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Submission Date: _____
Action-Date: App 3/26/02
Senate App 5/7/02

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. **CONTACT**

Contact Person Dr. Andrew C. Browe Phone 357-2191

Department Biology - Weyandt 327

II. **PROPOSAL TYPE (Check All Appropriate Lines)**

_____ COURSE HUMAN PHYSIOLOGY

_____ New Course* _____

__X__ Course Revision BIOL 151 - HUMAN PHYSIOLOGY

_____ Liberal Studies Approval+ for new or existing course _____

_____ Course Deletion _____

_____ Number and/or Title Change _____

_____

_____ Course or Catalog Description Change _____

_____ **PROGRAM:** _____ Major _____ Minor _____ Track

_____ New Program* _____

_____ Program Revision* _____

_____ Program Deletion* _____

_____ Title Change _____

_____

III. **Approvals** (signatures and date)

Arthur C. Hulse, III 3-13-01
Department Curriculum Committee

W. Barry Butt 3/13/01
Department Chair

3/20/01
College Curriculum Committee

John D. Eder 3/27/01
College Dean

+Director of Liberal Studies (where applicable)

*Provost (where applicable)

forms/curricul

Part II

1) Description of Curriculum Change

A. Catalog Description

	4 credits
	3 lecture hours
	2 lab hours
BIOL 151: Human Physiology	(3c-2l-4sh)

Prerequisite: BIOL 103, 105, or 111, or HPED 221, or Permission of Instructor. Non-Biology majors and controlled elective for Biology majors.

Human Physiology is the study of the mechanisms by which the human organism functions. Mechanisms covered in the course will range from the molecular/sub-cellular, to the tissue, organ and organism levels. Organ systems examined include the nervous, muscular, cardiovascular, respiratory, endocrine, renal, digestive and reproductive systems. The course emphasizes 3 major themes: 1) that organ functions are dependent upon the underlying molecular and cellular processes, 2) that all organ systems utilize biological control systems to maintain organ homeostasis, and 3) that each organ function is closely controlled and dependent upon the interaction / integration with functions from other organ systems.

B. Course Objectives

The Objectives of the Human Physiology course include the following:

1) Each student will demonstrate an understanding and operational knowledge of the functions, interactions, and control of the major cellular and organ systems, including nervous, muscular, cardiovascular, respiratory renal, digestive, endocrine, and reproductive systems.

2) Each student will demonstrate an understanding of the principles and mechanisms that explain homeostasis at the cellular, tissue, organ, and organismal levels.

3) Each student will demonstrate an understanding of those cellular, tissue and organ functions that have particular clinical significance to biology and health science students.

C. Course Outline (42 lecture hours)

Lecture number	Topic
1	introduction, homeostasis
2	Membrane transport
3	Membrane potentials
4	Action potentials
5	Synaptic transmission
6	Cellular communication/signal transduction
7	Muscle contraction
8	Muscle fiber types (skeletal, cardiac, smooth)
9	Sensory receptors / somatosensory system
10	Pain mechanisms
11	Peripheral visual system
12	Central visual system
13	Auditory / chemo receptor systems
14	Proprioceptors / spinal control of movement
15	Central control of movement / autonomic system
16	EXAM #1
17	Red blood cells /stem cells
18	Hemostasis
19	Immune response / inflammation
20	Electrical properties of heart
21	Mechanical properties of heart
22	Cardiac output control
23	Hemodynamics / blood vessel properties
24	Capillary dynamics
25	Control of blood pressure
26	Respiratory mechanics
27	O2/CO2 exchange and transport
28	Control of ventilation / altitude / diving
29	EXAM #2
30	Tubular nephron / control of filtration
31	Control of fluid / electrolytes balance

32	Acid-base regulation
33	Control of calcium and phosphate
34	Control of gastrointestinal motility and absorption
35	Control of gastrointestinal secretions
36	Control of glucose metabolism
37	Control of growth and development
38	Control of energy balance
39	Temperature regulation / fever
40	Male reproductive system
41	Female reproductive system / pregnancy
42	Control of memory and consciousness
	Final Exam (Exam #3)

Laboratory Schedule (each laboratory exercise has a 2 week duration)

Laboratory Exercise	Topic
Week 1 & 2	Active transport
Week 3 & 4	Compound action potential
Week 5 & 6	Muscle contraction
Week 7 & 8	Electrocardiogram / Blood pressure
Week 9 & 10	Pulmonary volumes / flows
Week 11 & 12	Renal clearance
Week 13 & 14	Stress testing / metabolic and thermal

D) Evaluation Methods

Weekly lecture quizzes (14 quizzes @ 10 points)	= 140 points
Lecture exams (3 exams @ 110-120 points)	= 350 points
Laboratory quizzes (7 quizzes @ 10 points)	= 70 points
Laboratory reports/simulations (7 reports @ 20 points)	= 140 points
TOTAL	= 700 points

Grading

620 points or above	= A
530-619 points	= B
440-529 points	= C
350-439 points	= D
349 points or below	= F

E. Required textbook and manuals

Browe, A. Human Physiology Laboratory Manual for Maclab System. Kendall-Hunt Co. 1st edition, 2000.

Nolan, C. & Saladin, K. Clinical Applications Manual for Anatomy & Physiology. McGraw-Hill Co. 2nd edition, 2001.

Vander, A., Sherman, J., and Luciano, D. Human Physiology: The Mechanisms of Body Function. McGraw-Hill Companies. 8th edition, 2000.

F. Bibliography

Berkow, R., Editor-in-Chief. The Merck Manual of Diagnosis and Therapy. Merck & Co. 17th edition, 1997.

Berne, R. & Levy, M. Principles of Physiology. Mosby Co. 3rd edition, 2000.

Fox, S. Human Physiology. McGraw-Hill Co. 7th edition, 2002

Ganong, W. Review of Medical Physiology. Appleton & Lange Co. 19th edition, 1999.

Germann, W. & Stanfield, C. Principles of Human Physiology. Benjamin Cummings Co. 1st edition, 2002.

Goodman, A. & Gilman, A. The Pharmacological Basis of Therapeutics. McGraw-Hill Co. 9th edition, 1998.

Hansen, P. Editor. Advances in Physiology Education. American Physiological Society. Volumes 16-23, 1194-2001

Hoffman, J. Editor. Annual Review of Physiology. Annual Reviews Inc. volumes 55-63, 1995-2002.

McCance, K. & Huether, S. Pathophysiology: The Biological Basis for Disease. Mosby Co. 2nd edition, 1996.

Michael, J. & Rovick, A. Problem Solving in Physiology. Prentice Hall Co. 1st edition, 1999.

Patton, H. & Fuchs, A. Textbook of Physiology. W.B. Saunders Co., 22nd edition, 1998.

Rhoades, R. & Tanner, G. Medical Physiology. Little Brown and Company. 2nd edition, 2000.

Schultz, S. Editor. News in Physiological Sciences. American Physiological Society. Volumes 10-16, 1995-2001

Sherwood, L. Human Physiology: From Cells to Systems. Brooks/Cole Co. 4th edition, 2001.

Silverthorn, D. Human Physiology: An Integrated Approach. Prentice Hall Co. 2nd edition, 2001.

Sperelakis, N. & Banks, R. Physiology. Little, Brown and Company. 2nd edition, 1998.

Ward, M. & Milledge, J. & West, J. High Altitude Medicine and Physiology. Chapman & Hall Medical Co. 2nd edition, 1995.

2. Old and New Course Description

A. Catalog Description – **OLD**

BIOL 151 – Human Physiology (3c-2l-4sh)

Prerequisite: BIOL 105. Non-Biology majors only

Description: Deals with acquiring, through lecture presentations and laboratory experiments, an understanding of the basic functions and control of the major organ systems of the human body. Organ systems examined include the following: muscular system, cardiovascular system, respiratory

system, endocrine system, renal system, digestive system, reproductive system, and nervous system.

B. Catalog Description – **NEW**

BIOL 151 – Human Physiology (3c-2l-4sh)

Prerequisite: BIOL 105, or BIOL 111, or BIOL 103, or HPED 221, or Permission of Instructor. Non-Biology majors and controlled elective for Biology majors.

Human Physiology is the study of the mechanisms that govern the human organism functions. Mechanisms covered in the course will range from the molecular/subcellular, to the tissue, organ, and organism levels. Organ system examined includes the nervous, muscular, cardiovascular, respiratory, endocrine, renal, digestive, and reproductive. The course emphasizes 3 major themes: 1) that organ functions are dependent upon the underlying molecular and cellular processes, 2) that all organ systems utilize biological control systems to maintain homeostasis, and 3) that each organ function is closely controlled and dependent upon the interaction/integration with functions from other organ systems.

3. Rationale for course change

Human physiology (BIOL 151) has served as service course in the Biology Department for the past 25 years. It has been an important requirement for nearly all health science students (including nursing, per-physical therapy, per-dental, pre-podiatry, pre-chiropractic, pre-optometry, medical technology, athletic training, nutrition science, and respiratory therapy students) at the University. The vast majority of these students have not been Biology majors and thus the course has been listed as a non-Biology major course. The original purpose of the course was to serve as a survey course in basic physiology for those students entering into a health science professional field.

The past 15-20 years, however, have been characterized by a rapid expansion in our understanding of the molecular, cellular, organismal, and integrative physiological mechanisms, as well as the clinical significance of these mechanisms. The rapid expansion in the knowledge base in this discipline has altered the content and overall nature of a human physiology course. Human physiology has become an important course not only for health science students but also students in a variety of disciplines including pre-medicine, pre-veterinary, biochemistry, environmental health, bio-education, and molecular/cellular biology. Students in these disciplines are primarily Biology majors.

Thus the purpose of this course proposal is to change the description of Human Physiology from a non-Biology major course to a course that is open to both majors and non-majors providing that the student has completed the appropriate prerequisite course. This course revision will allow the Biology Department to more effectively prepare its students for careers in medicine, research, education, or biotechnology.

The change in the designation of this course from a non-majors only course to a course open to both majors and non-majors will not require, nor is it intended to produce any change in the nature of the existing course in Human Physiology. The course will continue to be offered to health science students without modification of existing content, format, or rigor.

Human Physiology is not an entry-level course in Biology, It will require one of the following prerequisites:

Cell Biology (BIOL 105) or
Principles of Biology I (BIOL 111) or
General Biology (BIOL 103) or
Structure and Function (HPED 221) or
Permission on Instructor

Andrew C. Browe

From: Ron Trenney <trenney@grove.iup.edu>
To: <acbrowe@grove.iup.edu>
Sent: Wednesday, April 19, 2000 9:34 AM
Subject: BI151

April18-00

Dr. Browe,

We have reviewed your proposed changes for course BI 151. We support your change for pre-requisites as this will aid our students in reqestering for this course. We also have no problem with this course serving both the non-major student, as it currently does, and being designated as a Biology Major course. We have always been happy with the content and format of this course. We rest assured that this course will continue to both challenge our students and provide them with the knowledge necessary for their continued education and future certifications.

We thank you for allowing us to review your proposal and provide this feedback.

Ron Trenney
Jose Rivera

Department of Health and Physical Education

Andrew C. Browe

From: Rebecca Hartman <rhartman@grove.iup.edu>
To: <acbrowe@grove.iup.edu>; pedaci <pedaci@grove.iup.edu>
Sent: Monday, April 17, 2000 8:33 AM
Subject: BI 151 Proposal

Andy,

After our meeting on April 17, 2000 I am sending this e-mail to confirm my support of the proposed change in BI 151 Human Physiology. It is my understanding you are proposing to designate this course to include Biology majors but the content and the teaching methods will not change with this designation.

Rebecca Hartman
Coordinator, Allied Health Professions

Andrew C. Browe

From: Jodell Kuzneski <kuzneski@grove.iup.edu>
To: <acbrowe@grove.iup.edu>
Cc: <metwal@grove.iup.edu>; <rhartman@grove.iup.edu>; J Kuzneski <kuzneski@grove.iup.edu>
Sent: Thursday, April 20, 2000 7:35 AM
Subject: BI 151 course revision proposal

Andy,

Thank you for taking the time to meet with me and other faculty to discuss the proposed changes in BI 151 Human Physiology. Your explanations clarified our understanding of the proposal.

The members of the department curriculum committee, the allied health coordinator, and I support your proposal for revisions to BI 151. This support is provided with the following understandings:

1. The prerequisite for the course will not exclude nursing and allied health majors.

2. Seats will continue to be available for nursing and allied health majors in sufficient numbers so as not to create delays in student progression or mandate summer study.

3. The proposal is not designed to change the content or rigor of the course in a way that will accommodate the biology majors.

Jodell Kuzneski, Chairperson
Department of Nursing and Allied Health Professions