Biochemistry Program. It has been reviewed and approved by our Department Curriculum Committee and approved by them and by our entire Department.

The courses required or recommended are appropriate in content and depth for this minor. This proposal will not require any additional faculty complement in the Department of Biology.

The Department of Biology fully supports the establishment of a Minor in Biochemistry as described in this proposal.

March 1, 1999

TO: Curriculum Committee
The University Senate
IUP

FROM: Dr. Pothan Varughese, Chairperson
Department of Chemistry
IUP



This letter is in support of the curriculum proposal submitted by the Biochemistry Program in the College of Natural Sciences and Mathematics. I have thoroughly reviewed this proposal for establishing a minor in biochemistry at the undergraduate level.

The courses in biochemistry, biology and chemistry required or recommended for receiving a minor in biochemistry are appropriate and consistent with the depth and breadth of biochemistry and related subjects expected in such a program. This program does not require any additional faculty complement in the Chemistry Department.

The Chemistry Department fully supports this proposal to establish a minor in biochemistry at the undergraduate level.