# Course Title: IBM Business Computing

# Course Description:

BCI433 introduces business information technology on the IBM midrange family of computers running on an IBM i operating system. Students will utilize an object based architecture using IBM i tools to create business applications. These applications will be developed using the DB2 relational database, Control Language commands and programming, and the business orientated RPGLE programming language. To demonstrate the heterogeneous systems support available on the IBM i platform, students will investigate the Integrated File System, which supports nonnative file systems, desktop connectivity tools, and support for mobile application development.

# Learning Outcomes:

1. Use IBM’s object based operating system to create, house and manage enterprise applications.
2. Apply IBM i security commands to ensure that IBM i databases and libraries are protected.
3. Apply IBM application development tools and RPGLE programming language when developing business applications.
4. Create a simple mobile application that runs on IBM i to demonstrate tool effectivity.
5. Use the system command language to run and manage business applications as batch and interactive jobs that utilize resources efficiently.
6. Embed structured query language statements in application development programming code
7. Use IBMi operating system menus and create custom user menus

Topic Outline:

* + Functions of an operating system – 2.5% o Including user interface, resource management, programmer support, job scheduling (WRKSBMJOB), file system, networking, system monitoring (WRKACTJOB).
  + Data representation - 2.5% o Typical data formats (including text, zoned and packed decimal) and reading a file dump.
  + System i Overview - 10% o Single-level storage, libraries, files, naming conventions, screen elements, system menus, and system libraries
    - Objects: System i object based architecture, types of objects, object attributes, qualified names and requesting or locating an object
    - System Values, User profiles
  + Working with Queues – 2.5% o Job, output, and message queues and related commands.
  + Describing a database file - 10% o Differences between program and externally described files, methods of creating an externally described file (including DDS coding) and data entry with the Data File Utility.
  + Physical, logical files and additional database facilities - 5% o Physical files and access paths, describing a logical file - alternate access path, selection and omission, projection, creating a logical file, preserving the existing data in a file, the copy file command and SQL
    - Overriding a Data Base File
  + Learning the IBM Rational Developer for System i toolset - 10% o Remote Systems Explorer, perspectives and views, using the LPEX editor with different programming languages, Remote compiling and the iSeries error list view
    - Creating interactive screens with input and output data fields, using indicators and performing field validation
    - Creating printer files
  + System security - 2.5% o Security levels, user profiles, classes of authority, object authority, authorization lists.
  + CL (Command Language) programming - 15% o Keyword & positional parameters, passing parameters, Commands - DCL,

DCLF, CHGVAR, SNDRCVF, IF THEN, GOTO, PGM, ENDPGM, RETURN,

CALL, MONMSG, Compiling - CRTBNDCL, CRTPGM, CRTCLMOD, Debugging

* + Programming with the IBM Rational Developer for System i toolset - 35% o Create, run and debug a batch RPGLE program o Create, run and debug an interactive RPGLE program o Create, run and debug an RPGLE file update program
    - Create, run and debug an RPGLE program with embedded SQL statements
  + Setting up and running a mobile RPGLE app – 5% o Setup required to enable running of the mobile app o Modifying and deploying RPGLE mobile app code

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Week1 ---------------------------------------------------------------------------

intro to system i: IBM's previous generation of midrange computer systems

code a cl program using 'green screen'

library lists

subsystems - WRKACTJOB

<https://www.ibm.com/support/knowledgecenter/en/ssw_i5_54/cl/wrkactjob.htm>

lecture

ZEUS.SENECA.ON.CA

ZEUS.SENECACOLLEGE.CA

BCI433

IFS 🡪 Root File System 🡪 BCI433 Notes 🡪 BCI433~~.ppt🡪 copy and paste to local PC

DSPLIBL 🡪 library list

System value – System library

Student library – user library system

CRT.SRCPF QCLLESPC 🡪 same to GUI

QCLLECSRC 🡪 FILE

SYSVALPRG 🡪 PGM (new program)

DT433A40 🡪 OUT

* systvacpr (mgr)
* SYSVALPRG(spooled file)

QGPL

PRTO1 🡪 out Q

print lists here …..

Change out Q:

Show in table : object table

= WRKOBJPDM library name 🡪 it is exactly same to GUI

one line program

create new object 🡪 create new member

RDI

BC144 (Connection)

OBJECT

Library LIST

COMMAND

JOBS

IFS

SPOOLED FILES

CALL STRJOB

Week2 ---------------------------------------------------------------------------library lists

Intro to RDi: Rational Developer for i, an integrated development environment (IDE) built on the Eclipse platform

Physical Files: contain the actual data that is stored on the system

Logical files: contain a description of records found in one or more physical files

<https://www.ibm.com/support/knowledgecenter/en/ssw_ibm_i_72/rzasc/hpflf.htm>

Week3 ---------------------------------------------------------------------------

RPG with Display files

MARKSRPG program:

lab 7 - completes the MARKSRPG program

[Playing with Library Lists Exercise](https://cs.senecac.on.ca/~bci433/library_lists.doc)

Week4 ---------------------------------------------------------------------------

CL Programming with Display Files: A CL program or procedure contains only CL commands. These can be IBM-supplied commands or commands defined by you.

<https://www.ibm.com/support/knowledgecenter/en/ssw_ibm_i_71/rbam6/clpro.htm>

Week5 ---------------------------------------------------------------------------

CL Programming with Display Files

User Profiles: A number of user profiles are shipped with your system software. These IBM-supplied user profiles are used as object owners for various system functions.

<https://www.ibm.com/support/knowledgecenter/en/ssw_ibm_i_61/rzarl/rzarlibmprf.htm>

Week6 ---------------------------------------------------------------------------RPGLE Business Application

RPGLE Batch Program

programming with database files

Printer Files

File Overrides

Week7 ---------------------------------------------------------------------------RPGLE Batch Program

Passing Paramters

Using a CLLE driver Program

Dynamic and Static Calls

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| --- | --- | --- |
| **Week Number** | **Topics** | **Deliverables** |
| 1 | * intro to system i * code a cl program using 'green screen' * library lists * subsystems - WRKACTJOB * lab 1 | * Labs available for download in IFS * Path is: Root File System /BCI433 |
| 2 | * library lists * Intro to RDi * Physical Files * lab 2 | * Hand in lab 1 at beginning of the lab period |
| 3 | * RPG with Display files * lab 3 * lab 7 - completes the MARKSRPG program * [Playing with Library Lists Exercise](https://cs.senecac.on.ca/~bci433/library_lists.doc) | * Hand in lab 2 at beginning of the lab period |
| 4 | * CL Programming with Display Files * Lab 4 - Part 1 * Lab 4 - Part 2 | * Hand in lab 3 at beginning of the lab period |
| 5 | * CL Programming with Display Files * User Profiles * Review for TEST 1 | * Hand in first part of lab 4 at beginning of the lab period |
| 6 | * RPGLE Business Application * RPGLE Batch Program * programming with database files * Printer Files * File Overrides * lab 5 | * Hand in 2nd part of lab 4 * Test 1 |
| 7 | * RPGLE Batch Program * Passing Paramters * Using a CLLE driver Program * Dynamic and Static Calls * lab 6 | * Hand in Lab 5 at the beginning of the lab period |
| **Study Week!** | | |
| 8 | * RPGLE Business Updating Application * RPGLE Batch Program File Update * lab 8 | * Hand in lab 6 and Lab 7 at beginning of the lab period |
| 9 | * RPGLE Interactive Program File Update * lab 9 * Review for TEST 2 | * Hand in lab 8 at beginning of the lab period |
| 10 | * Embedded SQL in an RPGLE Program * lab 10 | * Hand in lab 9 at beginning of the lab period * Week 10 * Test 2 |
| 11 | * Embedded SQL in an RPGLE Program * lab 11 | * Hand in lab 10 at beginning of the lab period |
| 12 | * RPGLE and Mobile apps * lab 12 | * Hand in lab 11 at beginning of the lab period |
| 13 | * Review | * Hand in lab 12 at beginning of the lab period |

Evaluation:

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| --- | --- |
| Tests | 35% |
| Labs | 30% |
| Final Examination | 35% |