

The ability to write cogently, concisely and clearly in an acceptable academic format and to present the results of your research orally are skills you must develop to be a success in our program. At the same time, you will be learning skills essential to success in your working life after graduation, as the ability to communicate clearly in written and spoken English is one the most important elements to success in business. You will regularly be expected to submit research papers and project reports as you progress through our program. Here's some key advice to help you succeed.

Format of Research Papers: Unless your professor gives you different instructions, you should prepare ITM research papers in the formats prescribed by the **Publication Manual of the American Psychological Association**, (commonly referred to as **APA**), which are very common styles in use for scholarly publications and academic papers. APA format is the ITM Department format and is the most common in computing disciplines. Among other things, APA format means that you should submit your paper typed in 10, 11, or 12-point type (no larger than 12-point), double-spaced, with 1 inch margins on one side of 8½ inch by 11 inch paper or the digital equivalent. Quotations, figure captions and the list of references should all be double-spaced. Devote separate pages to each figure, each table and the list of references, and number all pages after the first. Attach a cover sheet listing the paper title and the name and email address of the author. If submitting electronically, please submit as a PDF file or in Rich Text Format. Most word processors can save as RTF. Your professor may prescribe specific required or acceptable electronic formats. (See page 3 of this document for information on formatting your Master's thesis or formatting papers submitted for academic journal or conference publication.)

Title: Make your title short and specific. Ideally, titles should be 5 or 6 words long, never more than 10.

Length: Make papers as concise as possible; 8 to 12 pages should be reasonable for an undergraduate ITM research paper, while 15 to 20 pages would be more common for a graduate research paper. Note that your professor may prescribe a different length expectation and in some cases they may be quite a bit shorter. Please count only pages containing body text; figures, tables, the abstract, references and bibliography do not toward the page total.

Headings: Please try to use only one level or at most two levels of heading.

Running Head: Despite what it might *appear* to say in the APA guidelines, it is NOT necessary to place the words "Running Head:" in page headers; just put the abbreviated title of your paper in all uppercase letters ("all caps") in the header of each page.

Figures and Tables: Please submit copies of any figures and tables on separate sheets of paper. They should have captions that are interesting, that are written in complete sentences, and that fully explain and interpret the exhibit without forcing the reader to refer to the text. Conversely, the reader should not have to refer back and forth from the text to the figures to understand the paper. You should refer to figures where appropriate with "(Figure 1)," but you should explain the meaning and implications of your data fully in the text. Do not require the reader to interpret the figure to understand what you have done, as in "Figure 1 shows the outcome of this survey." Tables should list information in some obvious logical order.

References: Cite references in the body of the text: "Shrump (1998) quibbled that ..." or if 1998 was a prolific year for Shrump, "(1998)." If the author is not cited in the body of the text, then use the form (Shrump 1998) for your citations. Include **all references cited** in a bibliography which according to APA standards should be titled "**References**". Alphabetize your references by the name of the first author or the first word of the reference.

For articles use the form

Smith, James Q. (1978) Title of article. Title of Journal or Periodical, 10(5) 45-50.

and for books,

Toklas, Alice B. (1947) Book title. Publisher's name, City, State (or Country).

and for collections of papers,

Beedle, Albert A. (1979) Title of chapter. J.J. Fox, ed. Book title. Publisher's name, City, State (or Country), 556-572.

and for material online,

Bly, Laura (2000) Upstart airfare site beats the big boys. USA Today.com, April 21, retrieved on October 23, 2000 from (www.usatoday.com/life/travel/leisure/2000/ltl227.htm).

- ◆ Note that APA style requires indentation of the second and subsequent lines of references, book and periodical titles must be italicized, and that only the first word of a book title should be capitalized unless subsequent words would otherwise be capitalized (i.e. proper nouns, etc.)
- ◆ If there is no author given, cite the title, or if is published by a government agency, association, or corporation, cite the name of the agency, association, or corporate entity.
- ◆ If a reference includes a DOI (Digital Object Identifier), always include the DOI in your reference.

Footnotes: Avoid footnotes. If what they contain is important, it deserves a place in the text. If not, don't distract the reader from what is important.

Writing Papers: The following outline suggests an effective way of organizing a paper (it's just a suggestion):

1. Describe the problem;
2. Discuss previous work in the field and any necessary background information
3. Explain what you did, how you did it, and what obstacles you encountered; or provide specific findings of fact that support your proposed solution or thesis;
4. State your solution or conclusion;
5. List the resulting benefits, both quantitative and qualitative; and
6. If applicable, provide an appendix giving particulars of any models used or data collected during the research.

In writing your paper, explain your work so readers outside the field can understand it. If you must use a specialized term, abbreviation, or acronym, make sure you define it; write out an acronym or abbreviation the first time it appears and enclose it in parentheses immediately afterwards.

- ◆ Here is a possible step-by-step breakdown:
 - ◇ Choose an area of interest to you to start your topic selection
 - ◇ Search for publications—both in print and online—related to your topic
 - ◇ Narrow your topic to refine your search results
 - ◇ Formulate a thesis statement to guide your research
 - ✓ A good thesis statement is critical; it's the answer to the question that your paper explores and clearly delineates the argument that will be presented in your paper (see the humorous but accurate explanation to the right →→→)
 - ◇ Scan books to see if they are relevant
 - ✓ Use the Table of Contents & index to quickly locate useful information
 - ✓ The table of contents for many books is now available online at the publisher or on amazon.com
 - ✓ If you find a book you need at Barnes & Nobles or on amazon.com, go to our library and odds are that if they don't have it that they can get it on interlibrary loan
 - ◇ Make notes on, or photocopy, interesting passages as you encounter them
 - ◇ Make notes as you read to capture thoughts, questions, and ideas
 - ◇ Refine your research question and do further information gathering
 - ◇ Compose and write down your thesis
 - ◇ Review and reflect on work done in the field already; discuss any necessary background information
 - ◇ Construct your argument, with the main points organized in an outline
 - ◇ Write a rough draft, expanding the outline to fulfill paper length requirements
 - ◇ Include quotes that support your points
 - ◇ Revise your rough draft to ensure a strong, logical argument
 - ◇ Document *all* works referenced in the preparation of your paper with particular attention on works cited by creating a bibliography, which by APA standards should be entitled "References."
 - ✓ Ensure all quotes and paraphrases are properly cited in the body of your paper
 - ✓ Ensure all sources cited are included in your references
 - ◇ Revise your paper for spelling, punctuation and grammar errors
 - ◇ Print out the final revision of your paper and bibliography or save as PDF or RTF file as necessary

Hulk trying to craft cogent thesis statement.

It tricky to condense entire argument into focused declarative phrase and still assert Hulk's conclusions.



Use of Wikipedia: While *Wikipedia* is a good starting point for research to get an overview and point you to available resources, you cannot cite or quote *Wikipedia* in an assignment in Illinois Tech's Information Technology & Management curriculum. *Wikipedia* is a wonderful resource, but due to its community-edited nature it is not acceptable as a source of material for use in academic writing.

Live, In-Person Help:

- ◆ **The IIT Writing Center** (<https://www.iit.edu/humanities/student-resources/writing-center>) exists only to HELP YOU WRITE YOUR PAPER. Typically, you will take a project or paper assignment to the center, where a tutor will work one-on-one with you to assist with the writing process. There are tutors there who are especially trained to work with students for whom English is a second language but they certainly will work with anyone. The Writing Center is in Siegel Hall rooms 232 and 233. Students may use sign-up sheets on the doors of SH 232 and 233 to reserve a specific time with a tutor. When possible, the Writing Center also accepts students on a walk-in basis without an appointment. Online appointments may be made on the Writing Center [webpage](#).
- ◆ **Illinois Tech's Galvin Library** has *Reference Librarians* who are there specifically to assist you in your research and preparation of citations. If you have specific questions about preparation of your references, they are the experts and they are there to help. They also offer classes to help you learn how to best use library resources. You can also make a research appointment to receive specialized help with your research at <https://library.iit.edu/students/services/research-appointment>.

New student library resources are at <http://library.iit.edu/students/services/new-student-guide/>. Reference sources for information technology are at <https://guides.library.iit.edu/informationtechnology> and at <https://library.iit.edu/find/articles/by-subject/information-technology-and-management>. The Reference Librarian for specific information technology and management queries is Charles Uth, uth@iit.edu / (312) 567-5319

Fundamentals for International Students is a library workshop/tour to help you get familiar with the library building and services, and is usually scheduled during the orientation week or the first two weeks of classes. Tour dates are announced on the library websites and IIT Today. Special library resources for international students can be accessed at <http://library.iit.edu/students/services/international-students/> and the International Student Library guide is at <https://guides.library.iit.edu/internationalstudents>.

Additional Information:

- ◆ For a fine discussion of writing, read William Strunk Jr. and E.B. White's *The Elements of Style*, Allyn and Bacon, Needham Heights, MA.
- ◆ For definitive guidance for preparation of a research paper in APA style, see the American Psychological Association's *Publication Manual of the American Psychological Association*, American Psychological Association, Washington D.C.
- ◆ For a more complete, formal treatment of the process of preparing a paper for publication, see The University of Chicago Press *The Chicago Manual of Style*, University of Chicago Press, Chicago, IL.

- ◆ For sound advice on figures, refer to the series of books by Edward R. Tufte: *The Visual Display of Quantitative Information*, *Envisioning Information*, *Visual Explanations*, and *Beautiful Evidence*, all from **Graphics Press, Cheshire, CT**.

Other very useful resources for preparing papers:

- ◆ *The IIT Writing Center*: <https://www.iit.edu/humanities/student-resources/writing-center>
- ◆ *57 Tips for Writing Your Term Paper* (archived but still valuable): <https://web.archive.org/web/20070226210837/http://www.degreetutor.com:80/library/online-assignments/termpaper-writing>
- ◆ *50 Ways to Increase Your Chances for an “A” Research Paper* (also archived but still valuable; I have the author’s permission to update and republish this but I have to get Rasmussen University’s): <https://web.archive.org/web/20180507084831/http://www.rasmussen.edu/student-life/blogs/main/research-paper-strategies/>
- ◆ *Writing Guides, Indiana University*: <https://wts.indiana.edu/writing-guides/index.html>
- ◆ *OWL at Purdue: The Online Writing Lab* at Purdue University: https://owl.purdue.edu/owl/purdue_owl.html
- ◆ *APA Style*: <http://www.apastyle.org/>
 - ◇ *APA Style* official APA Handouts and Guides on APA citation styles and bibliography entries: <https://apastyle.apa.org/instructional-aids/handouts-guides>
- ◆ *Citing Sources and Bibliographic Styles*: This site provides information about citing sources, plagiarism and three bibliographic styles approved by the Illinois Tech Graduate College: APA style Guide, MLA Style Guide, and Chicago-Turabian Style Guide. <http://www.lib.berkeley.edu/instruct/guides/citations.html>. A similar resource covering the same set of styles plus IEEE is <https://pitt.libguides.com/citationhelp> (All work submitted for ITM should be in APA style unless specified otherwise by your instructor.)
 - ◇ *Easybib.com* is an online resource with an accurate automatic bibliography and citation maker for APA, MLA, and Chicago style formats. <https://www.easybib.com/>
 - ◇ *Zotero* bibliographic software as a standalone program for Windows, Mac or Linux with connecting extensions available for Chrome/Edge, Firefox, and Safari: <http://www.zotero.org/>

Submission of Research for Academic Publication: A key to submission of research for academic conference or journal publication is to ensure that they are correctly formatted for submission. Each conference or journal will have their own format; here are some of the most frequently used.

- ◆ **ACM Journals, Proceedings, and Conferences:** The current ACM publications submission template for Microsoft Word is at http://www.itm.iit.edu/data/ACM_submission_template.docx. Use this to format all ACM paper submissions. If a paper does not perfectly match this template, it may be rejected. If a paper is accepted, a new template will be applied before final submission; full instructions for submissions and the additional templates are at <https://www.acm.org/publications/authors/submissions>.
- ◆ **IEEE publication submission templates:**
 - ◇ *IEEE Conference submission template* for Microsoft Word: <http://www.itm.iit.edu/data/IEEE-conference-template-letter.docx>. Instructions for use of the template are at <https://www.ieee.org/conferences/publishing/templates.html>.
 - ◇ *IEEE CS Magazine submission template* for Microsoft Word: <http://www.itm.iit.edu/data/IEEE-CS-Magazine-template.docx>.
 - ◇ *IEEE Transactions template* for Microsoft Word: <http://www.itm.iit.edu/data/IEEE-Transactions-template-and-instructions-on-how-to-create-your-article.doc>, while specific instructions for use of these templates is at <http://www.itm.iit.edu/data/IEEE-Transactions-instructions-only.pdf>.
 - ◇ There are a variety of templates for IEEE publications and you can ensure that you select the correct one using resources at <https://journals.ieeeauthorcenter.ieee.org/create-your-ieee-journal-article/authoring-tools-and-templates/tools-for-ieee-authors/ieee-article-templates/>.
- ◆ *Other Resources:* For a very nominal cost you can use a commercial service, **typeset**, to format your paper for submission for publication at <https://typeset.io/>. If it’s just one paper, you may even be able to use their free trial option. They will also format your paper for publication in journals and conferences published by **IEEE, ACM, Elsevier, Spring, Wiley**, and many more.

Thesis Submission for Master of Science Students

To be successful in the pursuit of their degree, graduate students submitting a thesis must read and be very familiar with all of the references cited below. A mandatory thesis preparation discussion is held at the beginning of every semester to assist graduate students with the preparation of their theses. The exact date and time is emailed to all graduation applicants by the Office of Graduate Academic Affairs. (<http://bulletin.iit.edu/graduate/academic-policies-procedures/thesis/>)

- ◆ *Thesis Examination:* Details for preparation and submission of your Illinois Tech thesis as well as the thesis examination process are on the **Thesis Examination** page at <https://web.iit.edu/gaa/thesis>. Every thesis-option Master of Science student should become very familiar with all of the content on this page.
- ◆ *Graduate Thesis Manual:* Detailed instructions about how to format your thesis for submission is found in the 2021 edition of this manual at <http://bulletin.iit.edu/graduate-thesis-manual/>. (PDF version at <http://itm.iit.edu/data/2021GraduateThesisManual.pdf>.)
- ◆ *Thesis Template:* The Microsoft Word template for your Illinois Tech thesis is at <https://web.iit.edu/gaa/word-thesis>.
- ◆ *Required Forms:*
 - ◇ **Masters Thesis, Project Review, or Exam Scheduling (Form G300)** Students must arrange their committee with their academic adviser by the end of the third week of classes and the **G300 Form** with committee member names and the examination date must be submitted to the **Graduate Office of Academic Affairs (GAA)** no later than two weeks prior to the exam date. The *Masters Comprehensive/Ph.D. Qualifying Exam Results form (Form G303)* will be sent to the Department for completion as a result of submission of form **G300**, but the G303 form is never available to students.
 - ◇ **Final Thesis Approval (Form G501)** This form is due at least nine days before the end of the semester, during the Fall and Spring terms, and five days before the end of the semester, for Session B Summer term.

- ◆ *Other Important Web References for Master of Science Thesis Students:*
 - ◇ *Graduate Academic Affairs: Dates and Deadlines:* Thesis dates and deadlines for the current term. This is a **must-read** for the term in which you will complete your thesis. <https://web.iit.edu/gaa/students/dates-and-deadlines>
 - ◇ *Graduate Academic Affairs: Thesis Examination FAQs:* <https://web.iit.edu/gaa/thesis-examination-faqs>
 - ◇ *Graduate Bulletin: Graduate Academic Policies and Procedures: Thesis:* <http://bulletin.iit.edu/graduate/academic-policies-procedures/thesis/>
 - ◇ *Graduate Studies Handbook: Examinations:* This includes information on Thesis Oral Examinations and the required composition of Thesis Examination Committees <http://bulletin.iit.edu/grad-handbook/examinations/>
 - ◇ *Graduate Studies Handbook: Adviser Relationship - Graduate Student-Faculty Adviser Relationship:* <http://bulletin.iit.edu/grad-handbook/adviser-relationship/>
- ◆ *Departmental Thesis Information*

Master of Science students electing to do a thesis should be meeting with their research adviser to discuss the thesis no later than the beginning of the semester prior to their final semester of studies. Each student will be assigned a research adviser based on their research areas of interest. The research adviser will normally also be the thesis adviser and must be a tenured or tenure-track member of the faculty. In the Department of Information Technology and Management this currently includes Professors **Nobles, Dawson, Stolley, and Zhang**. Each faculty member eligible to serve as a thesis adviser will have an ITMT 591 section scheduled each term. Students will register for ITMT 591 for terms in which they will conduct thesis research.

 - ◇ *Research Faculty areas of interest:*
 - ✓ Associate Professor **Calvin Nobles:** Cybersecurity, human factors, business and management, governance
 - ✓ Assistant Professor **Maurice Dawson:** Cybersecurity, Internet of Things, software assurance
 - ✓ Associate Professor **Karl Stolley:** Web development, Web RTC, application development, Application Programming Interfaces
 - ✓ Assistant Professor **Yong Zheng:** Recommender systems, artificial intelligence, behavior analytics, data mining and machine learning, data management
 - ◇ *Thesis Examiner Appointment:* An initial thesis appointment with the Thesis Examiner must occur no later than six weeks before the end of the term in which the thesis will be defended, but may occur earlier. At this meeting students will be expected to share with the Examiner preliminary pages; at least one chapter that has tables and/or figures, if applicable; the appendix, if applicable; and the bibliography.
 - ◇ *Thesis Committee:* The Thesis Committee must have at least two members who must be drawn from Professors Nobles, Dawson, Stolley, and Zhang; students may elect to have a third committee member who is a tenured or tenure track faculty member from outside the department, or an outside member who may be a teaching faculty member in the department.
 - ◇ *Thesis Defense:* Students must defend their thesis in an oral presentation before their Thesis Committee which shall constitute the comprehensive examination for their degree. At least **two weeks prior** to the thesis defense, the completed thesis must be distributed to each committee member for review and comment. (<http://bulletin.iit.edu/grad-handbook/thesis-examination/>.) The thesis must be defended and then approved by the Thesis Committee and must be submitted **no later than fifteen days before the end of the term** (Master's Thesis Examination, <http://bulletin.iit.edu/graduate/academic-policies-procedures/examinations/>.) The graduate student must be registered in the semester in which the thesis is defended.

Project Submission for Master of Science Students

Master of Science students electing to do a project should be meeting with their research adviser to discuss the project no later than the beginning of the semester prior to their final semester of studies. Each student will be assigned a research adviser based on their research areas of interest. The research adviser will normally also be the project adviser and must be a tenured or tenure-track member of the faculty. In the Department of Information Technology and Management this currently includes Professors **Nobles, Dawson, Stolley, and Zhang**. Each faculty member eligible to serve as a project adviser will have an ITMT 597 section scheduled each term. Students will register for ITMT 597 for terms in which they will conduct project research.

- ◆ *Research Faculty areas of interest:*
 - ◇ Associate Professor **Calvin Nobles:** Cybersecurity, human factors, business and management, governance
 - ◇ Assistant Professor **Maurice Dawson:** Cybersecurity, Internet of Things, software assurance
 - ◇ Associate Professor **Karl Stolley:** Web development, Web RTC, application development, Application Programming Interfaces
 - ◇ Assistant Professor **Yong Zheng:** Recommender systems, artificial intelligence, behavior analytics, data mining and machine learning, data management
- ◆ *Project Examination Committee:* The Project Examination Committee must have at least two members who must be drawn from Professors **Nobles, Dawson, Stolley, and Zhang**; students may elect to have a third committee member who is a tenured or tenure track faculty member from outside the department, or an outside member who may be a teaching faculty member in the department.
- ◆ *Project Submission:* Students must submit documentation of their project and demonstrate and describe their project in an oral presentation before their Project Examination Committee which shall constitute the comprehensive examination for their degree. Documentation submitted for a Master's project must include a paper suitable for academic publication as, at minimum, a conference poster session. (Details of submission of research for academic publication is described above.) The project must be presented and approved by the Committee and submitted **no later than fifteen days before the end of the term** (Comprehensive Examination, <http://bulletin.iit.edu/graduate/academic-policies-procedures/examinations/>.) The graduate student must be registered in the semester in which the project is submitted.

- ◆ *Required Forms:*
 - ◇ *Masters Thesis, Project Review, or Exam Scheduling (Form G300)* Students must arrange their committee with their academic adviser by the end of the third week of classes and the **G300** Form with committee member names and the examination date must be submitted to the Graduate Office of Academic Affairs (GAA) no later than two weeks prior to the exam date. The *Masters Comprehensive/Ph.D. Qualifying Exam Results* form (**Form G303**) will be sent to the Department for completion as a result of submission of form **G300**, but the G303 form is never available to students.