Enterprise Resource Planning (ERP)

Web site: http://web.mst.edu/~erpcenter

Email: erpcenter@mst.edu
The ERP Center Overview

Corporations world-wide have focused on improving business processes for the past two decades. In their efforts to use information technology more effectively in enabling business processes, we have seen the emergence and growth of Enterprise Systems, and more recently, Extended Enterprise Systems such as Supply Chain Management (SCM), Customer Relationship Management (CRM), Strategic Enterprise Management (SEM), and Business Intelligence. Most Fortune 500 companies have already adopted Enterprise Resource Planning (ERP) systems and many midsize companies are also planning ERP implementations. With a commitment to keep pace with these changes in business processes and technology, the University of Missouri system joined SAP's University alliance and Microsoft's University Alliance programs in order to continue and expand classroom capabilities for integrating ERP software into the curriculum.

read more
Faculty Introduction

- Dr. Bih-Ru Lea, Director, Center for ERP
- Dr. Vincent Yu
- Dr. Ray Kluczny (Emeritus)
- Dr. Barry Flachsbart (Default graduate Advisor)
- Ms. Yu-Hsien Chiu (undergraduate Advisor)
- Mr. Ryan Sims, SAP Administrator
- New Faculty, Craig Claybaugh (fall 2010)
What is Enterprise Resource Planning (ERP)?
Enterprise Resource Planning (ERP) System

ERP software systems facilitate decision making by capturing all corporate data and making it available to managers as usable information.

Vendors: SAP, Oracle/PeopleSoft and Microsoft.

The Enabling Position of ERP Architecture

Source: Chapter 1: Realizing the Epic-dream of ERP, In Strategic ERP Extension and Use by Elliot Bendoly and F. Jacobs, Stanford Business Books; 1 edition (August 15, 2005)
Who Should Learn ERP…

In 2009…

- 70% of the world economy's transactions in some shape or form touch an SAP system
- 2.5 billion utility bills are processed by SAP software each year
- 65% of all chocolate in the world is manufactured using SAP software
Who Should Learn ERP…

In 2009…

- 70% of the world economy's transactions in some shape or form touch an SAP system.
- 2.5 billion utility bills are processed by SAP software each year.
- 65% of all chocolate in the world is manufactured using SAP software.

Now, add companies that run other ERP software (e.g., Oracle, Microsoft).
Who Should Learn ERP…

In 2009...

- SAP has more the 82,000 customers across 120 countries
- 85% of the Fortune 500 run SAP software
- 80% of Fortune 1,000 companies run SAP software
- 60% of Fortune 2,000 companies run SAP software
- Approximately 64,000 SAP customers are small businesses or midsize companies
Who Should Learn ERP…

In 2009…

- SAP has more than 82,000 customers across 120 countries
- 85% of the Fortune 500 run SAP software
- 80% of Fortune 1,000 companies run SAP software
- 60% of Fortune 2,000 companies run SAP software
- Approximately 64,000 SAP customers are small businesses or midsize companies

Now, add companies that run other ERP software (e.g., Oracle, Microsoft)
Missouri S&T and SAP

- We have the largest ERP program in the State of Missouri and one of the best in the nation
- Missouri S&T is a part of SAP’s University Alliance Program
- Missouri S&T was one of five SAP Hosting Centers from 2000 to 2006
- Among the very few self-hosted schools currently
  - Most schools use an application service provider model
- We deploy and run all necessary SAP software for our ERP curriculum
Our Mission…

to leverage ERP technology to improve business performance and competitive advantages
Our Objectives and Goals…

Objective: Leverage the information technology to achieve a competitive advantage through ERP education.

- To carry out research associated with application of ERP technologies
- To break academic “silos” to show students how one discipline affects another and ultimately how they all impact the company
Our Objectives and Goals...

Objective: Bring managerial relevance into academic teaching through industry collaboration

- To establish and improve industry relationship
- To provide a vehicle for students to learn development and research skills.
Technology Based Creative Learning
Small Classes

Individual Attention
Software Resources

- **SAP Products**
  - SAP ECC Core
  - Customer Relationship
  - Business Intelligence
  - Supply Chain Management
  - Performance Dashboard
  - Portal
  - xRPM
  - etc.
  - **Microsoft Dynamic** (Microsoft’s ERP software)

- **Oracle**
  - Database
  - Developer Suite
  - Application Server
  - E-Business Suite (in planning)

- **SAS**
  - Statistics
  - Business Intelligence
    - Enterprise Miner
    - Text Miner
  - Business Performance Management Suite (in negotiation)
Agenda

- Introduction
- Curriculum and Certification Options
- Advising
- Research and Thesis
- Career Paths
- Co-op/Internship
- Enrichment Activities
- General Question & Answers
- Breakout Sessions
Certificates in ERP

The ERP Center Overview

Corporations worldwide have focused on improving business processes, and more recently, Established systems like Enterprise Resource Planning (ERP) systems and many midsize companies are implementations. With a commitment to keep pace with business processes and technology, the University of Missouri’s University Alliance and Microsoft’s University Alliance continue to expand classroom capabilities for integrating the curriculum.
SAP Certificate of Excellence

- Issued by SAP Company
- Appears on resume
- Both undergraduate and graduate students can apply
- The SAP Certificate provides proof that a student has taken three courses with SAP content (30% or higher).
ERP or BI Graduate Certificate

- Issued by the University after formal application and careful verification that it has been earned.
- It appears on the transcript.
- Only graduate students can earn an ERP or BI Graduate Certificate.
- The ERP Graduate Certificate does not verify any specific SAP content, only that ERP or BI academic content has been mastered, in accordance with the standards which have been approved all the way up to the Missouri Board of Higher Education.
Corporations worldwide have focused on improving business processes and technology, taking advantage of information systems and effectively enabling business processes. In the past twenty years, many midsize companies have already adopted Enterprise Resource Planning (ERP) systems. With a commitment to keep pace with business processes and technology, the University of Missouri-Rolla and SAP's University alliance and Microsoft's University Alliance will continue to develop classroom capabilities for integrating ERP systems into the curriculum.
Curriculum and Certificates

- Undergraduate Students
  - Emphasis Area in ERP
  - Minor in ERP

- Certificate
  - Missouri S&T - SAP Certificate of Excellence
Curriculum and Certificates

Graduate Students
- Masters in Information Science & Technology
- MBA
- ...

Certificates
- Missouri S&T - SAP Certificate of Excellence
- ERP Graduate Certificate
- Business Intelligence Graduate Certificate
Curriculum and Certificates

- Non-Degree
  - Missouri S&T - SAP Certificate of Excellence
  - ERP Graduate Certificate
  - Business Intelligence Graduate Certificate
Agenda

- Introduction
- Curriculum and Certification Options
- Advising
- Research and Thesis
- Career Paths
- Co-op/Internship
- Enrichment Activities
The Enabling Position of ERP Architecture

- **Transactional applications (B2B/B2C, e-commerce)**
  - ERP246, ERP346, ERP446, ERP 3XX Portal
- **Data Warehouse**
  - ERP345, ERP444
- **SRM and Collaborative R&D**
  - ERP347, ERP346, ERP446
- **Strategic Enterprise Management**
  - ERP348, ERP448
- **SCM and Collaborative Logistics**
  - ERP347
- **Data Mining**
  - ERP345, IST443
- **CRM and Collaborative R&D**
  - ERP442, ERP347, ERP346, ERP446
- **Advanced Planning & Scheduling**
  - ERP347
<table>
<thead>
<tr>
<th>Course</th>
<th>Short Course Title</th>
<th>Course Schedule</th>
<th>Course Focus</th>
<th>SAP Certificate Courses***</th>
<th>Undergraduate</th>
<th>Graduate Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Spring</td>
<td>Summer</td>
<td>Fall</td>
<td>End User Application</td>
<td>Developer</td>
</tr>
<tr>
<td>ERP 246</td>
<td>Intro to ERP</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>R</td>
</tr>
<tr>
<td>ERP 3XX</td>
<td>Enterprise Portal</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>ERP 345</td>
<td>Use of Business Intelligence</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>ERP 346</td>
<td>ERP Design &amp; Implementation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>R</td>
</tr>
<tr>
<td>ERP 347</td>
<td>Supply Chain Management Systems</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>ERP 348</td>
<td>Strategic Enterprise Management System</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>ERP 349</td>
<td>ERP System Administration</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>E</td>
</tr>
<tr>
<td>ERP 442</td>
<td>Customer Relationship Management**</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ERP/IST 444</td>
<td>Data Warehouse</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ERP 446</td>
<td>ERP Configuration</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>ERP 448</td>
<td>Enterprise Performance Management System Prototyping**</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BUS 426</td>
<td>Business Process Integration Using ERP</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IST 443</td>
<td>Information Retrieval &amp; Analysis</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IST 445</td>
<td>Database Marketing</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUS 120</td>
<td>Financial Accounting</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* R: Required Certificate Courses  
E: Elective Courses
** ERP442 and ERP448 are offered alternately in fall semester. That is, ERP442 and ERP448 will be offered once every other fall semester.
*** Exception: No more than two of the following can be counted, since portions of the SAP material overlaps in these three courses: ERP 246, ERP 346, BUS 426.
Typical Course Suggestions

### Undergraduate Students

#### (R: Required courses; E: Elective)

**Course Short Course Title**  
More IT focused  
More end user & Business focused  

<table>
<thead>
<tr>
<th>Course</th>
<th>Short Course Title</th>
<th>ERP Graduate Certificate</th>
<th>BI Graduate Certificate</th>
<th>MBA Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERP 246</td>
<td>Intro to ERP</td>
<td>R</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>ERP 3XX</td>
<td>Enterprise Portal</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 345</td>
<td>Use of Business Intelligence</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 346</td>
<td>ERP Design &amp; Implementation</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>ERP 347</td>
<td>Supply Chain Management Systems</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 348</td>
<td>Strategic Enterprise Management System</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 349</td>
<td>ERP System Administration</td>
<td>E</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>ERP 442</td>
<td>Customer Relationship Management</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP/IST 444</td>
<td>Data Warehouse</td>
<td>E</td>
<td>E</td>
<td>R</td>
</tr>
<tr>
<td>ERP 446</td>
<td>ERP Configuration</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>ERP 448</td>
<td>Enterprise Performance Management System Prototyping</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>IST 443</td>
<td>Information Retrieval &amp; Analysis</td>
<td></td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>IST 445</td>
<td>Database Marketing</td>
<td></td>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

### Graduate Students

**Course Short Course Title**  
Supply Chain  
ERP General End Users  
ERP General Developer  
ERP Dashboard/Scorecard Developer  

<table>
<thead>
<tr>
<th>Course</th>
<th>Short Course Title</th>
<th>ERP Graduate Certificate</th>
<th>BI Graduate Certificate</th>
<th>MBA Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERP 246</td>
<td>Intro to ERP</td>
<td>R</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>ERP 3XX</td>
<td>Enterprise Portal</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 345</td>
<td>Use of Business Intelligence</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 346</td>
<td>ERP Design &amp; Implementation</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>ERP 347</td>
<td>Supply Chain Management Systems</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 348</td>
<td>Strategic Enterprise Management System</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP 349</td>
<td>ERP System Administration</td>
<td>E</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>ERP 442</td>
<td>Customer Relationship Management</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>ERP/IST 444</td>
<td>Data Warehouse</td>
<td>E</td>
<td>E</td>
<td>R</td>
</tr>
<tr>
<td>ERP 446</td>
<td>ERP Configuration</td>
<td>R</td>
<td>R</td>
<td>R</td>
</tr>
<tr>
<td>ERP 448</td>
<td>Enterprise Performance Management System Prototyping</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>IST 443</td>
<td>Information Retrieval &amp; Analysis</td>
<td></td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>IST 445</td>
<td>Database Marketing</td>
<td></td>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

**Typical Course Suggestions**

- **Undergraduate Students**
  - Required courses: R
  - Elective courses: E

- **Graduate Students**
  - Required courses: R
  - Elective courses: E

**Notes**

- ERP Courses
- Non-ERP Courses
Advising

- Degree Requirements
- Advising Process
- Graduation
Agenda

- Introduction
- Curriculum and Certification Options
- Advising
- Research and Thesis
- Career Paths
- Co-op/Internship
- Enrichment Activities
Research

- Undergraduate Students
  - Opportunity for Undergraduate Research (OURE)
  - Class Research Projects
  - Independent Research Project with faculty

- Graduate Students
  - Thesis
  - Class Research Projects
  - Independent Research Project with faculty
Industry Research Collaboration

- Faculty Supervised Student Projects
  - Class projects
    - Shorter term (typically one semester)
    - Can be arranged to be related projects for different classes
  - Thesis projects
    - Longer term (typically two to three semesters)
    - Can be single project for one student or related projects for a group of students

- Faculty Research Projects
Corporate Advisory Board Partners

- Accenture
- Monsanto
- Boeing
- Caterpillar
- Cerner
- EDS
- AT&T
- Tellabs
- Junction Solutions
- ...
Agenda

- Introduction
- Curriculum and Certification Options
- Advising
- Research and Thesis
- **Career Paths**
- Co-op/Internship
- Enrichment Activities
Center for Enterprise Resource Planning (ERP)

Career Outlook in the field of ERP…

Now, add jobs from companies using other ERP software (e.g., Oracle, Microsoft)
Career Outlook in the field of ERP

InformationWeek U.S. IT Salary Survey 2008 Results

- How this is calculated

Job Function: Application Development
Position Level: Staff
Geographic Area: United States

<table>
<thead>
<tr>
<th>SALARY</th>
<th>TOTAL COMPENSATION (including bonuses, stock options, etc.)</th>
<th>PERCENT INCREASE IN SALARY OVER LAST YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>High:</td>
<td>105,000</td>
<td>High: 115,000</td>
</tr>
<tr>
<td>Average:</td>
<td>92,000</td>
<td>Average: 98,000</td>
</tr>
<tr>
<td>Low:</td>
<td>75,000</td>
<td>Low: 74,000</td>
</tr>
</tbody>
</table>

InformationWeek 2009 U.S. IT Salary Adviser

- How this is calculated

Job Function: Enterprise Resource Planning (ERP)
Position Level: Staff
Geographic Area: United States

<table>
<thead>
<tr>
<th>SALARY</th>
<th>TOTAL COMPENSATION (including bonuses, stock options, etc.)</th>
<th>PERCENT INCREASE IN SALARY OVER LAST YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>High:</td>
<td>110,000</td>
<td>High: 124,750</td>
</tr>
<tr>
<td>Median:</td>
<td>99,800</td>
<td>Median: 101,800</td>
</tr>
<tr>
<td>Low:</td>
<td>82,200</td>
<td>Low: 82,200</td>
</tr>
</tbody>
</table>
Career Outlook in the field of ERP...

InformationWeek U.S. IT Salary Survey 2008 Results

<table>
<thead>
<tr>
<th>Job Function: Enterprise Resource Planning (ERP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position Level: Management</td>
</tr>
<tr>
<td>Geographic Area: United States</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SALARY</th>
<th>TOTAL COMPENSATION (including bonuses, stock options, etc.)</th>
<th>PERCENT INCREASE IN SALARY OVER LAST YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>156,000</td>
<td>High: 180,000</td>
</tr>
<tr>
<td>Average</td>
<td>115,000</td>
<td>Average: 125,000</td>
</tr>
<tr>
<td>Low</td>
<td>106,000</td>
<td>Low: 106,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SALARY</th>
<th>TOTAL COMPENSATION (including bonuses, stock options, etc.)</th>
<th>PERCENT INCREASE IN SALARY OVER LAST YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>132,000</td>
<td>High: 145,000</td>
</tr>
<tr>
<td>Median</td>
<td>118,909</td>
<td>Median: 124,750</td>
</tr>
<tr>
<td>Low</td>
<td>96,500</td>
<td>Low: 100,000</td>
</tr>
</tbody>
</table>
ERP Consultant Career Path

PMO

Subject Matter Expert
Conversion
Solution Architect
System Test

Cross Functional Modules Team Lead
Technical Team Lead
Change Management Team Lead

Functional Module 1 Team Lead
Functional Module n Team Lead
Technical Infrastructure Team Lead
Development and Interface Team Lead

Functional Module 1 Consultant
Functional Module n Consultant
Technical Infrastructure Consultant
Development and Interface Consultant
Training Consultant
Communication Consultant
Project Management Career

- Program Manager
- Quality Assurance
- Project Manager
- Module or Project Lead
Agenda

- Introduction
- Curriculum and Certification Options
- Advising
- Research and Thesis
- Career Paths
- Co-op/Internship
- Enrichment Activities
Our Co-op/Internship Program

“The real world experience I got at … is invaluable. My co-workers treated me like a member of the team and were genuinely concerned about my success during my time there.”

—Sarah Richmond

Co-op Average Salaries

<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Undergraduate Students</th>
<th>Graduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Business</td>
<td>Information Science &amp; Technology</td>
</tr>
<tr>
<td>2006 - 2007</td>
<td>$2,402</td>
<td>$2,601</td>
</tr>
<tr>
<td>2007 - 2008</td>
<td>$2,311 (co-op)</td>
<td>$2,575 (co-op)</td>
</tr>
<tr>
<td></td>
<td>$2,313 (intern)</td>
<td>$3,224 (intern)</td>
</tr>
</tbody>
</table>
Center for Enterprise Resource Planning (ERP)

http://career.mst.edu

Employer Services

Employers select to recruit at Missouri University of Science and Technology because of its outstanding academic reputation and being one of the top technological research universities in the nation. While known as one of the nation’s best engineering and computing schools, Missouri S&T offers a wide variety of outstanding academic programs, infusing them with a unique technological perspective.

Whether you are looking to fill positions for full-time, co-op or summer, the Career Opportunities Center is committed in providing you with outstanding employees. The COC offers the following recruiting resources:

MinerJobs is an electronic job system that allows you to view and add job postings, request and participate in on campus interview schedules, register for the career fair, information sessions, special events and more!

Career Fair is a one day recruiting event where you meet with Missouri S&T students and alumni who are well educated, have a high degree of career maturity and bring a strong work ethic to the workplace.
Student Eligibility

- Freshmen
  - After first two semesters

- Transfer
  - Immediately eligible

- Graduate (M.S./Ph.D.)
  - Domestic
    - After completing one semester
  - International
    - After completing 9 months of studies, and with advisor approval.
International Students

Co-Op for International Students

- International Students are eligible to apply for up to 12 months of Curricular Practical Training (CPT) which allows them to accept internship or co-op positions prior to graduation.
- Employers do not need to sponsor international students for co-op or internship employment.
  - CPT is approved and issued by the Missouri S&T International Affairs Office, and can be processed within one week.

STEM program

- The Information Science & Technology (IST) major is one of the STEM programs
  - Before graduation: 12 month Curricular Practical Training (CPT)
  - After graduation: 29 month Optional Practical Training (OPT)
Where our ERP students work...

...and many others
Agenda

- Introduction
- Curriculum and Certification Options
- Advising
- Research and Thesis
- Career Paths
- Co-op/Internship
- Enrichment Activities
Enrichment Activities

The Center for ERP provides a series of enrichment activities ranging from resume preparation, ethics, professionalism, to subject knowledge lectures to prepare students for the work place.
Corporations world-wide have focused on improving business processes for the past two decades. In their efforts to use information technology more effectively in enabling business processes, we have seen the emergence and growth of Enterprise Systems, and more recently, Extended Enterprise Systems such as Supply Chain Management (SCM), Customer Relationship Management (CRM), Strategic Enterprise Management (SEM), and Business Intelligence. Most Fortune 500 companies have already adopted Enterprise Resource Planning (ERP) systems and many midsize companies are also planning ERP implementations. With a commitment to keep pace with these changes in business processes and technology, the University of Missouri system joined SAP's University alliance and Microsoft's University Alliance programs in order to continue and expand classroom capabilities for integrating ERP software into the curriculum.

read more