
Fall Orientation Bulletin

Ph.D. Degree in Microbiology

August, 2008

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Synopsis of a Graduate Career

Submission of a Ph.D. dissertation containing the results of original, publishable research remains the culminating and defining event of a graduate career. Graduate students achieve that final event in stages, progressing from mostly academic work to full-time research.

During the first year, students take a Core Curriculum designed to introduce all those topics that the faculty consider essential for anyone pursuing research in microbiology and molecular biology. They also take a course during the first semester on how to critically evaluate scientific research papers. In addition, after familiarizing themselves with the faculty and the research interests of the labs, they begin research by engaging in brief projects in three to four laboratories ("rotations").

Towards the end of the first year, students identify a research laboratory in which to do their dissertation research, and assemble a dissertation committee to help oversee the research. At this point, the student's research usually begins in earnest.

During the second year, research occupies an increasing portion of a student's time, and formal academic work usually occupies a decreasing fraction. The dissertation committee is formed and students also take a course on writing grant proposals. In addition, second-year students begin fulfilling the Advanced Course requirement.

The culminating event of the second year is the Preliminary Examination, which students take during the summer. This examination seeks to determine whether, through his/her academic and independent study and research experiences, a student has successfully prepared themselves for independent work. Students who pass the exam are admitted to formal candidacy for the Ph.D. degree.

Once admitted to candidacy, students spend the majority of their remaining time in graduate school working on their research projects. However, the dissertation is not the sole remaining requirement. First, we require that every student do some teaching during the course of her/his graduate career. Second, each student must enroll (during year 3) in a half-semester course devoted to research ethics and other aspects of the life of a scientist. Finally, we expect that all graduate students, irrespective of year, will attend and participate in Microbiology Journal/Research Club (M850), the weekly research seminars, and the departmental series of seminars by visiting speakers.

The First Year of Graduate School

Fall Semester: Students take 4 courses: B501, L585, L523, and M500 for a total of 12 credits.

B501 and L585 (each 4.5 credits) are parts of our "Core Curriculum" for all first-year graduate students. Previously, we asked first- and second-year students to choose from among a variety of introductory courses in different areas. The Core Curriculum now includes the most essential material from all those courses. We think it provides a better, more efficient, and more exciting way to begin graduate study.

The instructors for the 2008 Fall Core are below:

B501*	<u>Integrated Biochemistry</u>	Oakley, Ellison, Giedroc
L585**	<u>Molecular Genetics and Bioinformatics</u>	Nelson, Andrews, Cherbas

*Students who have not had Biochemistry or Molecular Biology or who consider their background in those areas to be weak may prefer to take C483 Biological Chemistry or C485 Biosynthesis and Physiology, instead of B501. Although C483 and C485 are formally advanced undergraduate courses, they carry graduate credit as well. Students who take C483 or C485, and then join labs with an emphasis on biochemical approaches, should take B501 during the second or third year of graduate school as an Advanced Course.

**Students who have not had Genetics or who have a weak background in Genetics are encouraged to take M480 Microbial and Molecular Genetics (undergraduate level but also carries graduate credit) their first year and L585 Molecular Genetics their second year.

L523 (1.5 credits) is Critical Analysis of the Scientific Literature. This course meets one evening a week for half of the semester (8 weeks). Each session focuses on detailed examination of the techniques, results, and interpretations presented in one scientific paper. The papers chosen and discussion format used are designed to teach students how to critically evaluate scientific data and writing for themselves. **Note:** Students may elect to take B502, Analysis of the Biochemical Literature (1.5 credits) instead of L523. Both courses have similar goals and format.

M500 (1.5 credits) is Introduction to Research. This is essentially research rotations. The rotations are designed to enable students to sample the interests, approaches, and styles of individual laboratories (3-4) in some depth. It is expected that rotating students will participate in some aspect of on-going research, usually by carrying out a small project under supervision. Although the 8 weeks of a rotation are only occasionally long enough to permit a project to be finished, this period will provide a student with considerable opportunity to learn how the laboratory approaches science.

Microbiology Seminar (M850) requirement: Microbiology students must participate in the Microbiology Seminar, which meets Tuesdays at 12:20 PM during the Fall and Spring semesters. Students are required to register for M850 each semester after the first semester until they have completed their required 90 course credits, attend each meeting, attend practice talks as requested, and give at least one Journal Club and one Research Seminar presentation over the course of their graduate career. Students in their dissertation years (usually after the third year) do not have to register for M850 but must still attend the weekly seminar, attend practice talks as requested, and may need to give a presentation. During the semester when they are writing their dissertation, students do not have to give a presentation but are still required to attend the weekly seminar.

Academic Standing: The college requires that students must obtain a GPA of at least 3.0 in courses or they are placed on academic probation. If the GPA is lower than 3.0 for two consecutive semesters students will be dismissed from the graduate program by the college. However, a GPA of 3.2 is required by the Department of Biology for a student to remain in “good standing” and retain a merit-based fellowship, award or teaching assistantship (see Satisfactory Progress and Course Work Requirements sections).

Faculty mentor: A faculty mentor will be assigned to each incoming graduate student. Our mentoring program is designed to offer every student an "advisor" prior to their settling into a dissertation lab. Students will meet periodically with their mentor throughout the first year, and should consult with him/her if questions or problems with coursework or rotations arise.

Spring Semester: Take a total of 12 credits

Required: Z620 Bacterial Cell Biology, Regulation and Environmental Responses (3 credits)
 M850 Microbiology Seminar/Journal Club (1 credit), see above
 M500 Research Rotations (1.5 credits)

Electives:

Students should take one of the other two, 3-credit spring core courses, L586 Cell Biology or L587 Developmental Biology. Although students may opt to focus on these courses only, other course offerings include but are not limited to:

L321 Principles of Immunology

M430 Virology

M525 Microbial Physiology and Biochemistry

Z620 Special Topics (Examples; Two-Component Regulatory Systems; Plasmids and Conjugative Elements and Conjugation)

Additional courses from this or other departments can be substituted with written permission of the Microbiology Program Director.

Other First-Year Activities:

If a student's native language is not English, they must become sufficiently fluent to pass the University A.I. English fluency examination during the course of the first year.

Throughout students' graduate careers, we expect them to attend and participate in our departmental seminar series (***Check "This Week in Biology"*** on the Biology Dept. Website under Events)

1. MBG and Microbiology Journal Clubs. Mondays and Tuesdays, 12:20 - 1:10 pm
2. GCDB and BMB research seminars. Fridays, 12:20 - 1:10 pm
3. MBG, Microbiology, and Genomics guest seminars. Tuesdays and Thursdays, 4:00 - 5:00 pm
4. Biochemistry guest seminars. Usually Friday, 2:30-3:30 pm in the Chemistry Bldg., Rm 033

Entry into a Research Laboratory:

By the end of the final rotation (may be after Spring Rotation I or II, or after Fall rotation II for students who performed a early summer rotation), students determine their research lab and mentor. This is a negotiation process, in which the faculty and the students attempt to find a productive and appropriate fit. Students are not guaranteed positions in laboratories, although in practice this is rarely an issue. If students desire additional rotations, they may apply for these with the Microbiology Program Director. It is **very important** to note that entry into a research lab is a requirement for our graduate program, and students must have joined a lab by the beginning of their second year. Exceptions will be made in only the rarest of cases.

Selecting a Minor:

Students must select a minor field distinct from their degree choice. Most commonly a student will select one of the MBG degree programs other than his/her own as minor, or Biochemistry, but other options are also available. In the case of MBG, the Core Program courses meet minor requirements. In other cases, a student may select another minor and must meet any additional requirements set by that minor.

For students from other programs who wish to minor in Microbiology, the requirement is 6 credit hours of work in that field. The course selection should be approved by the director of Microbiology. The L585 core course counts towards this minor.

The Second Year of Graduate School

Courses:

Summary of course requirements after the first year

Z620 Special Topics (2 courses of 1.5 credits), one of which must be offered by the Biology Department and designated as appropriate by the degree program

Grant Writing (Z620) during the second year

Research Ethics and Careers (Z620) during the third year

M850 (Microbiology Seminar) each semester it is offered (see description of this requirement above)

The second year is when dissertation research starts in earnest. In addition to research, students must take two Z620 Advanced Courses, Grant Writing (Z620), Research Ethics and Careers (Z620, explores practical and ethical issues in scientific careers), and Microbiology Seminar (M850). The Z620 Advanced Courses are half-semester (8-week) courses devoted to specialized, advanced subjects. Some will consist mostly of lectures, some will be seminars - most will be mixtures. We typically offer 4-6 different Z620 Advanced Courses in any one year, and the offerings change from year to year, to offer students maximum diversity. Students may also substitute one or more regular graduate course electives (400 and 500 level graduate courses) for Z620 Advanced Courses with one graduate course being equivalent of two Z620 courses. The schedule of Advanced Courses for recent years is shown below, to provide an example of typical course offerings.

Advanced Courses

Fall 2005	Fuqua	Molecular Genetics (L585)
	Hardy	Microbiology Seminar (M850)
	Ybe	Proteins: Sequence to Struc./Function (Z620)
	Stein	Microscopy (Z620)
Spring 2006	Fuqua	Microbiology Seminar (M850)
	Hardy	Molecular Virology and Public Health (Z620)
	Moczek	Developmental Plasticity and Evo. (Z620)
	Ellison	Advanced Nucleic Acids (B601)
	Dalkilic	Bioinformatics (L529)

Fall 2006	Foster	Molecular Genetics (L585)
	Fuqua	Microbiology Seminar (M850)
	Kaufman	Grant Writing (Z620)
	Stone	Macromolecular Struc. & Interaction (B503)
	Jakobsson	Genome Biology (L504)
Spring 2007	Brun	Microbiology Seminar (M850)
	Winkler	Two-Component Regulatory Systems (Z620)
	Chen	Microbial Biochemistry and Physiol. (M525)
Fall 2007	Ellison	Advanced Nucleic Acids (B601)
	Fuqua	Molecular Genetics (L585)
	Kearns	Microbiology Seminar (M850)
	Donahue/Hangarter	Grant Writing (Z620)
	Ye	Genome Biology (L504)
Spring 2008	Stein	Microscopy (Z620)
	Brun	Microbiology Seminar (M850)
	Hardy	Molecular Virology and Public Health (Z620)
	Fuqua	Plasmids and Conjugative Elements (Z620)
	Chen	Microbial Biochemistry and Physiol. (M525)
	Giedroc	Macromolecular Struc.& Interaction (B603)

Research and the Advisory Committee:

For most students, the second year is when research begins in earnest. Sometimes students are tempted to try to fill their schedules with other activities in an effort to meet requirements early. This is not a good idea. It is very important for students to use the second year to become immersed in the research of their chosen lab, and organize their dissertation advisory committee. Success in the Preliminary Exam (at the end of the second year) requires such immersion.

Students must organize and meet with their Advisory Committee during the fall semester or early in the spring semester of their second year. In addition to their research mentor, the advisory committee is comprised of at least three other faculty members, one of whom must represent the student's minor. In consultation with their research mentors, students invite faculty to serve on their advisory committee. Faculty are not required to serve in this capacity, and may decline, in which case students must invite other faculty, until the committee roster is filled. The first meeting is required for a student to be eligible to take the Preliminary Exam at the end of the second year (see below). In subsequent years of graduate school, students must meet with their Advisory Committee at least once every 12-months. If an additional meeting is deemed necessary, it may be called by the student, research advisor, or advisory committee. Research advisors who accept MIC students into their labs will participate in the advisory committee meetings. Student preparation for the meetings and thoughtful feedback by committee members helps students 1) avoid or minimize pursuing unproductive lines of investigation, 2) produce careful and thorough studies, and 3) think critically and creatively about interpretations and possible future directions. Critical in-depth analysis and discussion of recent data and plans for the overall research project are crucial for the development of any research program.

Prior to each meeting with the Advisory Committee, students should write up and distribute to the committee members a summary of research efforts, results to date, and plans for the future. After each meeting, the student and the research advisor, in consultation with the Advisory Committee, should write

up a summary of the meeting and indicate whether the student is making sufficient progress toward completing a dissertation. The summary reports should then be submitted to the graduate office for inclusion in the department records. If progress is judged to be unsatisfactory, probation may be recommended (see section below).

Preliminary Exam (at the end of the second year)

During the summer following the second year of graduate school, students take a Preliminary Examination. The Preliminary Exam is a traditional part of Ph.D. programs. Its purpose is to establish that students have successfully made the transition from purely academic study to independent learning, are adequately prepared for research, and are already making adequate progress toward a dissertation. The current format of the Preliminary Exam is as follows. Working independently, each student writes a detailed proposal, in the style of a grant proposal, describing an area for research, analyzing the current state of our knowledge in that area, identifying important questions for research, describing experiments to address the questions, and summarizing progress on the project. In general, the research topic will be chosen to reflect the student's research area, and the proposal should describe progress made to date and future experiments that the student plans to carry out. The student meets with an examination committee of 3 faculty for ~3 hours to present his/her proposal and to be examined orally on it and on matters related to it. At the end of the exam, the faculty will confer with the student on strengths and weaknesses of the proposal and defense, communicating whether the student has passed or must proceed through a second examination round.

If a student writes a an excellent to outstanding proposal, displays mastery of the research area (not just techniques), has made adequate progress on the initial phases of the project, and proposes well thought-out future experiments and possible outcomes, the student will pass. Evidence of research progress from the initial phases of the of the project is highly desirable. If a student writes a poor proposal or exhibits a deficiency in knowledge or understanding, the student will be requested to retake the exam. In the latter case, the examining committee will indicate to the student the nature of the deficiencies and specific areas of emphasis for a retake of the exam. Students who pass the first or second round of the exam are equivalently admitted to candidacy for the Ph.D.

A student who does not pass the Preliminary Exam may not continue in the Ph.D. program. On a case-by-case basis, students who are otherwise in good academic standing may be admitted to a program leading to the Masters Degree.

The Third Year of Graduate School

During the third year, the main activities are research, seminars, and taking additional Advanced Courses. In addition, we require that students enroll in a course on Research Ethics and Career Development, a half-semester course that explores practical and ethical issues in scientific careers and different types of career options. Some students may also meet the teaching requirement during their third year.

Satisfactory Progress Toward a Ph.D. Degree

After passing the Preliminary Exam, for a student to remain in "good standing" in the Microbiology program requires that she/he be making sufficient progress toward completing a dissertation and maintains a GPA of at least 3.0. If the research advisor and/or other members of the Advisory Committee become concerned about or dissatisfied with a student's progress or efforts, a meeting of the student with the Advisory Committee must be called, to discuss the reason(s) for concern/dissatisfaction. If the Committee determines that the student's progress is not satisfactory, or if the overall GPA is below 3.0, then the student will be placed on probation. The probationary period (usually a semester) will provide an opportunity for the student to demonstrate effectiveness and progress in research. This research may be conducted in the same lab with the same research advisor. However, a student may apply for permission to continue in a new lab with a different research advisor. Students without a faculty advisor will be put on probation and given one semester to find a new advisor. To remain in the graduate program, a student must have a faculty advisor. At the end of the probationary period, if the Advisory Committee judges the student's progress to be satisfactory, then probation will be lifted. If the Advisory Committee judges the student's progress to remain unsatisfactory, then the student will be required to leave the Program and any departmental commitment for further financial support for the student will be suspended at the end of the semester during which the student is discharged from the program.

Completing a Dissertation

Once a student has passed the Preliminary Exam and all of the other requirements mentioned in these pages, research toward the Ph.D. dissertation becomes the focus of her/his work. There are two timing rules to be aware of: the advisory committee must meet at least once each year to evaluate the progress of the research, and the dissertation must be accepted formally within 7 years following admission to candidacy.

The dissertation itself must represent a body of independent, publishable work that makes a significant contribution to science. Ph.D. degrees are not awarded for purely academic achievement, nor in recognition of "time served".

It is also important that students understand the University's formalities for enrollment in courses and for tuition charges. For each of the first 3-4 years of enrollment, students can take up to 12 credits of course work during each semester of the academic year and up to 6 credits during the summer. These credits come from lecture courses, seminar courses, and research (initially as M500 for rotations and later as M800). Students will normally have completed 90 hours of coursework by the end of the 3rd or 4th year. Students who have completed 90 hours are thereafter eligible to enroll in G901 (advanced research; 6 credits/semester during the academic year) in place of L800, at greatly reduced tuition rates. The University permits a student to enroll in G901 for up to 3 years. If a student should exhaust this eligibility for G901, his/her tuition will return to the original higher level.

Once the student and his/her advisor agree that the dissertation project is nearly done, a student should begin to plan the dissertation defense. The student must have an advisory committee meeting six months before they plan to finish, ensuring that all members of the committee agree that sufficient research has been completed for the dissertation. First, the student should select a date for the defense when all of the dissertation committee members can be present. Prior to the defense, each committee member must receive a copy of the dissertation that both the student and her/his advisor consider as complete and polished - it should be properly formatted and printed and include all figures and references. Our rules state that this copy must be submitted to the committee no later than 6 weeks prior to the defense. However, it is often possible to shorten this period by agreement with the individual committee members, and 2 weeks is more common. Committee members are expected to read the dissertation promptly and carefully. If they have major objections, they will express them at this stage and the defense may be deferred. It is more common that committee members will suggest revision of only portions of the dissertation, and then they may reserve their comments for the doctoral defense.

The doctoral defense comprises two parts. It begins with a public presentation (i.e. a seminar), which must be announced in advance; the University Graduate School requires that a 1-page summary and announcement of the dissertation be submitted 30 days prior to the scheduled defense, and the student must arrange to have the seminar posted in "This Week in Biology. Following the presentation, the candidate meets with the dissertation committee and is examined on the contents of the dissertation. Dissertations may be accepted in their current form (rare), rejected (also rare), or accepted pending revision (common). Once a dissertation has been revised to meet the committee's standards and the University's format requirements, the committee and research advisor certify its acceptance to the Graduate School and recommend that the Ph.D. degree be awarded.

Course Work -- General Requirements

A student must maintain a minimum grade point average of 3.2 in order to remain in "good standing" and retain a merit-based fellowship or award. Furthermore, in order for a course to count toward degree requirements, it must be passed with a grade of B- or better. At Indiana University grade points are assigned according to the following scale:

A	=	4.0
A-	=	3.7
B+	=	3.3
B	=	3.0
B-	=	2.7
C+	=	2.3

Minor degree requirements:

The graduate school requires that each student declare a "minor" in a field other than his/her major field of study. The most common minors are in MCDB, Genetics, and Biochemistry. For entering students, the MCDB, Genetics, and Plant Science minor requirement is trivial - it is fulfilled by the Core Course. No additional courses are required. Therefore, when a student selects a Ph.D. degree program, they may simply select one of the other areas to be the minor. Other possible minors are plant sciences,

biochemistry, evolutionary biology, zoology, chemistry, organic chemistry, and perhaps other fields. The requirements for a minor in one of these areas are set by the minor field.

Seminar Series

A major part of the life of any scientific institution is the sharing of information through formal and informal seminars. We conduct a number of regular seminar programs. It is essential that all graduate students attend these seminars and, when appropriate, participate in them. Their importance rivals that of formal academic work.

Journal Club (MBG, Monday and Microbiology, Tuesday, 12:20pm) is a forum for reviewing important recent papers. Each week a student, postdoc, or faculty member describes and critically analyzes a recent paper. Senior microbiology graduate students present their own research instead of covering a paper.

GCDB and BMB Research Seminars (Friday, 12:20pm) are presentations on work-in-progress by graduate students, postdocs, and faculty. The evolution of virtually every dissertation project involves 2-3 of these presentations, often associated with dissertation committee meetings. There is no better forum for learning how research actually progresses, for discovering what goes into a Ph.D. dissertation, or for obtaining helpful criticism.

MBG, Microbiology, and Genomics Guest Seminars (Tuesday and Thursday, 4:00pm) are presentations by distinguished visiting speakers. There is always an opportunity (usually immediately following the talk) for graduate students to meet with and question the speaker.

Biochemistry Seminars (usually Friday, 2:30pm, in the Chemistry Bldg. Rm 033) are sponsored by the Chemistry and Biology departments.

The Teaching Requirement

Ph.D. candidates are participants in a venerable tradition that involves both learning and passing on knowledge. They have a responsibility to help teach others and to refine their ability to do so effectively. In recognition of this responsibility, all Ph.D. programs in the department require that each student teach at least one semester during his/her graduate career.

It is also a requirement of the College of Arts and Sciences that all Ph.D. students take formal instruction in college teaching methods. There are usually several options for meeting this requirement; for example, the requirement can currently be satisfied by attending the Howard Hughes Medical Initiative Teaching Workshop, held the week preceding the fall semester, or by taking the course L555, Seminar in Approaches to College Teaching or a Z620 course on teaching.

Student Rights and Responsibilities

As members of the Indiana University academic community, graduate students have both rights and responsibilities. Minimally, students have the right to be free of racial and sexual harassment, whether by other students or by faculty. They should also expect to be treated fairly, impartially, and with dignity as colleagues in the academic enterprise. Some of these rights are protected by specific University regulations described in the "Academic Handbook" and the "Code of Student Ethics". More informally, students should feel free to bring problems to the attention of their program directors, the Director of Graduate Studies or the departmental chairperson.

Students also have responsibilities both as scholars and as teachers. As teachers they are subject to the same rules that apply to permanent faculty, rules that are designed to protect students against bias and harassment. Associate Instructors (A.I.s) should make themselves aware of these rules. Beyond the rules, A.I.s should be aware that they will be important role models to undergraduates and that their behavior toward their students should be beyond reproach.

For members of the scholarly community, the cardinal rule guiding both academic and research work is one of honesty and open attribution. Plagiarism, cheating, and forgery will not be tolerated and will be punished severely when detected. Credit for ideas, experiments, models, etc. must be given to their originators. Undergraduate courses are often lax in their enforcement of such regulations since undergraduates are frequently confused about the origins of ideas. Graduate students are expected to be informed on such matters, and faculty are alert to intellectual theft whether in papers, examinations, or purportedly original work.

Plagiarism - Definition, Guidelines, and Consequences

For members of the scholarly community, the cardinal rule guiding both academic and research work is one of honesty and open attribution. Plagiarism, cheating, and forgery will not be tolerated and will be punished severely when detected. Credit for ideas, experiments, models, etc. must be given to their originators. Undergraduate courses are often lax in their enforcement of such regulations since undergraduates are frequently confused about the origins of ideas. Graduate students are expected to be informed on such matters, and faculty are alert to intellectual theft whether in papers, examinations, or purportedly original work.

Indiana University Academic Handbook, June, 1997, p. 124:

"Honesty requires that any ideas or materials taken from another source for either written or oral use must be fully acknowledged. Offering the work of someone else as one's own is **plagiarism**. The language or ideas thus taken from another may range from isolated formulas, sentences, or paragraphs to entire articles copied from books, periodicals, speeches, or the writings of other students. The offering of materials assembled or collected by others in the form of projects or collections without acknowledgement also is considered **plagiarism**. Any student who fails to give credit for ideas or materials taken from another source is guilty of **plagiarism**."

In assignments for class and in research articles you write in the future, your writing should:

- reflect your thinking about and interpreting what you read and hear
- express ideas in your own words
- give credit to the sources of the ideas

A good strategy is to make yourself to do the writing without the primary references in front of you. That will force you to use your own words.

Here are some reasons students have given for plagiarizing:

- "The author said it so precisely and clearly, and I knew I couldn't do a better job."
- "I knew it was wrong, but I didn't have time to write a really clear answer."
- "I just didn't feel I understood the answer well enough to use my own words."
- "I really did understand the material, but I thought it was better to use the language from the paper to show that I understood the right answer."

When cases of plagiarism are discovered, the disciplinary actions are severe:

-- After a 1st incident of plagiarism, we will assign a 0 on the assignment that contained a plagiarized portion or portions, and we will notify the Dean of the Graduate School of the incident and our action. Note that in the Preliminary Examination, a first incident of plagiarism may lead to the grade of 0 on the full Preliminary Exam, even if the plagiarism occurs in the first attempt at the written part of the exam. In such a case, the student would have failed the Preliminary Exam and would not be able to continue in the Ph.D. program.

-- After a 2nd incident of plagiarism, we will recommend to the Dean of the Graduate School that the student be expelled from our graduate program.

You are now entering a training program in which you will be asked often to evaluate the ideas, data, and conclusions from journal articles, reviews, the web, and other sources. In addition to avoiding outright plagiarism (as described above), you should also avoid mindlessly stitching together ideas from various sources even if they are appropriately referenced. You need to gather ideas and information together, synthesize your own "big picture", and then describe your thoughts in your own words, citing your sources for the ideas and information you discuss.

One last point ... even when you cite a source, it is not appropriate to directly copy the wording from that source. Providing a reference does not give you permission to use that reference's text directly. You should instead express the idea(s) in your own words, unless it is more appropriate to use properly cited direct quotes (rare in scientific writing).

Examples of plagiarism

Indiana University Academic Handbook, June, 1997, p. 124:

"Honesty requires that any ideas or materials taken from another source for either written or oral use must be fully acknowledged. Offering the work of someone else as one's own is plagiarism. The language or ideas thus taken from another may range from isolated formulas, sentences, or paragraphs to entire articles copied from books, periodicals, speeches, or the writings of other students. The offering of materials assembled or collected by others in the form of projects or collections without acknowledgement also is considered plagiarism. Any student who fails to give credit for ideas or materials taken from another source is guilty of plagiarism."

I could transmit this information to you one of several ways:

Copying directly, without giving credit:

-- Plagiarism is a form of dishonesty and cheating and is not tolerated at this university.
Honesty requires that any ideas or materials taken from another source for either written or oral use must be fully acknowledged.

} **not permitted**

Copying and modifying some words, without giving credit:

-- Plagiarism is a form of dishonesty and cheating and is not tolerated at this university.
Honesty demands that any thoughts or methods taken from another place for either written or oral use must be fully cited.

} **also not permitted**

Restructuring the content to disguise the original, without giving credit:

-- Plagiarism is a form of dishonesty and cheating and is not tolerated at this university.
Whether taken for either written or oral use, you must fully acknowledge ideas or materials taken from another source in order to be honest.

} **also not permitted**

Copying directly, and giving credit:

-- Plagiarism is a form of dishonesty and cheating and is not tolerated at this university.
The Indiana University Academic Handbook states that "Honesty requires that any ideas or materials taken from another source for either written or oral use must be fully acknowledged."

Putting the general idea into my own words and telling you where it came from:

-- Plagiarism, the copying of material from another person or text without giving credit to that person or text, is a form of dishonesty and cheating and is not tolerated at this university. This is explained more fully in the Academic Handbook.

Plagiarism tutorial requirement

An excellent tutorial on plagiarism has been prepared by the Indiana University Instructional Systems Technology Department. You are required to complete this tutorial and to pass an online test, upon successful completion of which you will be able to print a confirmation certificate.

IU Plagiarism Tutorial site: <http://www.indiana.edu/~istd/>

Your plagiarism tutorial confirmation certificate must be brought to Gretchen by 4 PM on August 31st, 2007. Note that this certificate indicates that you understand plagiarism. If you do not understand it after going through the tutorial, please discuss this with your professors.

The following info is reproduced verbatim from the web site: "This tutorial is divided into sections:

- [The Indiana University Definition](#)
- [Overview](#): when and how to give credit; recommendations; decision flowchart
- [Plagiarism Cases](#): links to Web sites describing real plagiarism cases
- [Examples](#): word-for-word and paraphrasing plagiarism -- 5 examples each
- [Practice with feedback](#): identifying plagiarism -- 10 items
- [Test](#): if you pass, you get a confirmation certificate

- **Resources:** Web sites, books, dictionary links, references”
In order to understand of plagiarism well, you should go through each section carefully

Financial Assistance

Students who are U.S. citizens may be eligible for support from the training grants (eg. The NIH Genetics and Molecular Sciences Training Grant). Assignments to the training grant are made as vacancies arise and take into account students' accomplishments and interests. Assignments are generally made in response to nominations by students' advisors. Please note that an NIH research-teaching payback provision is in effect on training grant support.

In addition, all students may be eligible for support by a number of Graduate Fellowships awarded under the auspices of the College of Arts and Sciences and the Indiana Molecular Biology Institute. Students are also eligible for Biology Associate Instructorships, which provide full stipend support and require at most 20 hours teaching per week. Finally, many advanced program students are supported as Research Assistants on the research grants of their research advisors.

The University sets standards of English competence for A.I.s. To make sure that all funding options are available to students whose native language is not English, it is critically important that foreign students meet those standards as early as possible during their graduate careers.

Microbiology Research Advisors

Carl Bauer	Regulation of photosynthesis; biosynthesis of chlorophyll; phototaxis
Jim Bever	Ecology and evolution of plants and fungi
Yves Brun	Mechanisms and regulation of bacterial cell division and differentiation
Lingling Chen	Structural studies of molecular chaperones and quorum sensing
Keith Clay	Plant ecology, plant/fungal and invertebrate/microbe interactions
Pranav Danthi	Molecular biology of reoviruses – cell death and disease
Jim Drummond	Biochemistry of DNA repair and metabolism
Pat Foster	Mutagenesis, DNA replication, and recombination
Clay Fuqua	Mechanisms and consequences of microbial interactions
David Giedroc (C)	Metal biochemistry and RNA structure/function
Richard Hardy	Genome functions of RNA viruses and the roles of trans-acting factors
Ke Hu	Apicomplexan parasites and cytoskeletal biogenesis
Roger Innes	Molecular genetics of plant/pathogen interactions
David Kehoe	Molecular genetics of light-regulated signal transduction
Daniel Kearns	Bacterial multicellular behavior
Melanie Marketon	Pathogenesis and host cell interactions of <i>Yersinia pestis</i>
Tuli Mukhopadhyay	Structure and assembly of enveloped, RNA viruses
David Nelson	Chlamydial virulence and immune response
Jeff Palmer	Molecular evolution; origin and evolution of introns and organelle genomes

Flynn Picardal (S)	Environmental microbiology, biogeochemistry, and bioremediation
Rich Phillips	Biogeochemical consequences of plant-soil-microbial interactions
Heather Reynolds	Plant community ecology; plant-microbe interactions
Sidney Shaw	Microtubule dynamics and organization in acentriolar <i>Arabidopsis</i> cells
Gregory Velicer	Sociobiology of myxobacteria
Malcolm Winkler	Molecular mechanisms of bacterial pathogenesis
Miriam Zolan	Meiosis and DNA repair

C = adjunct with Chemistry

MS = adjunct with Medical Sciences

S = adjunct with School of Public and Environmental Affairs