Department of Technology
College of Business and Public Administration

Graduate Program Assessment Plan
2012 - 2013

Contact Person
Dr. Dave Yearwood
Assessment Coordinator
701.777.3061
yearwood@und.edu
Introduction

The Department of Technology, which is in the College of Business and Public Administration offers two program options (thesis and non-thesis) leading to the Master of Science. The program for the Technology degree is designed on an individual basis to serve students who desire to further their higher education goals, or to go on to college, technical institute, or secondary level teaching, administration, or to pursue technical/management careers in business, government or industry.

Essential Elements

The Department of Technology’s Graduate Program Assessment Plan meets the requirements of the University of North Dakota and includes the following essential elements:

1. A statement of the mission of the department/program.
2. A statement of the desired student learning goals of the academic program.
3. A statement of objectives, which further characterize each of the goals and state obtainable and documentable outcomes contributing specifically to the attainment of each goal.
4. A description of how desired learning outcomes are linked with the courses and experiences in which outcomes are to be attained.
5. Descriptions of the specific assessment methods to be used to assess each learning outcome, including a description of criteria that will be used to determine whether goals for student learning have been met.
6. A statement of the timeline along which assessment data will be collected, analyzed, interpreted and documented.
7. Identification of who will be responsible for collecting, analyzing, interpreting and documenting the results of assessment.
8. A description of the process that will be implemented to document and communicate that the results of assessment have been used to inform instructional and curricular improvement.

Mission Statements

University of North Dakota

The University of North Dakota, as a member of the North Dakota University System, serves the state, the country and the world community through teaching, research, creative activities, and service. State-assisted, the University's work depends also on federal, private, and corporate sources. With other research universities, the University shares a distinctive responsibility for the discovery, development, preservation and dissemination of knowledge. Through its sponsorship and encouragement of basic and applied research, scholarship, and creative endeavor, the University contributes to the public well-being.

The University maintains its legislatively enacted missions in liberal arts, business, education, law, medicine, engineering and mines; and has also developed special missions in nursing, fine arts, aerospace, energy, human resources and international studies. It provides a wide range of challenging academic programs for undergraduate, professional, and graduate students through the doctoral level. The University encourages students to make informed choices, to communicate effectively, to be intellectually curious and creative, to commit themselves to lifelong learning and the service of others, and to share responsibility both for their own communities and for the world. The University promotes cultural diversity among its students, staff, and faculty. In addition to its on-campus instructional and research programs, the University of North Dakota separately and cooperatively provides extensive continuing education and public service programs for all areas of the state and region.

College of Business and Public Administration

The College of Business and Public Administration is committed to being a preeminent center of learning amongst regional universities, preparing and developing leaders of business, government, and society in a global setting. Challenging learning
environments provide quality undergraduate and graduate education programs that are interdisciplinary and employ appropriate technological tools. Through the complementary activities of teaching, research, and service, the faculty strives to enhance its position in the scholarly community while fostering the dissemination of a diverse body of knowledge to stakeholders. The elements of distinction in the College of Business and Public Administration are:

a) Instilling practical knowledge and skills through experiences that integrate theory and practice.
b) Encouraging a balanced mix of instructional, applied, and basic research.
c) Engaging in innovative teaching, research, and outreach activities that accentuate the complementary and converging aspects of business and government.
d) Nurturing partnerships with a diverse set of entities, both internal and external to the College.

Department of Technology

Mission
To provide students with a diverse, comprehensive, experiential, and professional education that prepares them for careers in business, education, government, and industry where they can apply knowledge to advance technology for economic development and provide solutions to technical problems.

Vision
A place where students enter in the pursuit of knowledge and leave as critical thinkers, creative problem solvers, and leaders.

Goals for Student Learning
The Master of Science in Industrial Technology (MSIT) graduate program enrolls qualified students for postgraduate education and prepares them to be advanced technical, management, or education professionals. By graduation, students should be able to:

1. Think critically and creatively.
   Definition: Critical thinking is analyzing, evaluating, synthesizing, and reflecting on content related to issues or problems to come to a well-reasoned conclusion and/or solution. Creative thinking is exploring issues or problems in an imaginative way to discover alternate perspectives.
Critical and creative thinking occurs within or across subject fields in all those spaces where humans need to interact and make decisions, solve problems, and figure out what to believe and what to do.

2. Conduct, discuss, and present research in technology.
3. Apply technical management tools to solve problems.
4. Produce a body of research deemed publishable in appropriate professional.

Objectives and Desired Learning Outcomes

The Department of Technology is committed to meaningful assessment that is used to enhance student learning and improve the quality of our program. Our overall objectives throughout each student’s graduate career include guiding students in the synthesis and integration of the Technology graduate program’s goals for student learning.

The thesis and independent study serve as primary ways of understanding how courses, advising, experiential learning opportunities, and overall graduate education have contributed to student knowledge. Producing these bodies of research provide students with important opportunities to apply what they have learned throughout their coursework and to gain new knowledge through research. Furthermore, requiring students to prepare, analyze, evaluate, synthesize, present and discuss their research challenges them to think critically and creatively.

Assessment Methods

The Department of Technology employs several assessment methods to evaluate learning outcomes from the program goals outlined above. Assumptions guiding the collection of evidence about student learning are these: that assessment should be conducted systematically and over time, that multiple measures using multiple sources of information are needed to analyze results, that both qualitative and quantitative methods are of value, that direct measures are insufficient without indirect methods, and that results should be useful for program improvement.

Two significant direct assessment methods in the Department of Technology are:

1. Faculty review and analysis of student learning in individual courses taught (see Table 1).
2. Faculty directed review and analysis of the thesis or independent study (see Table 2).

5
**Table 1. Relationship of Program Goals to Assessment Methods & Tools of Individual Courses**

<table>
<thead>
<tr>
<th>At the completion of the MST graduate program, students should be able to:</th>
<th>Individual Course Assessment Methods</th>
<th>Individual Course Assessment Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Think critically and creatively;</td>
<td>Coursework that assesses student performance</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research and Select Topic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Write Topic Proposal</td>
</tr>
<tr>
<td>2. Conduct, discuss, and present research in technology;</td>
<td>Coursework that assesses student performance</td>
<td>525</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Write first three chapters of thesis or independent study</td>
</tr>
<tr>
<td>3. Apply technical management tools to solve problems</td>
<td>Coursework that assesses student performance</td>
<td>520</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research case studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Research and write three papers on technical management topics</td>
</tr>
<tr>
<td>4. Produce a body of research deemed publishable in appropriate professional contexts.</td>
<td>Coursework that assesses student performance</td>
<td>996</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Write independent study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>997</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Write thesis</td>
</tr>
</tbody>
</table>

**Table 2. Relationship of Program Goals to Assessment Methods of Theses and Independent Studies**

<table>
<thead>
<tr>
<th></th>
<th>Thesis/Independent Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Think critically and creatively;</td>
<td>Thesis/Independent Study</td>
</tr>
<tr>
<td>2. Conduct research in industrial technology;</td>
<td>Thesis/Independent Study</td>
</tr>
<tr>
<td>3. Prepare, present, and discuss research;</td>
<td>Thesis/Independent Study</td>
</tr>
<tr>
<td>4. Discuss and apply technical management tools to solve problems;</td>
<td>Thesis/Independent Study</td>
</tr>
<tr>
<td>5. Produce a body of research deemed publishable in appropriate professional contexts;</td>
<td>Thesis/Independent Study</td>
</tr>
</tbody>
</table>

Several *indirect* methods of assessment have been or will be implemented in the Department of Technology. The department faculty currently review *enrollment trends, retention, and graduation rates* to identify patterns or emerging issues. We review
syllabi and assignments to assess follow-through with incorporation of goals and other courses of action identified by faculty. We also encourage students to demonstrate their understanding of theoretical principles of the Industrial Technology profession by participating in professional testing such as the Association of Technology, Management, and Applied Engineering certification test, and the Society of Manufacturing Engineers certification test.

Beginning in the spring of 2012, we will distribute a Student Exit Survey (administered by the CoBPA office) to determine student perceptions of their program of study.

A similar survey will be constructed and distributed to alumni to solicit comparable and additional information about the Department of Technology’s program effectiveness. This Alumni Survey will be distributed two years after graduation beginning in the spring of 2012.

Another survey will be constructed and distributed in the fall of 2012 to employers of Technology graduates soliciting information about program effectiveness. Specifically, questions about graduates’ abilities to demonstrate an overall competency in the program goals will be asked. This survey will be distributed to employers one year after a student has graduated, as an Employer Survey.

In addition, an electronic alumni newsletter will be distributed it to hundreds of alumni and friends of our department. This publication will serve to maintain a connection between the department and our alumni. It will also assist in our efforts to regularly invite alumni back to our department to speak to our students about their careers and accomplishments, and the relevance of Technology in their lives and work. It is expected that this activity will provide the department with rich feedback about the value and relevance of our program.

Timeline and Description of Assessment Process

Within two weeks of the end of each semester faculty report the results of their individual course assessments to the department’s Assessment Coordinator. Data is collected on standardized assessment forms. Once the Coordinator receives the individual course assessments, including the Senior Capstone assessment results, the data is compiled and the results communicated to the Department of Technology faculty in the form of an Assessment Report and
during a faculty assessment meeting or workshop at the beginning of each fall semester. During this meeting, faculty review program goals and course objectives, document assessment methods and results, review recommendations and implement changes. This action not only provides faculty the opportunity to review the curriculum, but also provides them with a sense of student strengths and weaknesses as they have proceeded through the courses, and to consider the department offerings and assessment process. In addition, explicit discussion identifies which program goals, if any, are not being met adequately and how weaknesses in the upcoming course assignments and curricular planning can be addressed.

All assessment-related discussions are documented and filed with other assessment data in a centralized file that is created for each year’s program assessment data, results, and process documentation. Access to this file is restricted to faculty and staff, and is stored in a locked room.

Observations generated by all assessment methods contribute to on-going curriculum and course development in the Department of Technology. Any consideration of new courses or curricula will explicitly address how they will include the Department’s program goals. Those program goals are reviewed annually. The courses of action that may result from assessment include:

- Additions, deletions, or modifications of individual courses
- Modifications in curricular requirements
- Development of specific areas of faculty competence
- Shifts in resources for staffing sections, hiring, or equipment
- Shifts in emphasis of goals and assignments
- Raising standards of performance through assessment practices

Table 3. Individual Course Direct Assessment

<table>
<thead>
<tr>
<th>GPA Criteria</th>
<th>Direct Assessment Results</th>
<th>Use of Assessment Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>75% (min. of 3.0 on a 4.0 scale)</td>
<td>100% demonstrate an understanding of graduate studies in the Technology Department&lt;br&gt;100% demonstrate the ability to think critically and creatively&lt;br&gt;100% demonstrate learning growth</td>
<td>This introduction course to graduate studies in the Department of Technology continues to prove valuable to the education of our students by introducing them to the graduate program and teaching them to think critically and creatively in the production of meaningful artifacts. &lt;br&gt;&lt;br&gt;&lt;br&gt;&lt;br&gt;The recommendation is to continue with this course.</td>
</tr>
</tbody>
</table>

In addition, at the completion of each Thesis and Independent Study the chair or advisor of that research will submit data on a standardized department form titled
“Thesis/Independent Study Assessment” that considers student competency in demonstrating the program and student earning goals and objectives (see Table 4).

<table>
<thead>
<tr>
<th>Program and Student Learning Goals and Objectives</th>
<th>Thesis or Independent Study title</th>
<th>Assessment Method</th>
<th>Assessment Tools</th>
<th>Assessment Results</th>
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</tr>
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<tbody>
<tr>
<td>Goal 1. Think critically and creatively.</td>
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<td>Coursework that assesses student performance</td>
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<td>Writing is clear and concise demonstrating student’s ability to think critically and creatively</td>
<td>The requirement of this final body of research continues to prove valuable to the education of our students teaching them to think critically and creatively in the production of meaningful artifacts. <strong>Recommendation is to continue with this course.</strong></td>
</tr>
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<td>Objective 1.1 Student demonstrates knowledge of concepts, issues, facts, and theories related to their research.</td>
<td>Spring 2006 Dr. Lynda Kenney</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Responsibility of Assessment**

All faculty are responsible for collecting, analyzing, interpreting, and documenting assessment data from their individual courses. In addition, departmental faculty meet at an agreed time at the end of each semester to share information about semester courses that were assessed and in particular, and what was learned from the data analyzed. Faculty are also expected to share information about how they will address areas of concern related to individual courses they teach.

A special meeting—assessment retreat to talk about closing the loop—is scheduled at the beginning of each fall semester for faculty to discuss changes to be made to courses and program, and the reason for any proposed changes.

Approved 10-12-2012
Department of Technology
College of Business and Public Administration

Graduate Program Assessment Plan
2006 - 2007

Contact Person

Dr. Lynda Kenney
Assessment Coordinator
1.701.777.2197
Lynda.Kenney@und.edu
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Department of Technology

The purpose of the Department of Technology shall be to contribute to the mission of the University of North Dakota as an accredited professional program of study offering undergraduate and graduate degrees that:

a. Provide a diverse, comprehensive, and professional education to prepare graduates for careers in education and industry.
b. Preserve, create, demonstrate, and disseminate knowledge applicable to Electronics and Control Systems, Manufacturing, and Graphic Communication.
c. Contribute to the interdisciplinary studies within the University.
d. Advance technology transfer for economic development through educational and industrial partnerships.1

1 At present, our faculty members represent the emphasis areas of Manufacturing, Graphic Communication, Electronics and Control, Safety, and Teacher Certification.
**Goals for Student Learning**

The Master of Science in Industrial Technology (MSIT) graduate program enrolls qualified students for postgraduate education and prepares them to be advanced technical, management, or education professionals. By graduation, students should be able to:

1. Think critically and creatively;
2. Conduct research in industrial technology;
3. Prepare, present, and discuss research;
4. Discuss and apply technical management tools to solve problems;
5. Produce a body of research deemed publishable in appropriate professional contexts.

**Objectives and Desired Learning Outcomes**

The Department of Technology is committed to meaningful assessment that is used to enhance student learning and improve the quality of our program. Our overall objectives throughout each student’s graduate career include guiding students in the synthesis and integration of the Industrial Technology graduate program’s goals for student learning.

The thesis and independent study serve as primary ways of understanding how courses, advising, experiential learning opportunities, and overall graduate education have contributed to student knowledge. Producing these bodies of research provide students with important opportunities to apply what they have learned throughout their coursework and to gain new knowledge through research. Furthermore, requiring students to prepare, analyze, evaluate, synthesize, present and discuss their research challenges them to think critically and creatively.

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Two significant direct assessment methods in the Department of Technology are:

1. Faculty review and analysis of student learning in individual courses taught (see Table 1).
2. Faculty directed review and analysis of the thesis or independent study (see Table 2).

### Table 1. Relationship of Program Goals to Assessment Methods & Tools of Individual Courses

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<th>Individual Course Assessment Tools</th>
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<tbody>
<tr>
<td>1. Think critically and creatively;</td>
<td>Coursework that assesses student performance</td>
<td>500 Research and Select Topic Write Topic Proposal</td>
</tr>
<tr>
<td>2. Conduct research in industrial technology;</td>
<td>Coursework that assesses student performance</td>
<td>525 Write first three chapters of thesis or independent study</td>
</tr>
<tr>
<td>3. Prepare, present, and discuss research;</td>
<td>Coursework that assesses student performance</td>
<td>545 Research, write, present and discuss articles and studies</td>
</tr>
<tr>
<td>4. Discuss and apply technical management tools to solve problems;</td>
<td>Coursework that assesses student performance</td>
<td>550 Research case studies Research and write three papers on technical management topics</td>
</tr>
<tr>
<td>5. Produce a body of research deemed publishable in appropriate professional contexts.</td>
<td>Coursework that assesses student performance</td>
<td>996 Write independent study 997 Write thesis</td>
</tr>
</tbody>
</table>
Table 2. Relationship of Program Goals to Assessment Methods of Theses and Independent Studies

| 1. Think critically and creatively; | Thesis/Independent Study |
| 2. Conduct research in industrial technology; | Thesis/Independent Study |
| 3. Prepare, present, and discuss research; | Thesis/Independent Study |
| 4. Discuss and apply technical management tools to solve problems; | Thesis/Independent Study |
| 5. Produce a body of research deemed publishable in appropriate professional contexts; | Thesis/Independent Study |

Several *indirect* methods of assessment have been or will be implemented in the Department of Technology. The department currently reviews *enrollment trends, retention, and graduation rates* to identify patterns or emerging issues. We review *syllabi and assignments* to assess follow-through with incorporation of goals and other courses of action identified by faculty. We also encourage students to demonstrate their understanding of theoretical principles of the Industrial Technology profession by participating in *professional testing* such as the National Association of Industrial Technology certification test, and the Society of Manufacturing Engineers certification test.

Beginning in the spring of 2007, we will construct and distribute a *Student Exit Survey* in each Thesis and Independent Study course to determine student perceptions of their program of study. Specifically, questions about experiential learning opportunities, advising and mentoring, curriculum quality, research experiences, and post-graduate transitions will be posed.

A similar survey will be constructed and distributed to alumni to solicit comparable and additional information about the Department of Technology’s program.
effectiveness. This Alumni Survey will be distributed two years after graduation beginning in the spring of 2007.

Another survey will be constructed and distributed in the fall of 2006 to employers of Industrial Technology graduates soliciting information about program effectiveness. Specifically, questions about graduates’ abilities to demonstrate an overall competency in the program goals will be asked. This survey will be distributed to employers one year after a student has graduated, as an Employer Survey.

In addition, we will begin in the fall of 2006 publication of an electronic alumni newsletter and distribute it to hundreds of alumni and friends of our department. This publication will serve to maintain a connection between the department and our alumni. It will assist in our efforts to regularly invite alumni back to our department to speak to our students about their careers and accomplishments, and the relevance of Industrial Technology in their lives and work. In this way we receive rich feedback about the value and relevance of our program.

**Timeline and Description of Assessment Process**

Within two weeks of the end of each semester, faculty will send an electronic document (see Table 3) communicating the results of their individual course assessments to the department’s Assessment Coordinator.

<table>
<thead>
<tr>
<th>Course Number and Program and Student Learning</th>
<th>Direct Assessment Methods</th>
<th>Direct Assessment Tools</th>
<th>GPA Criteria</th>
<th>Direct Assessment Results</th>
<th>Use of Assessment Results</th>
</tr>
</thead>
</table>

*Table 3. Individual Course Direct Assessment*
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Goals and Objectives</th>
<th>Coursework that assesses student performance</th>
<th>Interpretive analysis of graduate studies in the Department of Technology</th>
<th>Write topic proposal</th>
<th>75% (min. of 3.0 on a 4.0 scale)</th>
<th>100% demonstrate an understanding of graduate studies in the Technology Department</th>
<th>100% demonstrate the ability to think critically and creatively</th>
<th>100% demonstrate learning growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 F06</td>
<td>Goal 1. Think critically and creatively. Objective 1.1 Students will demonstrate an ability to analyze and interpret new information. Objective 1.2 Students will demonstrate a broad knowledge of concepts, issues, and facts related to graduate studies in the Department of Technology.</td>
<td>Coursework that assesses student performance</td>
<td>Interpretive analysis of graduate studies in the Department of Technology</td>
<td>Write topic proposal</td>
<td>75% (min. of 3.0 on a 4.0 scale)</td>
<td>100% demonstrate an understanding of graduate studies in the Technology Department</td>
<td>100% demonstrate the ability to think critically and creatively</td>
<td>100% demonstrate learning growth</td>
</tr>
<tr>
<td>3 credits</td>
<td>Introduction to Graduate Studies</td>
<td>5</td>
<td>Dr. Lynda Kenney</td>
<td>This introduction course to graduate studies in the Department of Technology continues to prove valuable to the education of our students by introducing them to the graduate program and teaching them to think critically and creatively in the production of meaningful artifacts.</td>
<td>The recommendation is to continue with this course.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In addition, at the completion of each Thesis and Independent Study the chair or advisor of that research will submit data on a standardized department form titled “Thesis/Independent Study Assessment” that considers student competency in demonstrating the program and student earning goals and objectives (see Table 4).

### Table 4. Thesis/Independent Study Assessment

<table>
<thead>
<tr>
<th>Program and Student Learning Goals and Objectives</th>
<th>Thesis or Independent Study title</th>
<th>Assessment Method</th>
<th>Assessment Tools</th>
<th>Assessment Results</th>
<th>Recommendations Based on Assessment Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 1. Think critically and creatively.</td>
<td>ENTRY LEVEL GRAPHIC DESIGN STUDENTS: INFLUENCES OF SKETCHING ON THE DEVELOPMENT OF CREATIVITY</td>
<td>Coursework that assesses student performance</td>
<td>Research and write thesis or independent study</td>
<td>Writing is clear and concise demonstrating student’s ability to think critically and creatively</td>
<td>The requirement of this final body of research continues to prove valuable to the education of our students teaching them to think critically and creatively in the production of meaningful artifacts.</td>
</tr>
<tr>
<td>Objective 1.1 Student demonstrates knowledge of concepts, issues, facts, and theories related to their research.</td>
<td>Spring 2006 Dr. Lynda Kenney</td>
<td></td>
<td></td>
<td></td>
<td>Recommendation is to continue with this course.</td>
</tr>
</tbody>
</table>

Once the Assessment Coordinator receives the individual course assessments and the Thesis/Independent Study assessment results, she will compile the data and communicate the results to the Department of Technology faculty during a half-day, all-faculty retreat. During this retreat, faculty will review program goals and course objectives, document assessment methods and results, review recommendations and implement changes. This action not only provides faculty the opportunity to review the curriculum and research products, but also provides faculty with a sense of student strengths and weaknesses as they have proceeded through our courses, and to consider
our department offerings and our assessment process. In addition, explicit discussion will identify which program goals are not being met adequately and how we can address any weaknesses in our upcoming course assignments and curricular planning.

All assessment-related discussions will be documented and filed with other assessment data in a centralized file that will be created for each year’s program assessment data, results, and process documentation. Access to this file will be restricted to faculty and staff.

Observations generated by all assessment methods will contribute to on-going curriculum and course development in the Department of Technology in the coming years. Any consideration of new courses or curricula will explicitly address how they will include our program goals. The Department’s program goals will be reviewed annually. The courses of action that may result from assessment include:

- Additions, deletions, or modifications of individual courses
- Modifications in curricular requirements
- Development of specific areas of faculty competence
- Shifts in resources for staffing sections, hiring, or equipment
- Shifts in emphasis of goals and assignments
- Raising standards of performance through assessment practices

**Responsibility of Assessment**

All faculty are responsible for collecting, analyzing, interpreting, and documenting assessment data from their individual courses. The departmental Assessment Coordinator will be responsible for compiling the individual course assessment results and Thesis/Independent Study assessment results, and presenting information to the department in the form of an annual assessment report.

Approved 11/08/2006