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SECTION I:

DEVELOPING A COURSE STRATEGY
AND OUTLINE

This section is for the instructor who wants to create an effective advanced information systems course. We hope the exhibits, aids, and guidance will save you considerable preparation time, and that any assistants you use to administer or help teach your course can benefit from this information as well.

Section I of this Instructor’s Guide provides advice and guidance in the following general areas.

A. Determining the Course Audience and Course Focus
B. Using this Instructor’s Guide
C. Selecting an Effective Course Delivery Mode
D. Choosing Aids to Stimulate Critical Thinking
E. Preparing the Course Syllabus

The methods and techniques suggested here are especially appropriate for instructors who may have been apprehensive about teaching an information systems capstone course. These materials should help dismiss uncertainties and enable you to conduct a quality comprehensive course with confidence.

For instructors with considerable experience, the ideas presented here may offer some fresh insights into methods and techniques, which we have found to be particularly successful. We believe that the materials contained here, together with the accompanying textbook, will enable all instructors to develop an effective course on managing Information Systems.
A. DETERMINING THE COURSE AUDIENCE AND FOCUS

Students aspiring to be future information system managers are the primary audience (but not the sole audience) for the course. More than likely, they will be majoring in information systems management, or taking a strong minor or concentration in the area. It is assumed they will have taken previously at least one computer information systems concepts or MIS (Management Information Systems) course.

For undergraduates, the course would specifically emphasize the management of information technology. This would reinforce the basic concepts and/or technical perspectives of information technology presented in prior courses. As a capstone course for those about to begin their careers, the course would summarize the practice of information systems – as a prelude to working with the information system managers who are facing the problems and using the principles addressed in the textbook.

At the graduate level, the course would serve as a second, advanced course in IS beyond the mandatory first IS course. Because the textbook is so comprehensive in its coverage of the subject matter, it is particularly well suited to support the final course in a graduate curriculum in information systems management. The emphasis would be on closure with a managerial or executive perspective over a very broad range of information systems related subjects.

Although a second course devoted exclusively to information systems management may not be appropriate for students majoring in other areas, topics such as the strategic use of information systems, system development, knowledge sharing, education and the human issues would be particularly relevant for inclusion in other courses or in a standalone abbreviated information systems course for non-majors. The emphasis there would be to learn about information technology, which has become indigenous to all functional areas and to better understand how to deal with systems professionals.

Some MBA programs tend to not emphasize information systems as an independent focus area, nor do they offer a concentration in IS. Typically, only one IS course is part of the program, with the intent (and hope) that information systems is addressed in an integrated fashion across the curriculum. In such cases, the one IS course would emphasize understanding information technology and IS literacy as well as the emerging issues and strategies rather than just tool use.

For graduate students who are currently employed as systems professionals, whether as technicians or managers, this course can be especially rewarding. The instructors who choose to tap these student resources through the sharing of their relevant personal experiences will find that opportunities abound to enhance both classroom dynamics and subject matter currency. With such groups, a comprehensive, pragmatic emphasis on issues and strategies is particularly relevant and meaningful.
B. USING THIS INSTRUCTOR’S GUIDE

This Instructor’s Guide is designed to support an advanced information systems course that uses the textbook, *Information Systems Management in Practice*, 8th Edition, by Barbara C. McNurlin, Ralph H. Sprague, Jr., and Tung X. Bui. This guide will assist you in accomplishing these two objectives:

1. Prepare a strategy and outline for conducting an effective advanced information systems course.

2. Teach the course using support materials and/or techniques designed to enhance understanding and assimilation of the subject matter.

The audience for this course is described, as is the course focus for each audience. Because you may encounter a variety of students and a diversity of teaching and learning styles, we suggest six (6) possible course delivery modes:

- A Seminar-Based Course
- A Lecture-Based Course
- A Directed-Study Course
- An Independent-Study Course
- An Action-Research Course
- An Online (distance learning) Course

The components of each of these modes are outlined in Section C, which follows. Some of the innovative or experiential components are described in further detail in Section D as aids to stimulate critical thinking. Your role may vary from lecturer to facilitator in each of the six approaches. Chapter-specific materials provided to support instruction, which include chapter overviews, answers to review questions, possible cases, definitions of terms, chapter outline, and critical questions, are contained in Part II of this guide.

Each chapter in Part II contains a set of model critical questions which, like discussion questions in the textbook, are designed to stimulate critical thinking and discussion among your students. Since the critical questions are based on topics for which legitimate differences of opinion may exist, they do not have right or wrong answers per se. Thus, no answers have been provided in this guide.

While this guide provides numerous ideas and techniques for structuring a personal pedagogy that best meets the needs of all parties involved, it does not include everything to ensure your success. You represent the main ingredient!
C. SELECTING AN EFFECTIVE COURSE DELIVERY MODE

To help you to create a course that best meets your and your students’ needs, six delivery modes with suggested support components appear below. Modify them as you feel would best suit your students. See Section D, which follows, for more detailed information and execution suggestions for items marked D.#.

**Seminar-Based Course:**
1. Textbook Subject Matter (pre-read)
2. Discussion Questions (responses in advance)
3. Critical Questions – D.1
4. Exercises in Textbook (occasional site visit) – D.2
5. Chapter Impact Summaries – D.3.a
6. Textual Material Updates – D.3.b
7. Survey Current Literature – D.4
9. Case Studies – D.6
11. Industry Guest Lecturer(s)

**Lecture-Based Course:**
1. Textbook Subject Matter (pre-read or post-read)
2. Review Questions
3. Discussion Questions (written responses)
4. Exercises in Textbook (occasional site visit) – D.2
5. Case Studies – D.6
6. Term Paper(s)
7. Industry Guest Lecturer(s)

**Directed-Study Course:**
1. Textbook Subject Matter
2. Review Questions
3. Discussion Questions (written responses)
4. Critical Questions – D.1
5. Exercises in Textbook (occasional site visit) – D.2
6. Survey Current Literature – D.4
7. Case Studies – D.6
8. Directed Readings (primary research literature)
9. Term Paper(s)
Independent-Study Course:

1. Textbook Subject Matter
2. Exercises in Textbook (including all those in each chapter requiring site visits that would be reported on in writing in a Journal or other form) – D.2
3. Chapter Impact Summaries (all chapters) – D.3.a
4. Textual Material Updates (all chapters) – D.3.b
5. Research Paper(s) – D.7

Action-Research Course:

1. Textbook Subject Matter
2. Exercises from Textbook (occasional site-visits) – D.2
3. Chapter Impact Summaries (all chapters) – D.3.a
4. Textual Material Updates (all chapters) – D.3.b
5. Research Project (student acts as consulting apprentice in industry for prolonged period)
6. Written Journal (synopsis) of Field Experience

Online (distance learning) Course*:

1. Textbook Subject Matter (pre-read)
2. Review Questions (e-mail) responses
3. Discussion Questions (written and private chat room responses)
4. Exercises in Textbook (optional site visits) – D.2
5. Chapter Impact Summaries – D.3.a
6. Textual Material Updates – D.3.b
7. Survey Current Literature – D.4

Please note that the specifics of an online course syllabus depend highly upon the tool that is used to support the online environment. For instance, tools such as public and private bulletin boards, instructor’s blackboards, testing, and grading methods and procedures – the foundation behind any online environment – have been excluded from the above list. Including them here would be tantamount to providing a tutorial on distance learning.
Recommendations from Lessons Learned Teaching Online Courses

There are a variety of important lessons that have been learned by the authors in conducting online courses. Two are shared here so that if you are teaching or are preparing to teach online courses you will be cognizant of some issues you are likely to encounter. With this knowledge you may be able to enhance the pleasure while minimizing the potential dissatisfaction of you and your students as you conduct online courses.

Student Desire for Real-time Interaction – Online students are universally impatient. This is revealed as frustration by the apparent inability to conduct real-time interactions in the three (3) main communication channels in online courses – interactive chat rooms, student/instructor interaction, and student performance feedback.

The current Internet is very heavily used which results in frequent delays and the relative impossibility to conduct real-time interactions at a micro level. Thus most current online courses are geared more to a store and forward philosophy where the sender must wait for responses until the receiver is available and ready to respond. This discontinuity fosters segmented thinking on the part of students, which frustrates many.

To ameliorate some of the potential student discontent, we recommend that you initiate a formal office hour policy. An example is allocating a 2-hour time slot once or twice a week where you are virtually available for pseudo real-time conversational interaction. The slot should be scheduled to meet student needs. To further minimize student discontent, we recommend providing feedback early and often. It has been said that “feedback is the breakfast of champions.” Implementing these disciplines will help to make your students patient champions in the online world.

Student Competency – There are three (3) components of competency that can impede a student’s performance in the online environment – keyboarding competency, tool competency, and content competency. It has been found that students with good keyboarding skills perform better in the online environment. This is particularly evident in pseudo real-time situations where forum competition may exist between multiple students and you. We recommend advising students to take a keyboarding course if they plan to take multiple online courses. Of course, if the online environment supports voice recognition as input, this recommendation may be tempered.

Tool competency refers to the student’s expertise and comfort level with the particular online environment being supported. You should be prepared to have novice students stumble in a new and complex environment. We recommend that you implement a special set of tool exercises for novices only so that once the productive (full speed ahead) sessions commence, these students will be reasonably well prepared. Some tool vendors have implemented novice tool exercises and you should investigate this option before reinventing the wheel. Lastly, content competency will depend on how you implement your course to obtain effective knowledge transfer. Recommendations to improve this are contained elsewhere in this guide.
D. CHOOSING AIDS TO STIMULATE CRITICAL THINKING

Since the course material addresses issues and strategies, it is important to ascertain that your students are exercising critical thinking in dealing with the subject matter. By this we mean a broad range of analysis and synthesis skills, such as inference, recognition of assumptions, deduction, evaluation of arguments, and interpretation.

One might assume that critical thinking is evident when students answer the Review Questions. Although these questions assist students to assimilate subject matter, in general, they demand less critical thinking than do the Discussion Questions. Discussion Questions force students to extend themselves beyond the explicit subject matter contained in the textbook so that they practice divergent and convergent thinking rather than simply search for a specific answer in the textbook. As is often the case in real life, the answers to most questions are rarely “black or white” as we might like, but rather somewhere in the vastness of “gray” which lies in between.

We encourage you to use the Discussion Questions as they appear in the textbook to stimulate critical thinking by your students. Additionally, a set of Critical Questions appears in this guide for each textbook chapter. These are designed to seed extemporaneous critical thinking discussions in your real or virtual classroom, as a natural adjunct to the Discussion Questions, which often are not as spontaneous.

To maximize critical thinking by your students, we strongly encourage you to have your students generate their own Critical Questions for each class – following the model Critical Questions provided here. Adopting this practice will result in your students maximizing their critical thinking skills.

It should be noted that answers for Discussion Questions and Critical Questions are omitted from this guide on purpose. Since such questions emanate from subject matter for which a legitimate basis for a difference of opinion may exist, answers to them may neither be right nor wrong. Therefore, providing answers would be a disservice to you since such answers would reflect only our views. Since that might influence or limit the outcomes of critical thinking by you or by your students, we purposely chose not to encourage such potentially restrictive activity.

Suggestions for implementing various experiential methods to stimulate critical thinking by your students follow. These include the technique for having students generate their own Critical Questions (section D.1). The suggestions documented here are not the only ways to stimulate critical thinking. Our experience has shown that, for an advanced information systems course, adopting some (or even all) of them will help you to create and conduct a more effective course.

As a convenience, each technique that follows starts on a separate page so that you may extract one or more of the adopted ones for insertion into your own course instruction book as you see fit. The next page is a handout defining critical thinking.
Handout: Critical Thinking Definition

A universally-accepted definition of critical thinking continues to be an elusive goal. In order for me to inspire and assess critical thinking in you, we will use an outcomes model that describes desired behaviors that I will expect from you. These desired behaviors, which offer evidence that critical thinking is taking place, are shown below. They are presented within three assessment dimensions as follows:

A. Logical/Rhetorical Dimension:
   1. Identify and state important points and their supporting arguments.
   2. Identify assumptions, biases, and their implications.
   3. Identify contradictory or irrelevant information.

B. Dialectical Dimension:
   4. Recognize and state relationships.
   5. Relate process and content.

C. Reflexive Dimension:
   6. Explain one’s own thinking.
   7. Identify significant elements in one’s own experiences.
   8. Abstract from and generalize about one's own experiences.

The Logical/Rhetorical dimension examines analytic and deductive skills as well as effective speech (monologues) in oral or written form. The Dialectical dimension focuses on intellectual investigation and reasoning via dialogue. The Reflexive dimension explores the capacity to view one's personal system from an external environment with the eye of a critic. I will assess you on these 8 outcomes throughout the course. Know them well!

The above is a results or outcomes model of critical thinking. In order to help you to better understand critical thinking, I also offer you a process model that encompasses only the Logical/Rhetorical dimension of the above model. In this more limited view, critical thinking is the composite of attitudes, knowledge, and skills including:

   1. Attitudes of inquiry that involve an ability to recognize the existence of problems and an acceptance of the general need for evidence in support of what is asserted to be true;
   2. Knowledge of the nature of valid inferences, abstractions and generalizations in which the weight or accuracy of different kinds of evidence are logically determined; and,
   3. Skills in employing the above attitudes and knowledge.

Although the process-based model may help you to understand what transpires during critical thinking, it does not offer the assessment potential of the outcomes-based model.
D.1. Generating Critical Questions

In order to properly direct your students to generate their own Critical Questions early in the course, give the following definition (with qualifiers to describe effectiveness) to your students at your first course session. This will set the proper tone and direction for the activity on a continuing basis.

A **Critical Question** is a written, open-ended query that emanates from critiquing the assigned textbook (or supplemental) material and, when asked in class, causes a spontaneous critical thinking discussion.

These qualifying criteria define an *effective* Critical Question:

- It draws upon the existing knowledge and experience of other students (and instructor) about the textual material,
- It is always written with a reference point in the textual material duly noted (and announced when asked),
- It is discussable (or answerable) without the need to refer to some second source unavailable at the time of discussion,
- It is clear, concise, and non-confusing as written; that is, it does not require paraphrasing to be understood,
- It is well-focused to avoid vague generalizations or rampant speculation during discussion, and,
- It cannot be answered with a simple yes or no.

In essence, any proposed Critical Question, which does not meet the above definition or fails to meet the above criteria, would be judged ineffective. Given this information, students can be evaluated on generating effective Critical Questions as a useful measure of subject matter assimilation. Note that measuring the effectiveness of the discussion itself is a separate issue.

Students should be cautioned that, in the context of the above definition, critical does *not* mean “most important.” It connotes instead the image of a student acting in the role of “critic” relating to the subject matter at hand. This point may have to be reemphasized on occasion. You and your students will find that generating Critical Questions becomes a natural result of reviewing the subject matter with a critical eye. This will occur rather rapidly as you continually reinforce this approach.

We have found that requesting students to generate at least two Critical Questions per textbook chapter – as part of the homework for the next class session – permits you to use these questions as a basis for in-depth discussions on the subject matter scheduled for that session. Generating two or more Critical Questions permits each student to have a backup question in case of duplication. This process requires that you pre-assign the
pertinent textbook or other textual subject matter, on which a critical discussion is planned, during a class prior to the one where the discussion would take place.

During the discussion session, you would select a student on a cyclical or random basis to ask the class a Critical Question. After a short discussion period, the next student you choose does the same. This process would continue until you intervene to end it.

During Critical Question discussions, you should assume the role of facilitator and moderator, in order to be a catalyst for effectiveness. Setting, and adhering to, time limit standards is important since this avoids having specific questions (or students) potentially dominate an entire session. We recommend that an initial time limit between 5 and 10 minutes be set for the total discussion following a question. A time limit of 2 or 3 minutes per student response helps to avoid individual dominance. When discussion dissipates prematurely, or is terminated by you, the next Critical Question is asked. If a discussion is particularly fruitful, then the time limit may be extended if you so choose.

It should be noted that experiential activity such as the above, as well as that which follows, is particularly useful in courses where you seek to evaluate whether or not your students have assimilated and understood a broad range of subject matter from multiple courses (besides this one). When your students recognize that both you (explicitly) and classmates (implicitly) are evaluating personal performance, the quality of discussion output tends to improve. You will need still to limit the quantity of output per student.

We offer this Critical Question generation technique as an alternative to using the model Critical Questions that are in this guide. It has worked well for instructors teaching this course using prior editions of the textbook. To help you succeed with the process of having your students generate the questions, the model Critical Questions have been presented in the following way.

For the early chapters, the Critical Questions appear as a series of chained questions emanating from the specific textual subject matter. This was done to enable you to ask multiple Critical Questions as models for your students, and to sustain critical discussions on certain issues in your early sessions. The model questions that appear in later chapters are in simpler form and should be used as a fallback if the process slows.

The simpler form is a model of the questions that students will generate most often. Some students will tend to submit a chained set of questions. A particular student might dominate a discussion by pursuing an entire chain in a set; therefore, you may have to restrict the asking of chained questions.

If you use the technique as described here, then the Critical Questions that appear in this guide can be used to generate open-book tests or to assign homework, since they will not have been seen in advance by your students. Although the Discussion Questions can serve a similar purpose, their appearance in the textbook implies a certain lack of spontaneity in their use.

We are convinced that having the students generate and ask the questions is extremely valuable.
### D.2. Directing Site Visit Exercises

The Exercises at the end of each chapter in the textbook provide the opportunity to have your students gain real world experience. Most of them require students to visit a local organization and to ask specific questions, or collect data and perform an analysis. These company-contact exercises are addressed below.

If the course is being taught in an environment with many local organizations, it is up to you to decide whether the exercise should be conducted in person during a site visit or by telephone. While phone conversations can satisfy the exercises in most cases, site visits are more meaningful experiences for all parties concerned – your students, you, and the company, too.

Company-contact exercises can be assigned on an individual basis or in small teams. If there are few companies to visit, the small team approach is more effective, because it prevents those few companies from being overwhelmed by individual visits from well-meaning information systems students.

Even when there are many companies available, we have found that only a limited number of them are truly interesting for the purposes of the course. Once again, it is best to use small teams in this prolific environment, too.

It will be your task to determine the contribution of team members (individually or collectively). Under your direction, (1) the exercise objectives should be made clear to the team, (2) all team tasks should be identified for the exercise, (3) an appropriate division of labor should be agreed upon, (4) a time limit should be set, and (5) the results to be delivered should be identified and agreed upon. All of this should be done prior to the site visit by the team.

We recommend that you initiate contact with the companies involved to lay the groundwork and open the doors for your students. In this way, your students can concern themselves with team building and the specific objectives of the exercise, including the results to be delivered.

We have found that having the instructor exercise some control over the choice of companies and contact dialogues usually results in a far more meaningful experience for the students, and good retention of the contacted companies for future activity of a similar nature.

If you use this experiential technique in a directed-study or independent study course, you may want to offer your students greater independence. In any case, it behooves you to sustain a good rapport with the local companies to solicit feedback on your students' activities, and to retain an open invitation and welcome whenever it might be needed for others in the future.
D.3.a. Developing Chapter Impact Summary Presentations

An additional method for stimulating critical thinking is to assign unique additional homework to at least one student (but not more than three) for the forthcoming class session. Our suggested direction to students for this special homework follows:

*Summarize what you believe are the five key points of a chapter and present them to the entire class at the next session. These will be the five most important points in the given chapter as you perceive them. Include in your presentation a defense for each point, i.e. why you believe it is important. Your presentation is limited to ten minutes and you must employ visual support (five overhead transparencies maximum).*

When issuing these preceding directions, stress that the relative importance of each point is determined individually by each student. This may have to be stressed again and again. The students are the ones who make the judgments on the key points based upon their knowledge, experience, skills, and value systems. In essence, your students will have exercised critical thinking skills in making the assessment of how the chapter material has impacted them.

Inform your students also that the chapter subtitles or hierarchical segmentation in the textbook does *not* necessarily imply importance in the sense demanded here. Some students will tend to defer to the explicit textbook hierarchy as the default starting point anyway, particularly when they have little or no skill or experience base upon which to exercise personal judgment. Encourage such students to make judgments by synthesizing from the knowledge base being acquired as the course progresses.

This exercise stimulates critical thinking outside of the classroom by forcing the selected students to analyze subject matter, to discriminate as to what is relatively important, to filter out the less important concepts, and focus down to the top five through ranking. Furthermore, the students must explicitly determine (and subsequently convey to the entire class) their justification criteria for each key point (why it is important). This avoids having a student's "response automation" (the subconscious response) from becoming the sole arbiter of relative importance.

Employing this technique gives students an opportunity to build and exercise their presentation and selling skills. These skills are particularly useful for students planning to be the future change agents and thought leaders in information systems management. You can be an effective coach for your students in this skill building process.

The evaluation of the chapter impact presentations is made a part of each student's course grade. Measures might include selection of key points, defense of each key point, presentation quality, originality, or similar measures. You might seek and/or support peer review, either in public at the presentation, or in private through written evaluations which might be shared with the presenter(s) later anonymously.
D.3.b. Updating Time-Fragile Textual Material

Since information technology is very dynamic and steadily evolving, some textual material dealing with current issues and practices tends to be time-fragile. That is, it tends to become out-of-date rapidly in certain areas. One recent example has been the revolution in knowledge sharing which is causing continuing sociological and technological debate even as you read this. The textbook that this guide supports – like all others dealing with information technology – is time-fragile.

Rather than perceiving time-fragility as an insurmountable problem, you can use it as an opportunity to involve your students in another critical thinking exercise. In this case, you can require your students to bring the subject matter in each chapter up-to-date. This can be done by searching recent research and/or trade literature, or by contacting responsible persons in industry on emerging issues.

Instead of having each student do this for each chapter, we suggest this be assigned as an adjunct exercise to the Chapter Impact Summary described in the previous section. In this way, only students assigned to do the presentations would also bring the material up to date, if necessary. The presentation would be extended up to five minutes for the addition of another section entitled, “What’s New?” Those presenting would identify their sources for “What’s New?” in their presentation materials.

Once again, each student would be expected to review the new material with a critical eye, synthesize it, filter it, and then summarize it for presentation to the class. In presenting, the student assumes the novel (and potentially rewarding) role of “expert” on “What’s New?”

We have found that this segment can be enhanced by permitting the “expert” to be open to questioning from the other students (or the instructor) on the presentation subject matter. Students can be evaluated (1) on their assumed “expert” role (one that they may be called upon often to assume in the real world), and (2) their ability to direct and control the question and answer interaction session after their presentation (a skill they will need to exercise often as managers).

An additional reward to you for using this exercise is the opportunity to benefit from the literature searches and research work that your students undertake to complete this exercise. If you are looking to enhance your personal and professional development, then the diverse perspectives and new sources of ideas that your students discover through this exercise can be very exciting and rewarding for all concerned.

What follows is an example of the student handout that can be used to integrate and implement the concepts contained in this section and Section D.3.a.
Handout: Chapter Impact Presentation

Identify five key points of Chapter X and summarize them for a presentation to the entire class at the next session. These will be the five [3 to 7] most important points in the given chapter as you perceive them. Include a defense for each point, i.e. why you believe it is important. You will be limited to ten minutes and you must employ visual support (5 overhead transparencies maximum). You will conduct a class discussion on the subject matter which is limited to a 5 minute period after you present.

Presentation (10 minutes or less):

+ Highlight the KEY Points of Chapter (Minimum of 3, Maximum of 7)

- Make it a personalized view. What is each key point and why do you think that this point is important? This may or may not correspond with the author's stress or outline that appears in the text. Your view is what's important here.

- Bullet form is most desirable (be specific, not prolific) as follows:

  #1. Describe Point #1 (3 line maximum)
      + 1st reason why important (3 line maximum)
      + 2nd reason ...

  #2. Describe Point #2
      + 1st reason ...

- What else can be said about the chapter material? Bring the material up-to-date if a more current view is available. Identify your source(s). Provide copies of your list of source(s) as handouts if possible. Communicate and emphasize why you are convinced that the additional material is important for you and your peers.

      + You must employ “professional” visuals using either existing presentation technologies or overhead transparencies. Amateurish, hand-lettered overheads are strictly prohibited.

- MS PowerPoint & Macromedia Flash are available for your use at various locations around campus.

DISCUSSION (5 minutes or less):

+ Conduct a class discussion on the subject matter. Ask your peers if they have any questions on what you have presented. Engage them by asking for opinions in opposition to, or in support of your own. Ask them specific questions to generate critical thinking (avoid using your homework Critical Questions at this time).
D.4. Surveying Current Literature (hard copy or online)

Another one-time technique to encourage critical thinking is to assign directed surveys of relevant sources in information systems, particularly periodicals. These might include both research and trade literature as well as Internet sources (E-zines). Have the students visit the campus library or use an online search engine to find relevant information sources. The directions for one such exercise that we have found to be effective are as follows:

Undertake a literature survey on a relevant I.S. publication (hard copy or E-zine.) Expected deliverable is a one page written summary to include the items below. (You might request each student to make copies of their critique for all class members.)

1. Publication (hard copy or E-zine) name,
2. Purpose, objective or mission of the publication,
3. Target audience or market (such as, academic or commercial, mainframe or PC base, specific industry, etc.),
4. Top three items (derived by content analysis, i.e. those items that appear most frequently or have the most text volume, in the three most recent issues of the publication), and,
5. Subjective relevance rating (On a scale of 1 to 5 with 5-High and 1-Low, each student personally rates the relevance value of this publication to the course and provides a written justification for the judgment criteria used).

This exercise is an opportunity for students to gain broad exposure to pertinent information sources rather rapidly (particularly if they are not frequent library users). Sufficient lead-time should be provided to students to permit inter-library loans if the particular publication is unavailable locally.

You may choose to have students present their summaries in class – to takes less than one minute per summary to do so. The critical thinking that went into each summary might be further explored by you via questions and directed dialogue with the presenter as each publication is discussed.

An adjunct exercise would be to have the class vote on the “top five publications,” and then have them commit to reading these for the duration of the course at least. Some sort of written critique at the conclusion of the course might be an appropriate assignment.

Since many of the publications offer free subscriptions, we recommended that you encourage your students to subscribe as they commence their life-long learning. Many instructors save the free subscription cards from trade magazines and give them to their students as available. Tell your students to obtain such cards from the literature during their survey when they are available. Of course it would be best if students were introduced to and commenced reading such literature earlier in their educational programs. For the more interested students who have a real thirst for knowledge, it is likely that this will have been the case already.
D.5. Using Case Studies

Assigning one or more case studies is an effective method for stimulating critical thinking by small groups and individuals. Even though this can be an effective experiential technique, many instructors tend to assign cases to be done outside of the classroom, with the results provided in written form back to the instructor. When this occurs, the dynamics of the critical thinking process (particularly by small groups) is unobservable by the larger audience.

We suggest that you experiment with one or more case studies in the classroom itself. Either the case can be dynamically assigned at a particular session – in which case critical thinking in both the analysis and synthesis phases can be observed by all. Or the case can be assigned prior to the session – in which case critical thinking in the synthesis phase is observed but much of the analysis phase may be missed. Trial cases conducted in the classroom have demonstrated that improved critical thinking occurs as a result of the group dynamics and the directed support of the instructor.

It is left up to you to determine the execution logistics and the subject matter tradeoffs when conducting case studies during class time. We believe this is particularly relevant when you consider that many case studies are somewhat limited in their subject matter, focus, or scope. Appropriate cases from The Idea Group and Harvard Business School are also listed by chapter in Section 2.
D.6. Research Paper Exercise

Handout: What It Is and What It Is Not

The Research Paper Exercise has the following 10 objectives:

1. Direct your attention to the primary research being conducted in the I.S. Field,
2. Compel you to engage in reading and understanding some of the primary research literature, both printed and electronic,
3. Stimulate your critical thinking about the content of this research material,
4. Focus your thinking on areas of professional appeal or personal interest,
5. Formulate a (potentially bold, innovative, or exciting) position about some specific research topic or content area which you will be able to defend through argument,
6. Develop a thesis statement which encapsulates 5. above,
7. Search for primary research sources which support your thesis position,
8. Create a preliminary abstract which shares the vision of your thesis, and any general conclusions drawn from your efforts,
9. Generate a research paper outline based on your thesis statement, your sources, and your vision of how your defense will unfold,
10. Write a quality research paper, which communicates your convictions, documents your position, and defends it with authoritative sources.

The Research Paper is not an exercise to see how well you can read, interpret the central ideas, and regurgitate them back at me and other class members in some concatenated or summary form. You are not writing a Readers Digest article, so do not do this!

The Research Paper is not a charge to undertake some original research in the I.S. field. The limited time given precludes you from doing that. It will not preclude you from researching the wide body of important I.S. literature, however.

The Research Paper is not an essay based on opinion without facts. You are being asked to "stand on the shoulders of giants." It is these 'giants' who will give you the credibility you need to convince your readers/audience of the validity of your thesis premise.
Handout: Sample Research Paper Guidelines (3 pages)

Objective:

The objective is to provide the opportunity for you to do independent research in an area directly related to the course subject matter, to generate a high quality written report summarizing the results of your research, and to present/defend your research paper at our Information Systems Conference to be held on day and date.

- Topic Distribution due: Class Session 1 (or class pre-session)
- Alternative Topic Proposal due: Class Session 3
- Deliverable Set A due: Class Session 4 (5% of grade)
- Deliverable Set B due: Class Session 7 (20% of grade)
- Deliverable Set C due: Class Session 9 (10% of grade)

[Saturday if conference]

Description of Deliverables:

Deliverable Set A [5%] - Due Session 4

1. Selection of Topic (including Preliminary Title)
2. Thesis statement expressing central idea or theme
3. Outline of Paper (1–2 page maximum)
4. Initial List of Works Cited (12 sources minimum)

Deliverable Set B [20%] - Due Session 7

1. Abstract of paper (1 page max)
2. Final paper (Approximately 15-20 pages)
3. Appendix A - All figures, diagrams, tables, etc., unless embedded in text
4. Appendix B - Works cited (Final list)
5. Appendix C - List of other works consulted (Bibliography)
6. Peer feedback form (Peer review of your paper)

Deliverable Set C [10%] - Due Session 9

1. Copy of Presentation materials & Discussant Critique Form
2. You in person to make your presentation

Standards:

Except for those shown above under Deliverables, standards for all papers shall be governed by the MLA Handbook for Writers of Research Papers. Your Research Paper is expected to be of the highest quality and to be ready for submission for publication in external forums for Research Papers such as ICIS. Your paper will be read by a peer for context editing and by another peer as conference discussant for your paper, thus I will not be the only living creature to read it.
**Grading the Research Paper:**

This Research Paper will count for 35% of your final grade, distributed as shown under deliverables. Missing schedule dates will result in late penalties as shown in the course syllabus. Early submissions will help avoid penalties due to unforeseen problems.

**List of Research Topics:**

The following are suggested topic areas for your Research Paper. Select one topic area from the list below and explore the research in that area in order to generate Deliverable Set A by Session 4 or sooner.

1. Chapters 1, 2, 3 or 4 of McNurlin, Sprague, and Bui textbook.
2. The information systems function and its relationship, criticality, or impacts on the strategic planning process.
3. The value and impact of information technology investments and the implications of those investments for effective management of the information systems organization.
4. Research on information systems that accounts for changing organizational forms, such as distributed communications and work arrangements, cross-national mergers/acquisitions, and international competitive markets.
5. Organizational and technical issues of significance in the international or global management of information systems.
6. Ethical issues relating to information technology use and the implications for managers and business practice.
7. Critical issues and innovative approaches to planning, design, and implementation of systems.
8. The impact of information systems on business process design (or redesign), managerial roles, and the changing world of work.
9. Cooperative work and relevant technological support, such as group systems, expert systems, or knowledge management systems.
10. The use of information technology to support the drive for E-Business in organizations, including products and/or processes in the information systems area.

Should you desire to propose an alternate topic, please make sure that you discuss it with me before Session 3 to gain approval. Ensure there is adequate research on your alternate topic to support it before you propose it to me!
**Miscellaneous Research Paper Information:**

Your initial list of cited works should contain at least twelve (12) sources, at least seven (7) of which are primary or seminal. Your final list of cited works should include at least seven total references. Books must be approved in advance by me!

You are strongly encouraged to have others proofread your paper to remove grammatical, spelling, or technical errors. Do not be dismayed from doing this. It will improve your paper’s quality. Grammatical and spelling errors can frequently be detected by computerized spell-checkers, grammar-checkers, or friends.

You may use a volunteer peer as a technical proofreading resource. Separately, I will assign a peer to read your paper before you submit it to me so that you will get feedback from this peer who will generally understand your subject matter. You are expected to provide this peer with a final draft of your paper by Session 6 so that you may gain, and integrate, that peer's feedback. The peer will be asked to document the feedback given to you on a separate form which you both will sign and submit with Deliverable Set B.

A different peer will be assigned to act as discussant at the conference itself. S/he will have read your paper in advance, but all feedback (good, bad, or indifferent) will be given to you immediately after you present in open forum. Critiques given here will support good quality or expose poor quality in the paper itself. A copy of the Discussant Critique will be submitted to you. A second copy, together with a copy of your presentation overhead transparencies, will be given to me.

High quality is critical. Finished papers are expected. If I encounter five or more errors (spelling, grammar, format), I will return your paper to you for “fixing” with a loss of ten points. I will do this only once. If your paper is not a quality, finished product, you will lose all 35 points for it and risk being ejected from the course. Don’t let it happen to you!

My best advice is to pick something that is of interest to you in order to sustain your level of motivation throughout the exercise. Go to the library to research the desired subject area or go on-line as soon as possible. Start to formulate a thesis to guide the research further as desired. Developing your thesis and an emerging outline as early as possible will make the actual paper writing a much easier task than you might suppose.

Remember, this Research Paper is not an essay. It offers you the opportunity to investigate an area of personal interest, to explore documented information systems research in that area, to develop a potentially bold and innovative thesis, and to support that thesis with appropriate documented research. I wish you success in your endeavor.
Handout: Guidance on the Thesis Statement and Abstract

The Thesis Statement:

A Thesis Statement is a position or proposition that a person advances and offers to maintain by argument. Three qualities that distinguish a good thesis statement are:

1. It is restrictive (specific not prolific)
2. It is unifying (used to focus 1 main idea)
3. It is precise (can only be interpreted one way)

The Abstract:

An Abstract is always composed after your paper is finished. It should summarize your thesis statement, your defense of it, and the results of your research. It should be concise and specific. Some satirical definitions of abstract follow to emphasize the point:

abstract, n. a brief summary which appears at the top of a scholarly paper. It is intended to warn off the uninitiated.

The cognoscenti have no need for such warnings.

Cosby said, “In point of fact, it put me off with its abstract which made it plain as day can be the paper wasn’t meant for me.”

Cosby added, “Yes that’s so. The paper’s from a field I know whose writings are all dark and muddy. None are meant for anybody.”

– Lucidides

abstract, adj. free of the confusing details of material reality and (therefore) incomprehensible to most people.

abstract, v. to boil something down to its bare essentials.

A cauldron of Abstracting Oil was heated to a rolling boil and Man was added, thus to find the Bare Essentials of his kind.

Boiling him for Seven Days revealed a Truth which won’t amaze. Within the Oil was no trace left— of Bare Essentials he’s bereft.

If Man’s Essentials do exist, to capture them you must resist the hope to really lay them bare. Without their clothes they’re less than air.

– Publius Popper
Handout: A Proper Approach to the I.S. Policy Thesis (3 pages)

First of all, you conduct initial research without preconceived notions of how things will turn out. To have one or more subjects of interest in mind is a necessary starting point so that you do not wander searching aimlessly. When you have settled on one or more subjects of interest that have the potential to excite and motivate you, then you can proceed.

Start conducting the actual literature research by examining sources of information about the specific subject matter. Such sources may be physical library-based or electronically available on the Internet. Use Note Cards to make note of items of potential interest. As you become more familiar with the sources on the subject matter, the faint glimmerings of a thesis should begin to emerge.

What is really happening? Well, as you analyze what you are reading — as you increase both the reach and range of the material encountered — you synthesize the material and voila! — critical thinking starts taking place. Relative to the material you have researched, you realize one or more of the following…

1. You can identify and state important points and their supporting arguments.
2. You can identify assumptions, biases, and their implications.
3. You can identify contradictory or irrelevant information.
4. You can recognize and state relationships.
5. You can relate process and content.
6. You can explain your own thinking.
7. You can identify significant elements in your own experiences.
8. You can abstract from and generalize about your own experiences.

Thus, in one or more ways, you are reacting to the researched material. Start formulating your thoughts into one or more tentative thesis statements. Can you provide a new or more interesting view or position about the material that is solidly grounded in the research you have done (and not simply on your own opinion)? Are you able to identify some critical factors – either advantages or risks – that lend themselves to a more comprehensive or integrated view than might have appeared in the research material independently? Can you synthesize and propose a unified or integrated model from the elements that you have discovered in your research? Answering questions such as these will lead to that elusive thesis statement!

As a theoretical example, let’s say that you are all fired up about the Java language and you start your research on this subject. In the course of discovery you learn, and make note of the all observations, that unlike previous languages, Java holds the first real promise of being platform independent. You learn that Java offers a very unique development environment that is geared to high productivity. You learn that Java is supported with consistency by a wider variety of vendors than any prior language. You learn that comparable productivity costs for a Java development environment are minimal. (Note that these may or may not be true. They are offered here as examples only.)
You learn other things as well in your research – both positive and negative – but let us assume that the aforementioned 4 points were the most important of all of the critical thinking points you noted in your synthesis of the research material. You’ve convinced yourself that Java is the greatest programming language of all time – that’s it’s better than sliced bread. Further, you’re confident that, based upon your research, you can convince others that your view is sound and true. That being the case, now is the time that you start writing your tentative thesis statement.

In the most desirable format for an I.S. Research Paper, your Opening paragraph would contain your specific Thesis statement, and it would be preceded by a Setup statement and trailed by a Follow-up statement. This triple combination separately might look like the following to support the aforementioned Java premise:

**Setup Statement** – an axiomatic statement that can be offered without proof which draws the potential reader’s attention to your subject area. It usually gives a sense of urgency about a problem or possible opportunity. For example:

“A study of the computing literature reveals that, for the past twenty years or more, the diversity and proliferation of programming languages have presented potential users with multiple seemingly unsolvable problems.”

**Thesis Statement** – a claim that you make which you can support with research facts (in our case from the results of a literature search). This is where you stand on your soapbox and propose a view that you offer to defend from the original research of others – the “experts” in the field – from whom you have synthesized your view. For example:

“It can be shown (demonstrated) that the Java language is the only language that will solve the four most important problems that potential users will encounter.”

**Follow-up Statement** – usually a brief statement extending the thesis summarizing what you have done in your paper to substantiate your thesis claim. For example:

“These critical problem areas – portability, programmer productivity, standardization, and development cost – are identified and discussed. How Java uniquely provides a solution for all four of these problems is presented. Recommendations for adopting Java in a typical organization are made where appropriate.”

Integrating the 3 statements above into a single Opening paragraph looks as follows...

“A study of computing literature reveals that, for the past twenty years or more, the diversity and proliferation of programming languages has presented potential users with multiple problems. It can be shown that the Java language is the only language that will solve the four most important problems that potential users will encounter. These critical problem areas – portability, programmer productivity, standardization, and development cost – are identified and discussed. How Java uniquely provides a solution for all four problems is presented. Recommendations for adopting Java in a typical organization are made where appropriate.”

Now, recognize what you had to do to get to the above Opening statement...
1. A search of the literature (in this case on the Java language) must be done. Since this is not a technical tutorial but rather a position paper, vendor literature can be referenced for facts but the seeds of important points will only be found through physical library-based and electronic Internet searches.

2. The different user impact problems associated with a variety of programming languages would need to be identified in order to have you focus on the important problems.

3. Filtering the list of identified problems (that might relate to Java in this case) would have to be done. The simpler the categorization, the better. A binary approach of “major” and “minor”, or of "these matter" and "those don't matter", would be best. Of course, if one's thesis dealt with proposing (defining) a category model and delineating all identified problems into this model, and so forth, one would need more than a binary approach.

4. Evidence to convince a reader of the criticality of the set of “major” or "these matter" items must be obtained for building the thesis defense.

5. Recommendations may need to be developed for the management, solution, (minimization, or elimination) of the "these matter" set. In essence, this is the "so what?" response to you identifying the problem. The strength or major value of your paper may well rely on what you have to offer to solve the problem.

6. Lastly, you would need to put all of the above together in a professional looking paper and presentation. This really is the easy part once the above has been done.

What I have given you above is a formula approach based upon the "strong" thesis statement noted above. If one essentially cannot "prove" the thesis statement as shown, you may have to take other possibly weaker approaches but that will depend on the results of your own research. Just remember that in the ideal situation, your thesis should build your passion – a fire in your loins – so that you can in turn defend it and build a fire in the loins of those who are willing to listen to you on your soapbox, whether it be in writing or orally presented.

That's all for now. I wish you success. One more thing – if your research on a particular subject is turning up nothing that you can critically think about or take a position on, then move on to another subject quickly. If you really think about it, this whole exercise is about selling your idea (or position) to others. This is something you will be doing for the rest of your lives. Do a good job now and it will benefit you throughout your life. That I can surely promise you.

Finally, remember that this Research Paper is not designed to be a tutorial about a subject. That you might be superbly skilled to espouse some incredibly complex concept in brilliantly illuminating terms is highly likely. I’m not asking you to do that. I’m asking that you make a claim and defend it through argument. Sell your reader/listener – teaching will be coincidental.
Handout – Research Paper Outline – Model Overview (2 pages)

Abstract Outline:

+ Separate summary of paper with thesis and results
+ Key marketing piece to get readers to read your paper
+ 1 or 2 paragraphs long but rarely if ever more than 1 page
+ Appears with Title on page by itself (stands alone)
+ Complete it after you have completed your paper

Research Paper Outline:

A. OPENING (Title precedes this but no subtitle here)
   + Gains reader's attention and perks interest
   + 1 or 2 paragraphs maximum – “The Triplet”
   + Opening Content
     - environmental Setup (axiomatic - acceptable w/o proof)
     - concise presentation of Thesis Statement
   + The claim you make and will defend -- ”It can be shown, demonstrated, proven…”
   + Optional -- defer naming component parts until B. below
     - follow-up extends the thesis & summarizes what you did to substantiate your thesis claim

B. INTRODUCTION (May be called something else -- whatever makes sense in your paper)
   + Expands/clarifies material in Opening Section
   + Documents assumptions and/or constraints
   + Establishes further credibility for Opening Section
   + Up to 2 pages long
   + Introduction Content
     - expansion of environmental setup
       + what more needs to be said on environment?
       + what assumptions, limits, constraints, definitions need to be identified and documented here?
     - expansion of thesis statement
       + restate the thesis in its expanded form
       + delineate specific component items here (ex. the contents of a set, parts of a model, etc.)
       + name them here, defend their inclusion/criticality in Section C. below.
C. THESIS DEFENSE
+ Expands/clarifies definition of included items (parts, factors, characteristics, etc.) in your thesis statement
+ Defends each item based upon sources of authority
+ Convinces reader of relevance of your thesis
+ 1 to 2 pages per item
+ **Thesis Defense Content**
  - name, define or introduce item #n
  - provide inclusion relevance for item #n
    + primary sources appear before secondary sources
    + as many as you feel necessary
  - identify any uniqueness of item #n (ex. assumptions)
  - summarize relevance of item #n to thesis statement
  - repeat prior 3 steps for each other item

D. SUMMARY (Only if Disclaimer and/or Recommendations follow)
+ Brief (interim) restatement of Thesis Defense above
+ Aroused reader's desire to agree with you (the buy-in)
+ 1 or 2 paragraphs maximum
+ **Summary Content**
  - restatement of thesis claim
  - state inclusion/criteria for each item
  - restatement of thesis now validated
  - "Thus, it has been shown, demonstrated, proven..."

E. DISCLAIMER (Optional)
+ Reminds reader of conditions (assumptions, limitations, constraints, etc.) under which the thesis is valid
+ Cautions reader not to generalize from the specifics discussed in paper
+ Removes remaining objections reader may have about your thesis statement and defense
+ 1 or 2 paragraphs maximum
+ **Disclaimer Content**
  - documented limitations of any kind
  - cautions of any kind you wish reader to observe
  - objections (potential holes in defense) identified and minimized or eliminated
F. RECOMMENDATIONS (Optional)
   + Advice or suggestions you offer to the reader as the result of your analysis efforts (no personal opinions)
   + Agreement/support for other authority's recommendations
   + **Recommendations Content**
     - recommendations drawn from your analysis/synthesis
     - support for theses/forecasts/speculation by others
     - suggestions for further relevant research
     "It is left to the reader, others, to..."

G. CONCLUSION
   + Final summary of thesis and argument validating it
   + If no Disclaimer or Recommendations section, this would replace Summary Content above
   + Might be combined as Conclusion & Recommendations if you have a relatively sparse or weak Recommendations Content
   + **Conclusions Content**
     - see Summary Content above for primary content
     - final statements convincing reader of thesis validity
     - any additions you choose to add

**Other Potential Models of Research Papers:**

In cases where your contribution is other than a proposition to be defended, such as the case of proposing a model of sorts (integrated, simplified, etc.), the Introduction would address the foundations for the model, the Thesis Defense would build the model conceptually, and the Summary would offer the total model. Diagrams would be most beneficial.
D.7. **Other Suggestions**

**D.8.a.  Sharing Information from Trade Articles**

Some instructors provide their students with a source list of pertinent articles in the current literature, to supplement textbook material or to update any time-fragile textual matter. In some cases, mandatory reading assignments are made from this initial list.

Since both you and your students read trade publications beyond those assigned in class, asking all parties to identify sources of particularly relevant articles and sharing them with the class has been very worthwhile for updating time-fragile material. A sample Student Survey is included here to start the process at the first class.

As an interesting oral exercise, those identifying sources of relevant articles might be asked to summarize and explain the importance of each to the rest of the class. Once again, this gives your students and you an opportunity to observe critical thinking in action. The results can also serve to formulate a revised initial source list for the next time the course is to be taught.

**D.8.b.  Using Electronic Mail to Improve Communication**

For campus environments where the technology is available, Electronic mail can be a very effective method for enabling communication between you and your students outside of normal class hours. This is particularly relevant in a directed-study, independent-study, action-research course, or online course, where formal contact hours may be rare or even non-existent.

The dynamic opportunity for you to give and receive feedback early and often can be very productive for all parties. Additionally, your students will benefit from ready access to you when they need assistance to remove roadblocks in completing assignments. It is left to you to explore the value and the logistics of using e-mail in a particular course. We know that the results can be rewarding.

**D.8.c.  Helpful Homework Hints**

We have found that requiring students to type all homework and reports will improve the quality of their input to you. The key seems to be that requiring typed output from them forces them to plan ahead, and it discourages improvised results that are generated at the last minute. Since many students own personal computers with word processing software, or have ready access to such equipment, this requirement is met easily.

We also recommend that students type out each part of each question before answering it on all homework. This helps them to answer the question that was asked, instead of some question that they imagine was asked—a very common occurrence.
Handout: Student Survey

NAME: __________________________                  DATE: _______________

1. What publications, (journals, magazines, etc.) do you read to keep current about issues and/or technologies in the Information Systems field?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2. Prioritize the publications in 1. above ranking the three that are most important to you.
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

3. To which industry trade magazines, journals, etc. do you personally subscribe?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

4. To which IS Industry Professional Association(s) are you a member, either student or professional?
     _____ None     _____ ACM     _____ AITP     _____ ASM     _____ IEEE
     _____ Other(s) _______________________________________________

5. What are your expectations from this course, either personal or professional?
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
E. PREPARING THE COURSE SYLLABUS

E.1. SAMPLE SEMESTER COURSE SYLLABUS OVERVIEW (see also E.2)

Delivery Mode

- Seminar-Based
- 15 Sessions
- Graduate Level

Course Components

- Textbook Subject Matter (pre-read)
- Discussion Questions (responses in advance)
- Exercises in Textbook (occasional site visit)
- Critical Question Generation
- Chapter Key Point Summaries
- Textual Material Updates
- Current Literature Survey
- Case Study
- Research-Oriented Term Paper
- Group Software Use
- Industry Guest Lecturer

Suggested Grading (Out of 100%)

- Written Homework & Chapter Impact Summaries 10%
  - Discussion Questions, Exercises, Searches
- Critical Questions (Written) 15%
- Class Presentations 5%
  - Chapter Impact Summary & What’s New?
- Research Paper 35%
- Group Software Use (GamePlan) 10%
- Case Study 5%
- Class Participation 20%
### E.2. SAMPLE SEMESTER COURSE SCHEDULE

**15 Sessions - Seminar-Based**

<table>
<thead>
<tr>
<th>SESSION</th>
<th>CHAPTER(S)</th>
<th>TOPICS AND/OR ACTIVITY</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>Introduction &amp; course overview</td>
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<td></td>
<td>-</td>
<td>Lecture on writing a research paper</td>
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<tr>
<td>2</td>
<td>1</td>
<td>The Importance of IS Management</td>
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<td>2</td>
<td>The Top IS Job</td>
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<td>3</td>
<td>3</td>
<td>Strategic Uses of Information Technology</td>
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<td></td>
<td>-</td>
<td>Assign survey of current literature</td>
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<tr>
<td>4</td>
<td>4</td>
<td>Information Systems Planning</td>
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<td></td>
<td>-</td>
<td>Research Paper Deliverable Set A due</td>
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<tr>
<td>5</td>
<td>5</td>
<td>Distributed Systems: The Overall Architecture</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Managing Telecommunications</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>Industry guest lecturer (CIO)</td>
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<td>7</td>
<td>7</td>
<td>Managing Information Resources</td>
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<td>Research Paper Deliverable Set B due</td>
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<td>8</td>
<td>8,9</td>
<td>Managing Operations/Technologies for Developing Systems</td>
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<td>9</td>
<td>-</td>
<td>Research Paper Presentations (Conference)</td>
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<td>Research Paper Deliverable Set C due</td>
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<td>10</td>
<td>10</td>
<td>Management Issues in System Development</td>
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<td>GamePlan introduction and strategy building</td>
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<td>11</td>
<td>11</td>
<td>Supporting Decision Making</td>
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<td>Review case study (presentations/reports)</td>
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