
**REVISED SYLLABUS OF RECORD FOR CHEM 341
PHYSICAL CHEMISTRY I**

I. CATALOG DESCRIPTION

COURSE TITLE: CHEM 341, Physical Chemistry I
NUMBER OF CREDITS: 4 cr (4c-0l-4cr)
PREREQUISITES: PHYS 112 or 132; MATH 126; Grade of

COURSE DESCRIPTION: 114.
Foundations of chemical thermodynamics,
equilibria, kinetics, quantum mechanics, and
spectroscopy.

II. COURSE OBJECTIVES

After completion of the course, students will be able to:

Phase equilibria, Membranes, Colligative Properties,
Cooperativity and Ligand Binding in Biochemical Processes

7. Exam #2 1 hour
8. Chemical Kinetics 7 hours

Reaction, Empirical Rate Equations, Analysis of Kinetic
Results, Molecular Kinetics, The Arrhenius Law, Reactions
in Solutions

9. Composite Reaction Mechanisms 7 hours
Types of Composite Reactions, Rate Equation, Rate
Constants, Rate Coefficients and Equilibrium Constants,
Photochemical Reactions, Catalysis, Enzyme Catalysis and
Inhibition
10. Exam # 3 1 hour
11. Quantum Mechanical Models 6 hours

Quantum Mechanical Models (Particle in a Box)

P. Atkins and J. de Paula, *Physical Chemistry*, ninth edition, WH Freeman, New York, 2010.

VII. SPECIAL RESOURCE REQUIREMENTS

Students may be expected to have their own programming calculators and to use the

software available in the Chemistry Department Computer Classroom. In addition students should have access to a computer to use web sites that provide supplementary information.

VIII. BIBLIOGRAPHY

P. Atkins and J. de Paula, *Physical Chemistry*, ninth edition, WH Freeman, New York, 2010.

P. Atkins and J. de Paula, *Physical Chemistry for Life Sciences*, 1st edition, WH Freeman, New York, 2006.

G.M. Barrows, *Physical Chemistry*, sixth edition, McGraw- Hill, New York, 1996.

R. Chang, *Physical Chemistry for the Biosciences*, University Science Books, 2005

T. Engel, P. Reid, *Physical Chemistry*, second ed., Prentice Hall, 2010

H. Kuhn, H.D. Forsterlin, D.H Waldeck, *Principles of Physical Chemistry*, second edition, J. Wiley & sons, 2009

I. Levine, *Physical Chemistry*, sixth edition, McGraw-Hill, 2009.

J.H. Noggle, *Physical Chemistry*, third edition, Harper Collins, New York, 1996.

I. Rinoco, Jr., I., K. Sauer, J.C. Wang, J.D. Puglisis, *Physical Chemistry: Principles and Applications in Biological Sciences*, fourth edition, Prentice Hall, 2002

R. J. Silbey, R. A. Alberty, M. G. Bawendi *Physical Chemistry*, fourth edition, John Wiley and Sons, 2004

Course Analysis Questionnaire

Section A: Details of the Course

A1 How does this course fit into the programs of the department? For what students is the course designed? (majors, students in other majors, liberal studies). Explain why this content cannot be incorporated into an existing course.

The B.S. Chemistry degree is certified by our professional organization, The American Chemical Society (ACS). The ACS has recently rewritten its requirements for a certified degree,

courses. Currently, B.S. Chemistry majors and B.S. Chemistry/Pre-Med majors are required to take CHEM 341 (Physical Chemistry I, covering the two major topics of thermodynamics and kinetics) and CHEM 342 (Physical Chemistry II, covering the two major topics of electrochemistry and quantum mechanics).

[The remainder of the page is heavily obscured by horizontal black bars, rendering the text illegible.]

C7 Does any professional society recommend enrollment limits or parameters for a course of this

Our professional society does not recommend enrollment limits or parameters on this course.

C8 If this course is a distance education course, see the Implementation of Distance Education Agreement and the Undergraduate Distance Education Review Form in Appendix D and

respond to the questions listed.
The course is not a distance education course.

2. Summary of Proposed Revisions

The original content of CHEM 341 and CHEM 342 has been reorganized from presenting the

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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[REDACTED]

[REDACTED]

**OLD SYLLABUS OF RECORD FOR CHEM 341
PHYSICAL CHEMISTRY I**

I. CATALOG DESCRIPTION

COURSE TITLE: CHEM 341, Physical Chemistry I
NUMBER OF CREDITS: 4 cr (4c-0l-4sh)
PREQUISITES: CHEM 112 or CHEM 114; PHYS 112 or
132; MATH 122, 124 or 128

COURSE DESCRIPTION:

CHEM 341, Physical Chemistry I

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

Subject: Course revision to Physical Chemistry I **From: Anne E Kondo** 02/13/12 09:46 AM

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Dear Devki ,

Attached, please find a proposed course revision for CHEM 341, Physical Chemistry I, which appears as an elective in the BS Physics/Applied Physics. In response to recommendations of the Committee for Professional Training of the

342. Instead of the traditional separation of Thermodynamics/Kinetics (341) and Quantum Mechanics/Spectroscopy (342), the courses will be taught as a Foundation and an Advanced course in Physical Chemistry. Examples of chemical and biochemical applications will be used in CHEM 341. This change will benefit students who take only one PCHEM course. The changes will allow the Chemistry

**Subject: Re: Changes to Physical
Chemistry courses**

From: N. Bharathan <bharathn@iup.edu>

To: Anne E Kondo <akondo@iup.edu>
cc: ssowa@iup.edu Jonathan N. Southard <southard@iup.edu> N. Bharathan

<bharathn@iup.edu>

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Dr. Anne Kondo: You have a well written course proposal. Sounds good to me. I am sure Dr. Sowa must have seen the course proposal too. I spoke to Dr. Southard. He agreed to me fully endorsing the revised proposal. Please find attached the letter of support. Thanks--
N.Bharathan

From: Anne E Kondo

Sent: Monday, February 13, 2012 10:27 AM