# Opening up by closing the circle:

Enhancing visibility & accessibility of theses and dissertations



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# Outline

- ETD Initiatives in India
- Jawaharlal Nehru University
  - Theses & Dissertations Collection
- Access to Theses & Dissertations
- Moving Towards Electronic Theses & Dissertations (ETDs)
- Access to ETDs
  - Full Text available in OPAC
  - ETD Archive/Repository at JNU
  - JNU's ETDs at Shodhganga
- What next
  - E-Thesis Tracking System
  - Repository of PhD Proposals

# **ETD** Initiatives in India

# Punjan Haryana Cylin Pradesh Reghalaya Meghalaya Meghalaya Meghalaya Maharastra Nadwa Pradesh West Bengal Crissa Nadwa Drailest

- Initiatives by individual institutions
  - Institutions and Organizations
    - Council of Scientific & Industrial Research: CSIR Explorations (http://eprints.csirexplorations.com)
    - Indian Institute of Science: ETD@IISc (http://etd.ncsi.iisc.ernet.in) 2271 Theses
    - Central Marine Fisheries Research Institute: Eprints@CMFRI (http://eprints.cmfri.org.in)
  - Indian Institute of Technology (IITs)
    - Indian Institute Technology, Bombay: ETD@IIT Bombay (http://etd.library.iitb.ac.in )
    - Indian Institute Technology, Delhi: Eprints@IIT Delhi (http://eprint.iitd.ac.in/)
    - Many others
  - Universities
    - Jawaharlal Nehru University: ETD@JNU (<a href="http://etd.lib.jnu.ac.in/">http://etd.lib.jnu.ac.in/</a>)
    - University of Mysore: Vidyanidhi
    - Cochin University of Science & Technology: Dyuthi (http://dyuthi.cusat.ac.in/xmlui/)
- Many other universities and institutions
- A search for repository type 'theses' from 'India' in OpenDOAR gives 34 results

# **ETD** Initiatives in India

### Initiatives at National Level

### Earlier Initiative: IndCat

- http://indcat.inflibnet.ac.in/
- Online Union Catalogue of Indian Universities
- IndCat (Theses Database) 2,64,636 unique Theses of 354 Universities

### Shodhganga

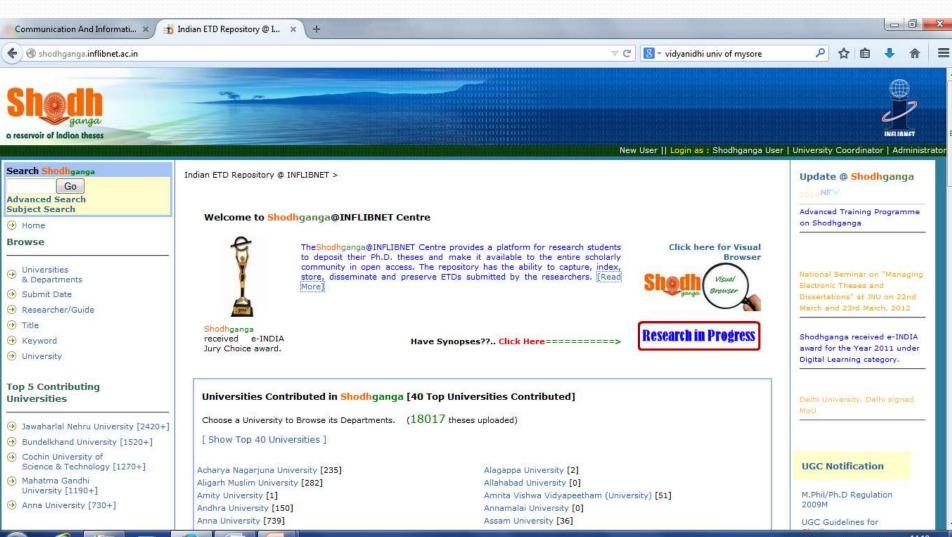
http://shodhganga.inflibnet.ac.in/ Digital Repository of Indian ETDs: An Initiative of INFLIBNET Centre 172 Universities signed MoU with INFLIBNET As on date, more than 18000 Theses



### KrishiPrabha

http://14.139.232.167:8080/HAU/thesis.html Indian Agricultural Doctoral Dissertations Repository Collection of more than 6000 doctoral theses from 45 State/Deemed Agricultural Universities

# Shodhganga http://shodhganga.inflibnet.ac.in











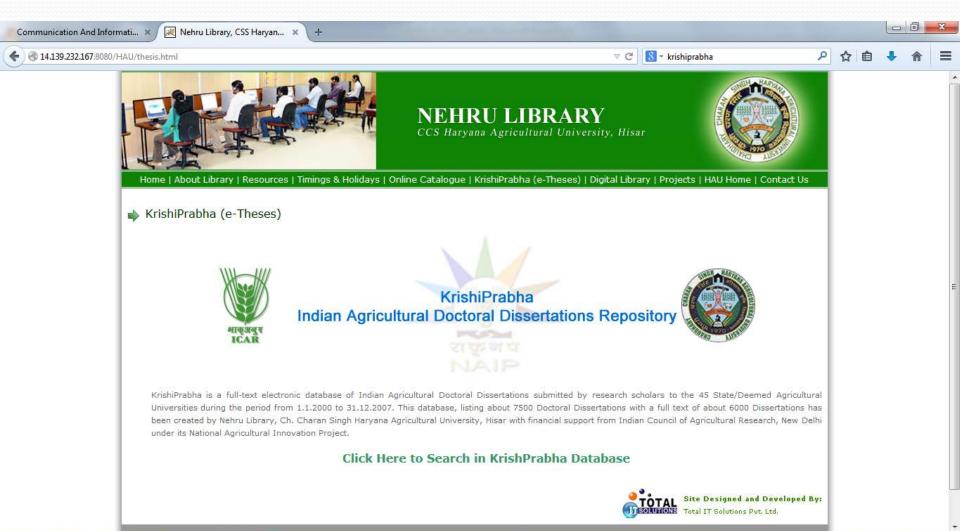








# KrishiPrabha http://14.139.232.167:8080/HAU/thesis.html





















# Jawaharlal Nehru University (JNU)

- Theses & Dissertations Collection
  - The first PhD awarded by JNU in the year 1970
  - As on March 2014, the JNU library has over 20,000 unique theses and dissertations
  - More than 5,000 PhD Theses are under open access
- Access to Theses & Dissertations
  - Phase I : Hard Copy of Theses & Dissertations with Card Catalogue
  - Phase II : Hard Copy of Theses & Dissertations with OPAC
  - Phase III : Hard Copy with digital Table of Contents (TOC) in OPAC
  - Phase IV : ETDs



# Access to Theses & Dissertations at JNU

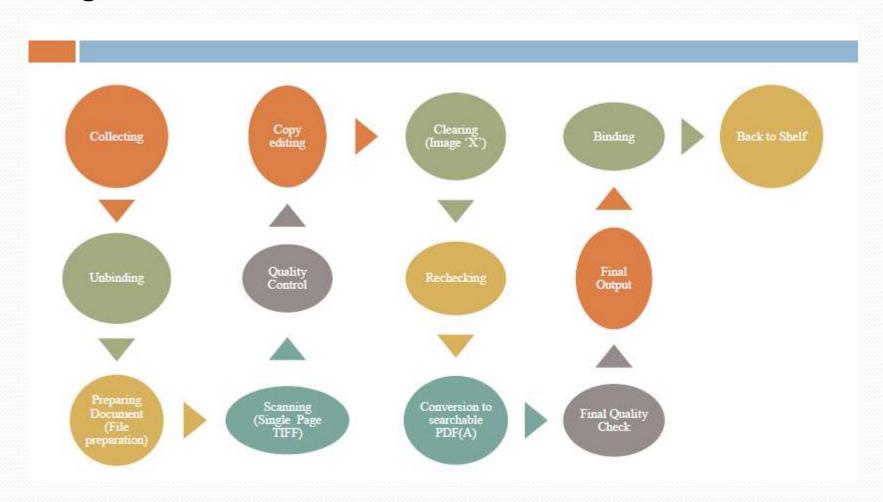
- Phase I:
- Hard Copy of Theses & Dissertations with Card Catalogue
  - Traditional approach with restricted access
  - Photocopy any part of theses and dissertations was not permitted
- Phase II: 2001 onwards
- Hard Copy of Theses & Dissertations with OPAC
  - The same traditional approach with restricted access
  - Theses became searchable in OPAC
- Phase III: 2007 onwards
- Hard Copy of Theses & Dissertations with Digital Table of Contents (TOC) in OPAC
  - The same traditional approach with restricted access
  - Theses became searchable in OPAC
  - Table of Contents (TOC) of theses & dissertations became available in OPAC
- Phase IV: 2011 onwards
  - Moving Towards ETDs

# Moving towards ETDs

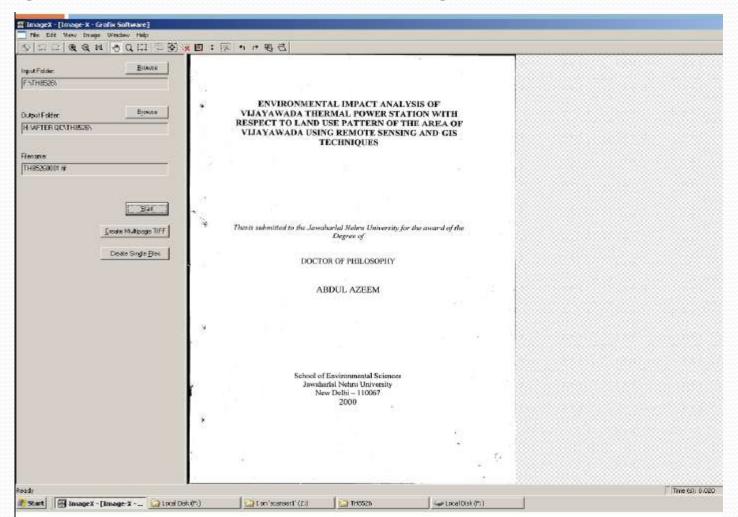
- In 2011, two major decisions were taken by JNU
  - To digitize hard copies of more than 20,000 theses & dissertations
  - Regulation for Submission of e-Thesis
- The digitization project
  - Outsourced to experienced company
  - Started in 2012
  - More than 20,000 theses & dissertations digitized
  - Over 3 million pages digitized
- Regulation for Submission of e-Thesis
  - Submission of e-Thesis along with hard copies of the thesis became mandatory
  - Plagiarism check before submission of thesis made mandatory
  - On CD-ROM with hard copy



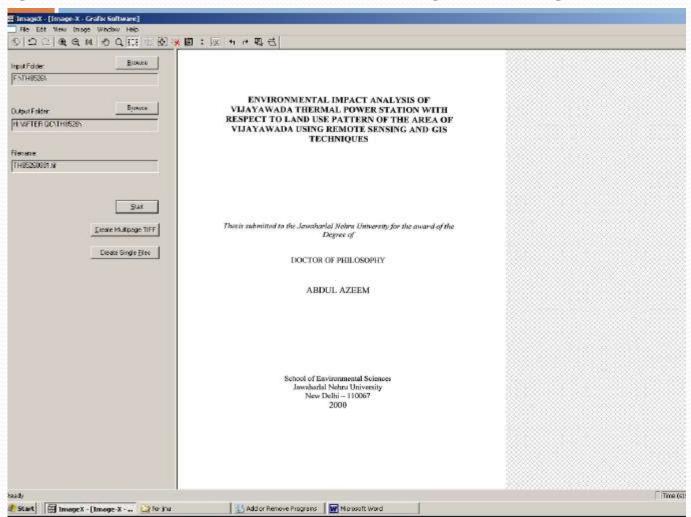
Digitization Process - Flowchart



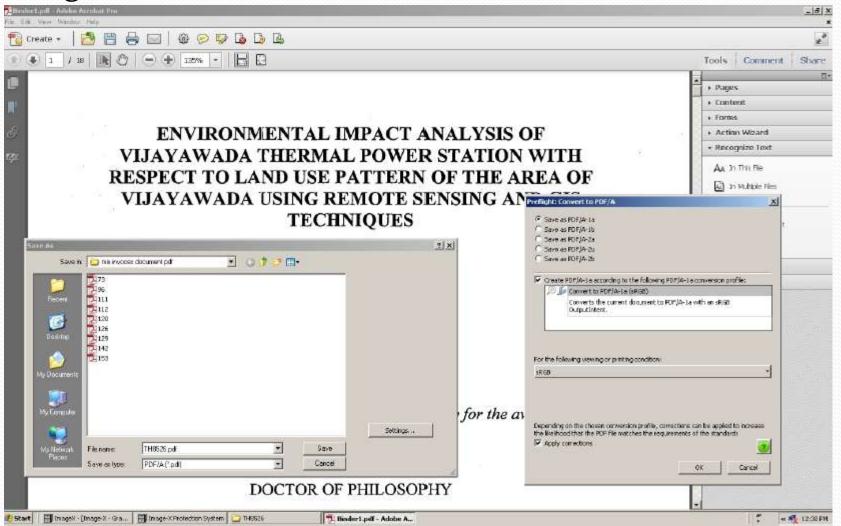
Digitization Process - Scanning



Digitization Process – Cleaning of Image



Digitization Process – PDF creation, OCR



Digitization Process – Cost Involved

Digitization per page INR 1.10

Metdata Creation per title
 INR 5.80

Uploading on Archive per title
 INR 9.85

□ Total average cost per title approx. INR 225 (US \$ 4)

(In-house staff cost involved in Editing, Quality Checking and related works not included in above cost)

# Regulation for Submission of e-Thesis

- In 2011,
  - Submission of e-Thesis on CD-ROM became mandatory
  - Plagiarism check before submission of ETDs made mandatory
- Difficulties faced
  - Inconsistencies in the contents of CD-ROM
  - Missing 'fonts' of other languages
  - Missing 'certificate' page
- In 2014,
  - Modifications in regulation for streamlining the process

# Modifications in regulation for Submission of e-Thesis

- Contents of the CD specified as
  - A single PDF file containing the complete thesis/dissertation
    - Without password, security tags, and restriction on copy, paste or print
  - MS-Word files of the thesis along with all special fonts used in the thesis
  - Authentication Certificate
    - thesis/dissertation contained in the CD/DVD is complete in all respect and is same as submitted in print
  - An abstract of the thesis/dissertation
  - Metadata Form
  - Consent Form for Digital Archiving
  - Other accompanying material/s, if any
- The Degree or Provisional Certificate shall finally be released after clearance from the library along with other 'No dues'

### Annexure-I

### Jawaharlal Nehru University

### Thesis/Dissertation Authentication Certificate

Name of the Author (Research Scholar)	
Degree	
Department/Centre	
School	
Name of affiliated Institution for which JNU is granting the degree	
Guide/Supervisor	
Thesis/Dissertation Title	
Date of Submission	

I hereby certify that the thesis/dissertation contained in this CD/DVD is complete in all respect and is same as submitted in print.

Signature of the Scholar

Signature and Seal of the Guide

Place : Date :

### Annexure-II

### Jawaharlal Nehru University Thesis/Dissertation Metadata Form

1.	Title	
2.	Alternative Title, if any	
3.	Name of Research Scholar	
4.	Name of Guide/Supervisor(s)	1. 2. 3.
5.	Name of Degree	
6.	Level of Degree	
7.	Department/Centre	
8.	School	
9.	Name of affiliated Institution for which JNU is granting the degree	
10.	Date of Submission	
11.	Subject Keywords	1. 2. 3. 4. 5.
12.	Coverage (for time periods or spatial regions only)	
13.	Language of the thesis	
14.	File Format of thesis and accompanying material, if any (PDF, MPEG, etc.)	

### Annexure-III

### Jawaharlal Nehru University Consent Form for Digital Archiving

Name of the Author (Research Scholar)	
Degree	
Department/Centre	
School	
Name of affiliated Institution for which JNU is granting the degree	
Guide/Supervisor(s)	
Thesis/Dissertation Title	
Date of Submission	

- I hereby give my consent to the Central Library, Jawaharlal Nehru University, New Delhi
  to archive and to make available my thesis or dissertation in whole or in part in the
  University's Electronic Thesis and Dissertations (ETD) Archive and to make it accessible
  worldwide under the conditions specified below in all forms of media, now or here after
  known.
- I retain all other ownership rights to the copyright of the thesis/dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

### Conditions [mark '√' in relevant box]:

[The University recognises that there may be exceptional circumstances requiring restrictions on public access. Requests for restriction for a period of up to maximum 3 years must be specified by the scholar explicitly. However the digital contents on JNU INTRANET will be available immediately after the award of Degree]

. Release the entire work for worldwide access immediately		
2. Release the entire work for	l Year	.60
worldwide access after	2 Years	- Ø
	3 Years	0

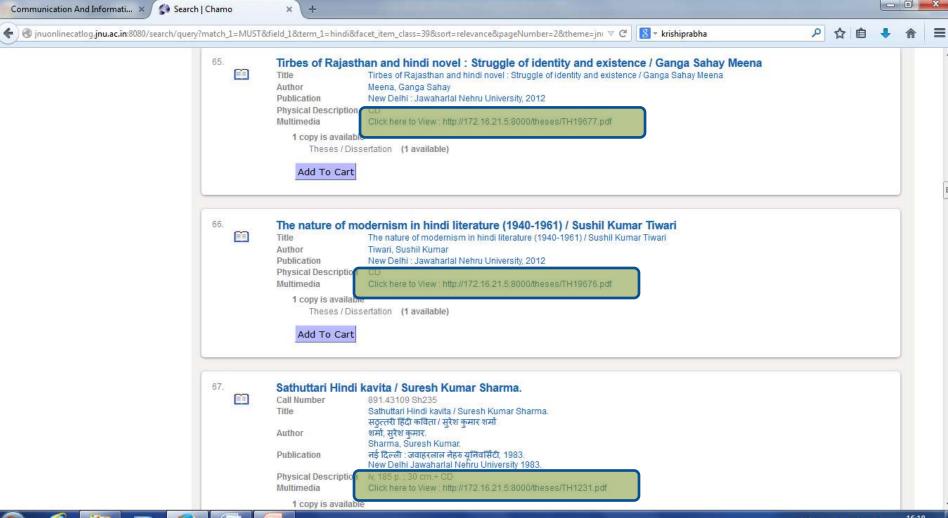
Signature of the Scholar

Place : Date : Signature and Seal of the Guide

## Access to ETDs at JNU

- Full Text available in OPAC
  - Full text PDFs are available in OPAC as multimedia link
  - Access within university premises only
- ETD Repository at JNU
  - http://etd.lib.jnu.ac.in
  - At present, available only within university premises
- JNU's ETDs at Shodhganga
  - JNU signed an MoU to upload its ETDs in Shodhganga
  - Open Access
  - With embargo period of 3 years
  - More than 5000 PhD theses sent to be uploaded in Shodhganga
  - 3155 Theses already uploaded

# Full Text available in OPAC sample search result of theses in OPAC











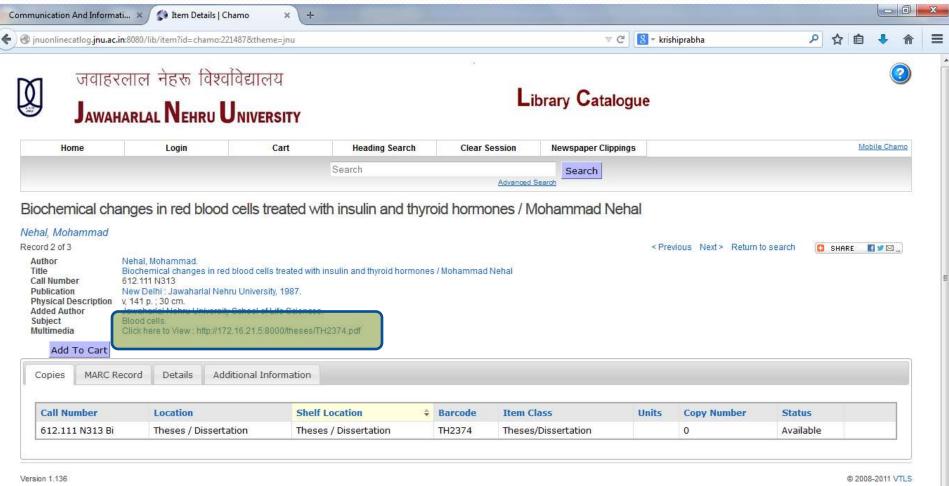








# Full Text available in OPAC sample record of thesis in OPAC



















# ETD Repository at JNU









### CENTRAL LIBRARY, Jawaharlal Nehru University

Login

ETD Archive Home

### JNU's Electronic Theses and Dissertations

Jawaharlal Nehru Univeristy has a collection of nearly 20,000 Theses and Disserations till date. All these theses and dissertations have been digitized and are ....

### **Communities in ETD Archive**

Select a community to browse its collections.

- Centre for the Study of Law and Governance
- School of Arts & Aesthetics
- School of Biotechnology
- School of Computational and Integrative Sciences
- School of Computer and Systems Sciences
- School of Environmental Sciences
- · School of International Studies
- School of Language Literature and Culture Studies
- · School of Life Sciences
- · School of Physical Sciences
- School of Social Sciences
- Special Centre for Molecular Medicine
- Special Centre for Nanoscience
- Special Centre for Sanskrit Studies

### **Recently Added**

Some aspects of regeneration in the ciliate spirostomum ambiguum /

Khurana Madhuhala (Jawaharlal Nobru University 1974)



### Browse

All of Archive

Communities & Collections

By Issue Date

Authors

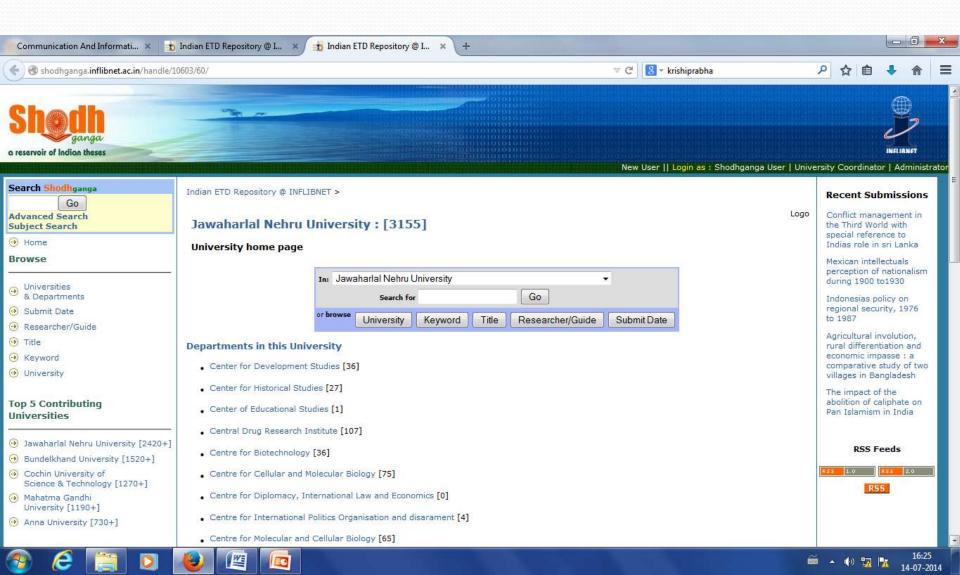
Titles

Subjects

# My Account Login Register



# JNU's ETDs at Shodhganga



# JNU's ETDs at Shodhganga



# What next?

- e-Thesis Tracking System
  - JNU Thesis Tracking System in place
  - Designed, developed, implemented and maintained in-house
  - Web based software, accessible by only authorized users
- Repository of PhD Proposals
  - ShodhGangotri
    - Repository of Indian Research in Progress details (Synopses/Research Proposals for PhD programme)
    - Developed and maintained by INFLIBNET
  - Similar solution for JNU is proposed

# JNU's e-Thesis Tracking System

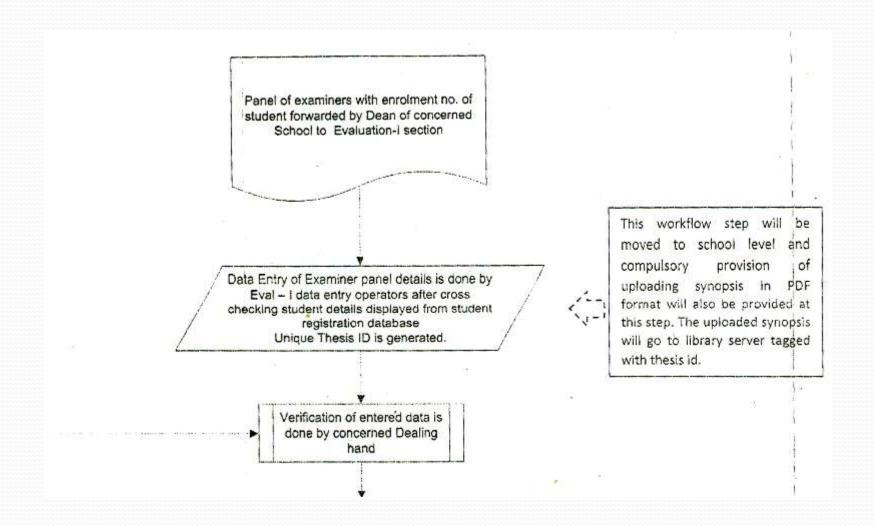
- Records of more than 1600 theses & dissertations available in the system
- Presently the software has 17 steps of workflow from Examiner panel entry to Award of degree
- Three new steps of workflow are being developed
  - To collect correct information from School level
  - To get approved synopsis/proposal at right time
  - To make sure collection of final thesis in appropriate format before award of the degree.

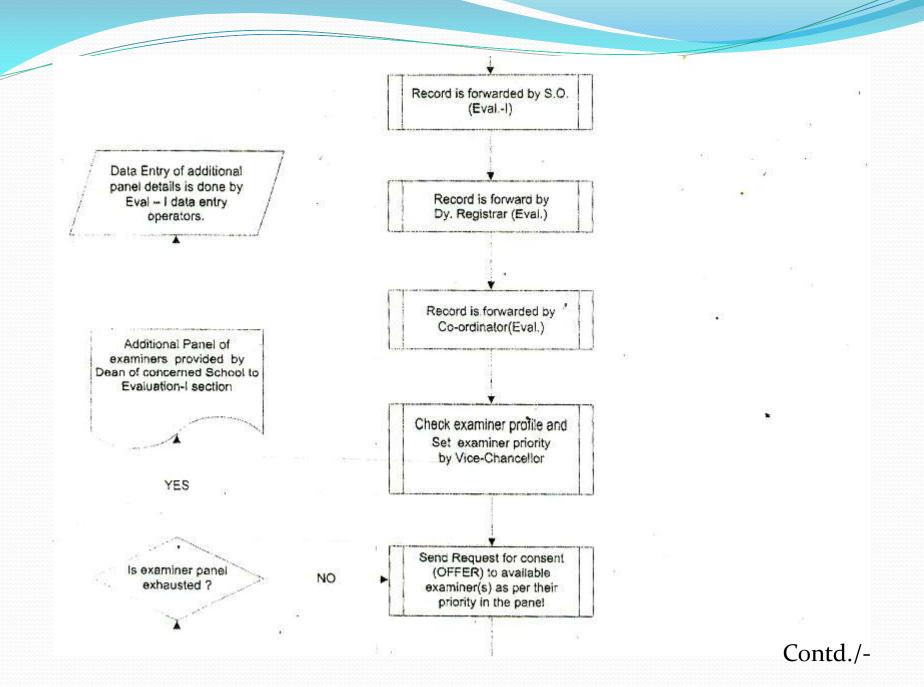
# JNU Thesis Tracking System

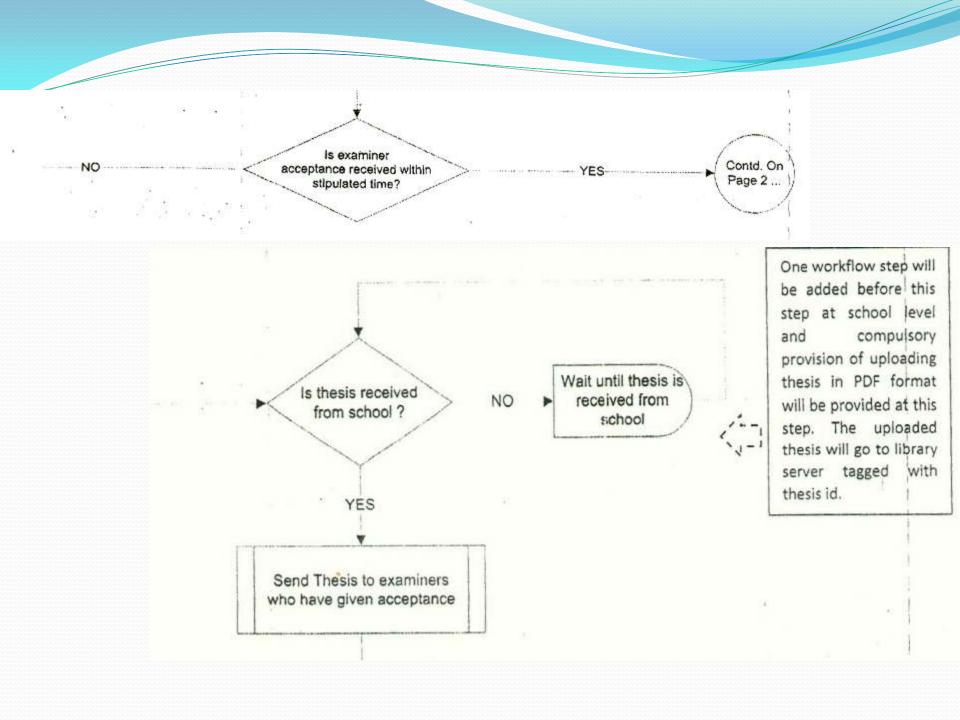
- \* Thesis Tracking System is a web based software which has been developed inhouse at JNU to speed up and streamline the workflow of processing the thesis / dissertations in the Evaluation branch. The software is available to authorized users on JNU network. Presently the system contains more than 1600 thesis / dissertation records with up-to-date status\*.
- \* The software and automated system has been designed, developed, implemented and maintained by **Mr. Tarun Pant**, Systems Analyst, E-Governance Cell(CIS), JNU. Mr. Amogh Batra of E-governance cell has provided Students Registration database connectivity. The software development has been done over one and half year, and implementation has taken two months time.
- \* Presently the software has 17 steps of workflow from Examiner panel entry to Award of degree, details of which are explained in following slides. The authorized users can access the system by opening the following link in their web browser: **thesistracking.jnu.ac.in**

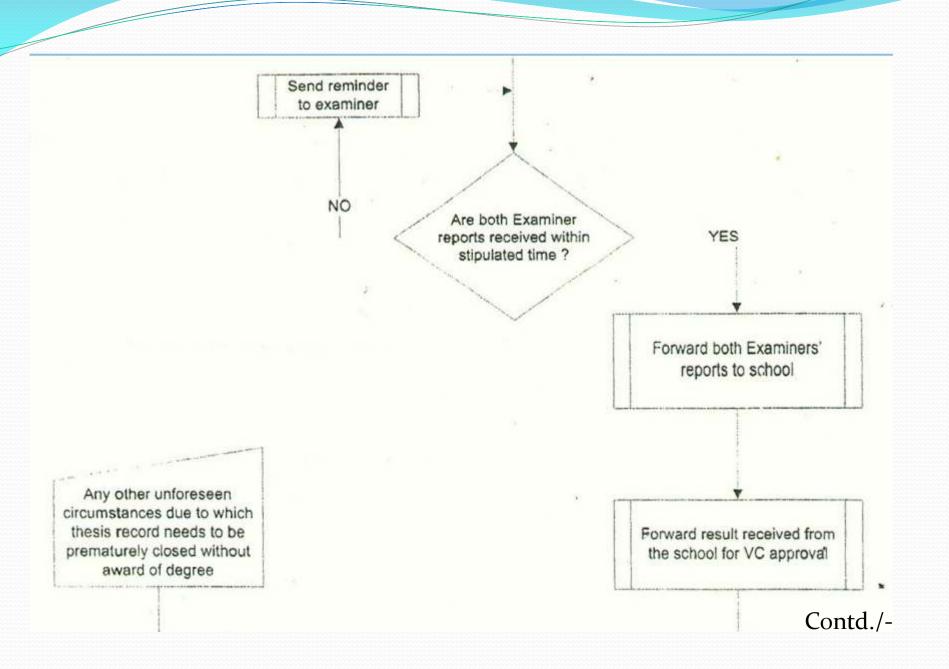
The software screenshots contain dummy data (dummy thesis and examiner records picked randomly from test instance of thesis tracking system). Still as a precaution, parts of screenshots have been obfuscated with pink coloured blocks wherever there are confidential data portions.

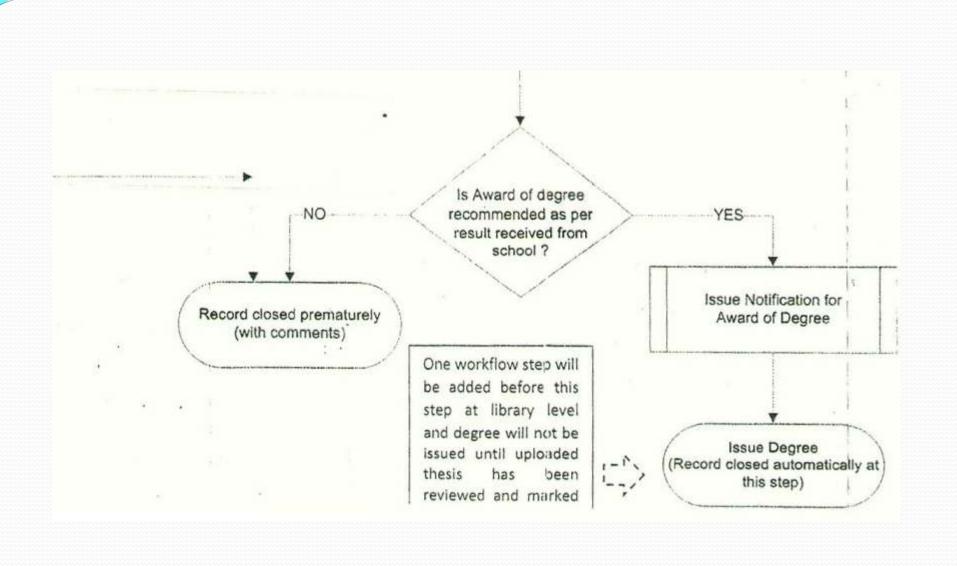
### Flow Chart of JNU's E-Theis Tracking Sytem

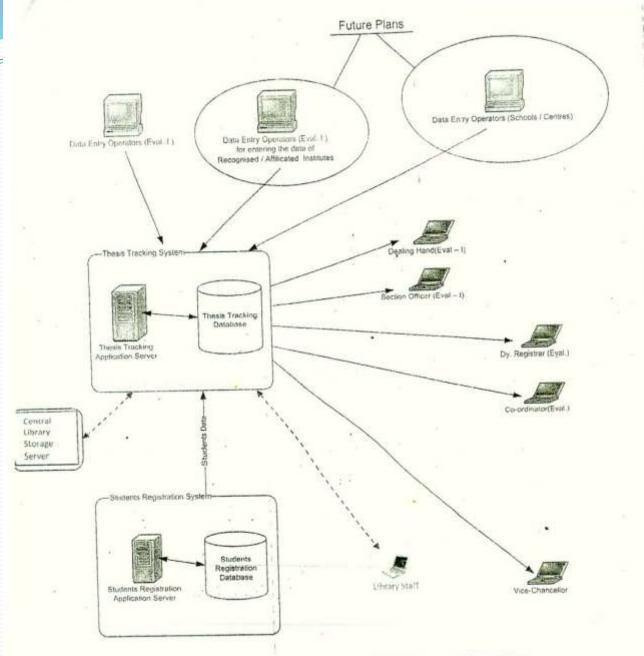




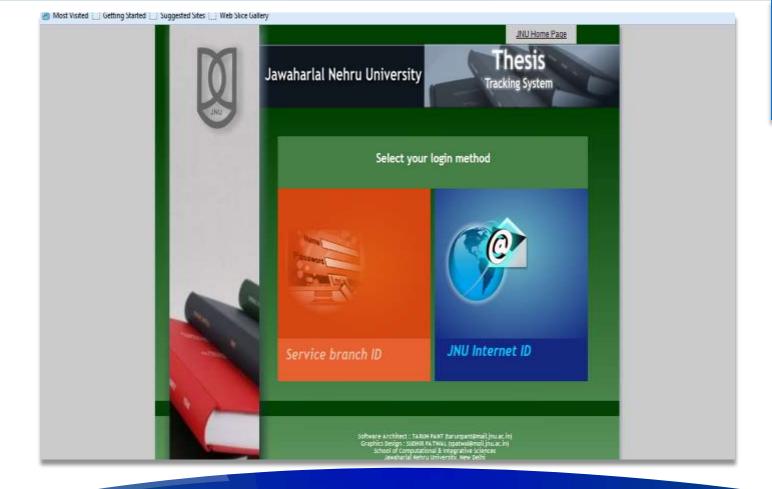






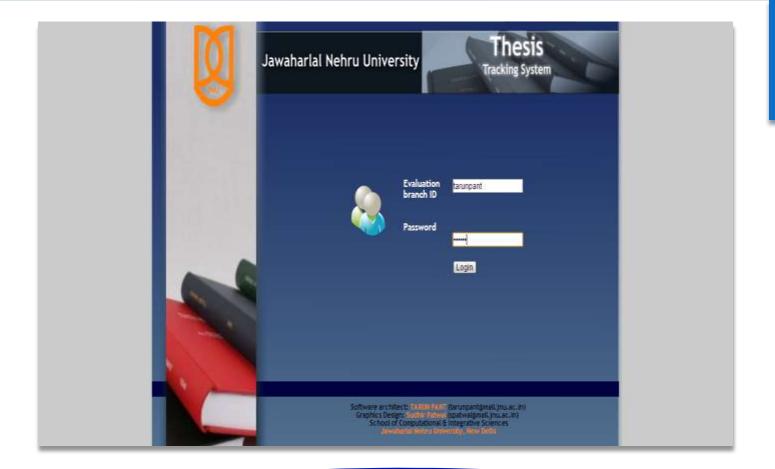


Enterprise Application diagram for JNU Thesis tracking system (Direction of arrows indicates the primary flow of data between the components / computers )



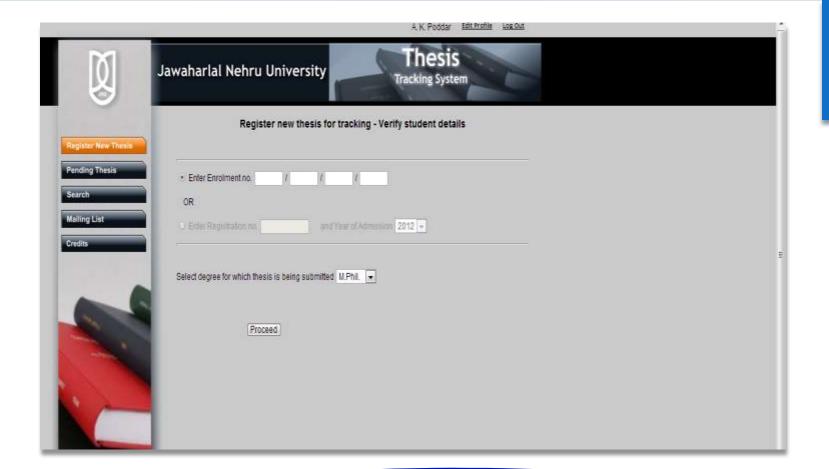
### First screen: Select your login method

This screen offers two options for user access: One is Service branch ID, which can be provided to authorized user by the concerned department (in this case Evaluation – I section). Other option is through JNU Internet ID of authorized user(this option is yet to be activated for this software, but already being used in JNU Helpdesk system).



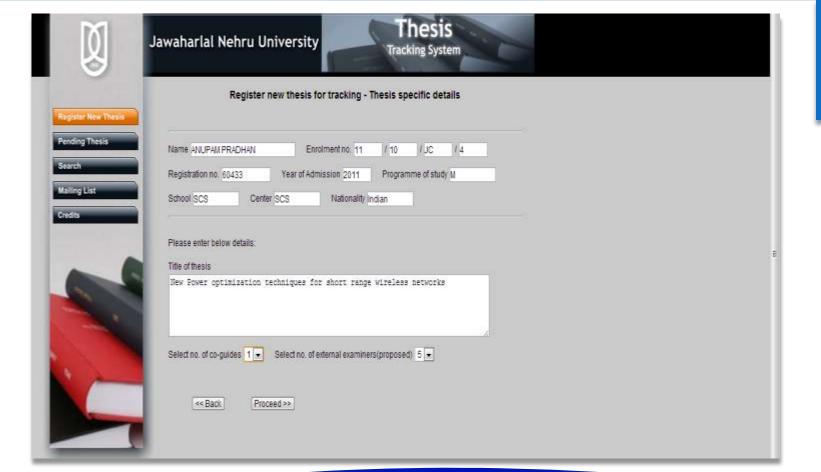
### Next Step: Enter your ID and Password

This is a screenshot of authentication using user ID provided by Evaluation-I section.



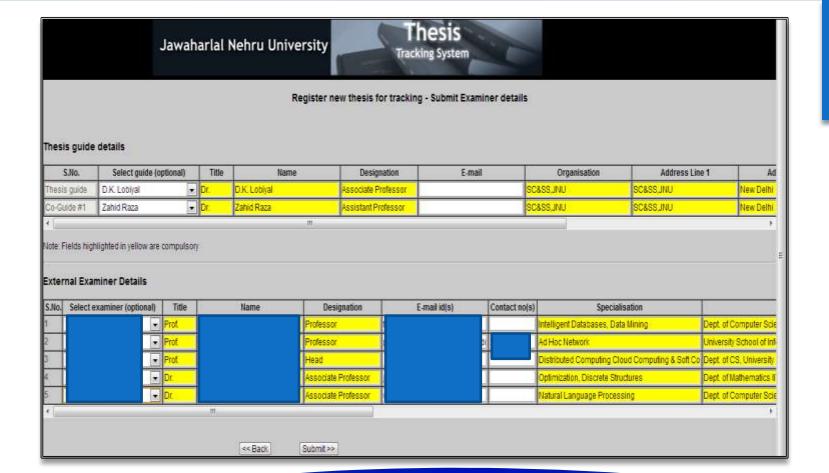
## Default screen after login: Register New Thesis for tracking

When a fresh examiner panel from school arrives in Evaluation-I section for VC approval, its full details are entered into the system. For this step entering Enrolment no. of the student is compulsory.



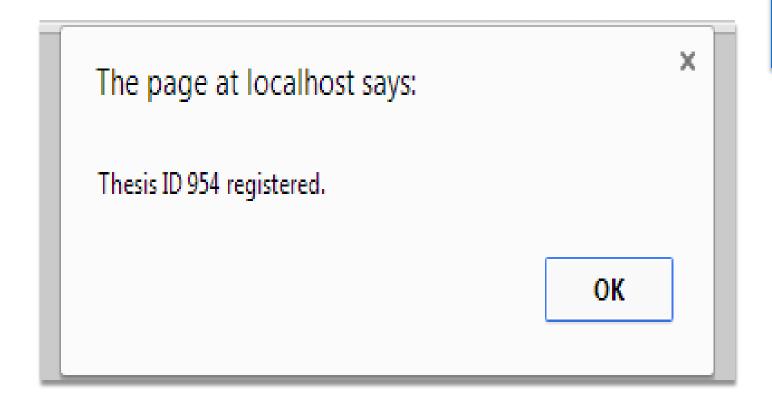
#### Thesis Specific details

On entering the enrolment no. of the student, the student details are displayed from the student registration database of JNU (courtesy: E-governance cell). Here thesis specific details such as Title of thesis, and no. of co-guides(if any) / external examiners have to be entered.



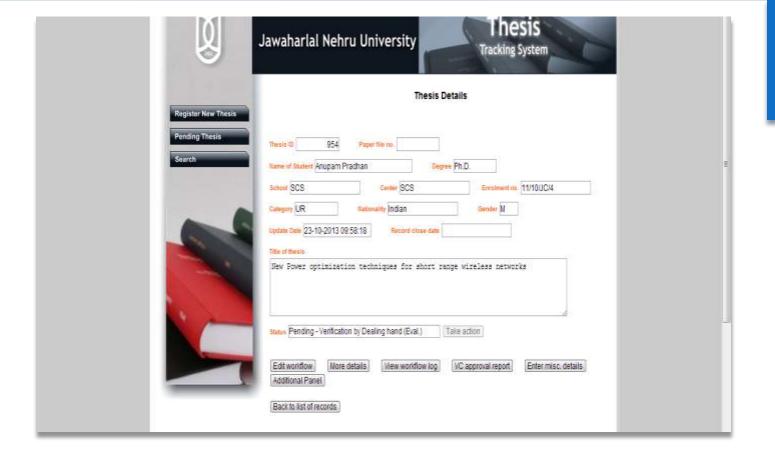
#### Enter Guide(s) / Examiners' details

Here full details of guide(s) / panel of External examiners such as Name, Designation, Organization, Specialization, E-mail, Contact no., Correspondence Address are entered by data entry operators at Evaluation-I section. A drop down list of recently entered examiners' data is also available to avoid re-typing of recently entered similar data. It is planned to move this data entry step at centre / school level by providing login ids / passwords at school level after certain operational pre-requisites for the system are fulfilled by concerned departments.



#### Thesis details registered successfully

Above dialog box is displayed to confirm the successful entry of record, and unique thesis ID generated by the thesis tracking system is also displayed.

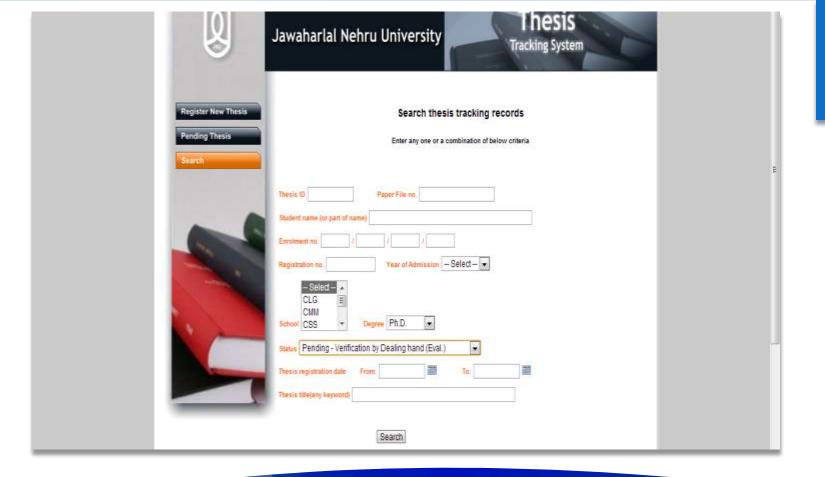


#### Public Thesis details screen appears now

Public details of the thesis are now visible on this screen. For checking confidential details, MORE DETAILS button is available to Evaluation staff. Workflow changes done by authorized users with exact date and time of actions taken in reverse chronological order are available through VIEW WORKFLOW LOG button.



Now we will proceed to next step in the workflow: Verification of record by Dealing hand...



### Dealing hand enters criteria to list his/her relevant records

Search button is available to search relevant records pertaining to a dealing hand by selecting appropriate criteria (in this case Degree and school dealt by that dealing hand).



Jawaharlal Nehru University

Thesis
Tracking System

Print this page

#### Search result

Status as on 23-10-2013 12:47:46

First Previous Next Last

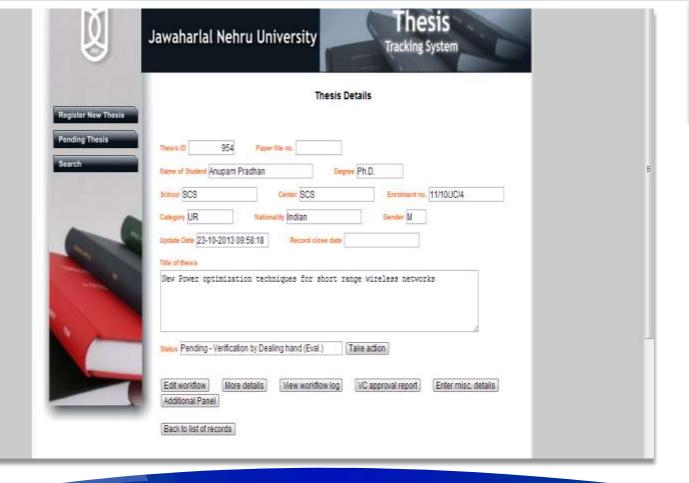
S.No.	Thesis ID	Paper file no.	Status	Last update		
1	752		Pending - Verification by Dealing hand (Eval.)	04-10-2013 12:52:48		
2	924		Pending - Verification by Dealing hand (Eval.)	14-10-2013 11:48:51		
3	943		Pending - Verification by Dealing hand (Eval.)	17-10-2013 16:40:27		
4	954		Pending - Verification by Dealing hand (Eval.)	23-10-2013 09:58:18		

Records: 1 to 4 of 4

Report generated by: Bhuwan Singh (bsingh)

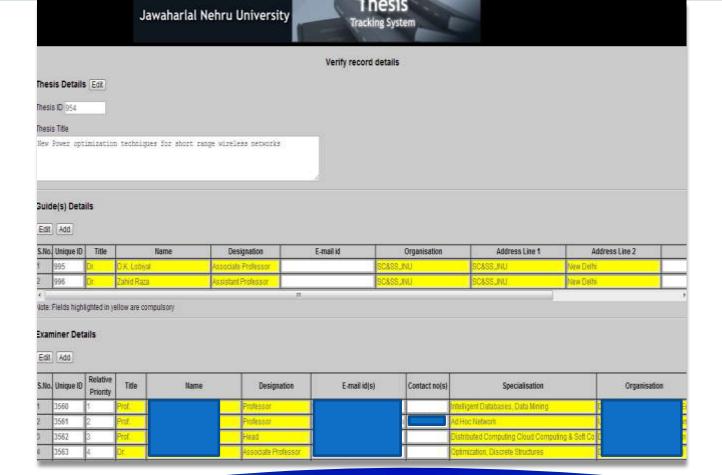
#### Relevant records are listed

Individual record details can be opened by clicking on the Thesis ID link of each record...



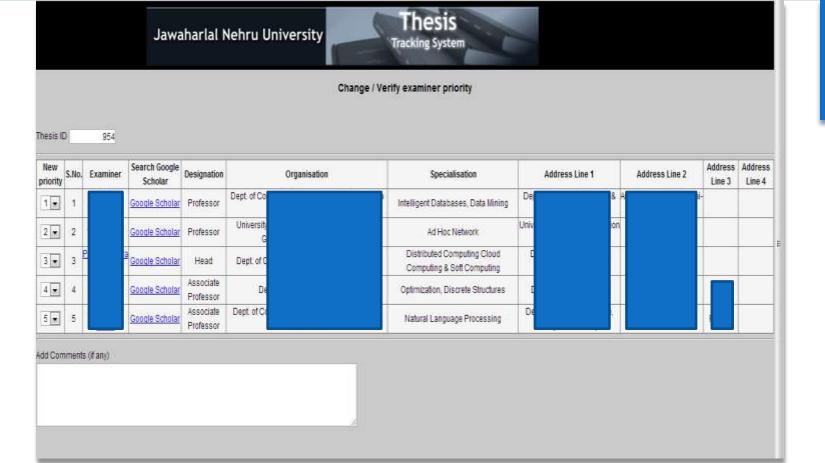
#### Public Thesis Details of the thesis selected appears

Currently opened record is showing status: PENDING – VERIFICATION BY DEALING HAND (EVAL.) Now Dealing hand has to press TAKE ACTION button to verify thesis details of currently open record...



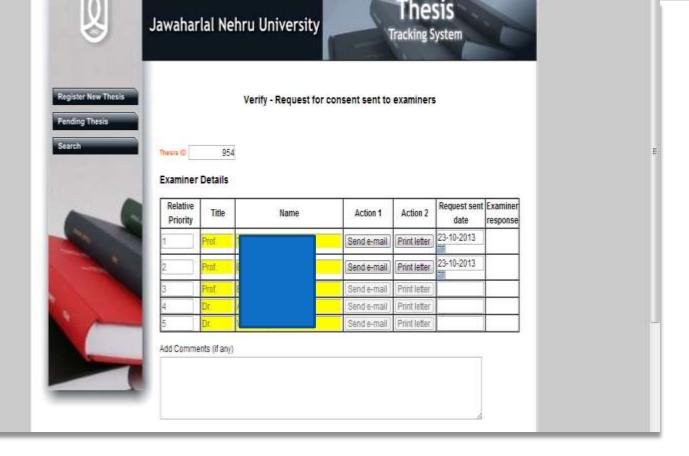
#### Verification step

Here the thesis record such as Thesis title, Guide(s) details, External Examiners' details can be checked and corrected (if needed). On completing this step, the workflow moves to Forward by S.O.(Eval.-I), D.R.(Eval.), C.E. respectively where these authorities can check the details as in screenshot above, make corrections(if any), and forward the workflow to next step. After record is forwarded by C.E., it will show in the Pending list of Vice-Chancellor...



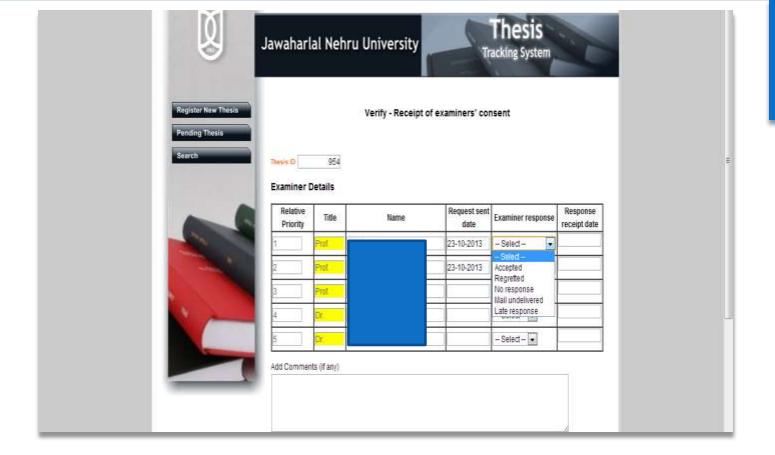
#### External Examiner priority selection by Vice-Chancellor

On clicking a record in pending list of VC, above screen appears. On this page links are given to Search Web of Knowledge database and Google Scholar for each examiner based on "Examiner Name + Specialization" criteria. Depending on the result of these searches, VC can take an informed decision and select/change priority of examiners' in the panel. The workflow is then forwarded to next step, i.e. Send Request for Consent to examiners' (as per their new priority)...



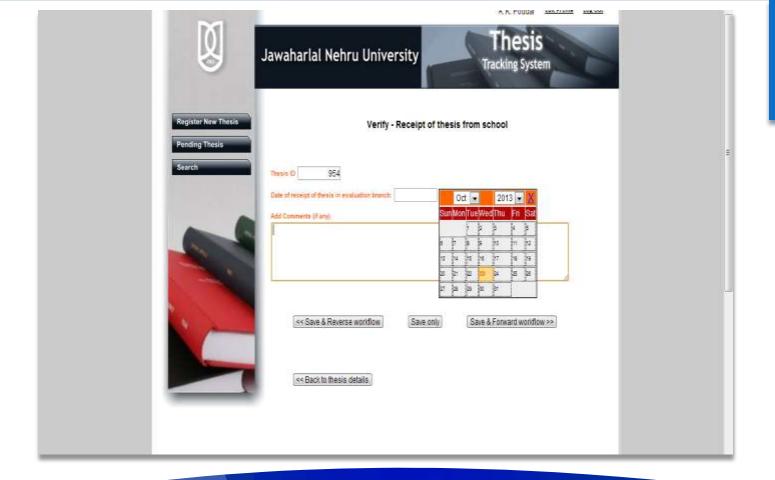
#### Send Request for consent to examiners

Request is sent through the software to 2 external examiners (in case of Ph.D. thesis) and 1 external examiner (in case of M.Phil. / M.Tech. dissertation) for evaluation. Preferably request is sent through E-mail by the software, if examiner's e-mail ID is available in the record, otherwise hard copy of letter is generated by the system and sent to correspondence address of the examiner. After the request is sent successfully, the Request sent date is updated in the software accordingly...



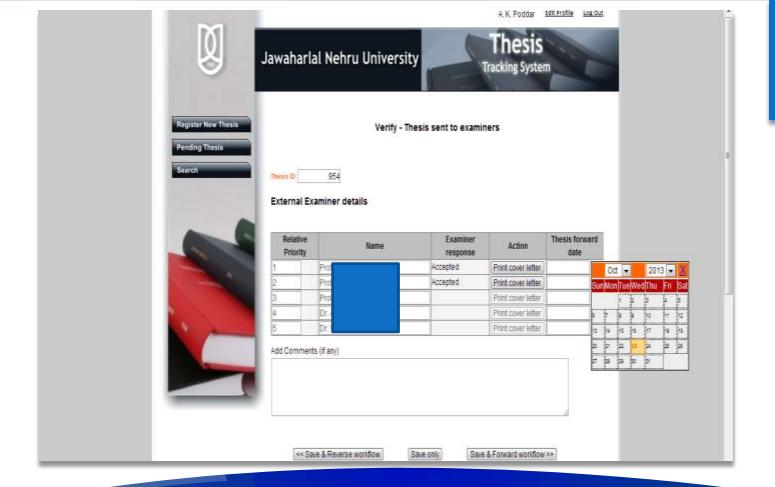
#### Receipt of examiners' response

Once examiner's response is received through e-mail / post, it is updated in the system as Accepted / Regretted / Late response. Also Response receipt date is recorded. If an examiner does not respond within 5 days by e-mail, or within 15 days by post, or in case of Mail Undelivered, the offer is sent to next examiner in priority by marking it as NO RESPONSE and going to previous step in the workflow.



#### Receipt of thesis from school

In this step date of receipt of thesis from school is recorded into the system without which system will not allow the dealing hand to proceed further. Next comes the step of sending thesis copy to examiners...



#### Send Thesis to examiners

Cover letter to be sent along with the thesis is generated through the system and date of sending the thesis to each examiner is recorded. Then Report of examiners is awaited...

Jawaharlal	Nehru	Universit
Jumanan	ricin a	Offiteisie

Thesis
Tracking System

#### Verify - Receipt of Examiners' report

Thesis ID

PW(CI))di	Examine	Details

954

Relative Priority		Name	Thesis forward date	Report	Report recei	ipt date	Action 1	Action 2	Reminder count	Reminder sent date
1	Prof.		24-10-2013	Ok	23-10-2013	100	E-mail reminder	Print reminder	0 💌	
2	Prof.		24-10-2013	Ok	23-10-2013		E-mail reminder	Print reminder	0 💌	
3	Prof.			- Select - ▼			E-mail reminder	Print reminder	0 •	
4	Dr. A			- Select - ▼			E-mail reminder	Print reminder	0 💌	
5	Dr. V			- Select - ▼			E-mail reminder	Print reminder	0 💌	

Add Comments (if any)

<< Save & Reverse workflow

Save only

Save & Forward workflow >>

Dealth thesis details

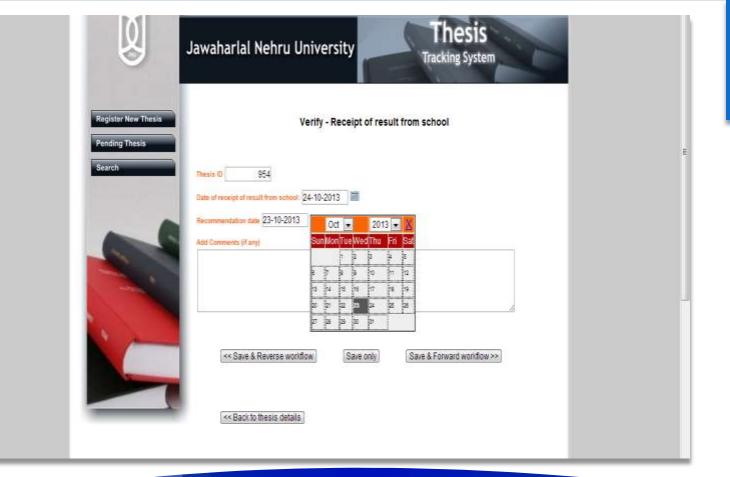
#### Receipt of examiners' report

Once examiner's report is received, it is updated in the system as Ok / Revision required / Rejected for that examiner. Also Report receipt date is recorded. In case of Thesis undelivered to the examiner or Examiner expressing inability to evaluate the thesis, the offer is sent to next examiner in priority by marking it as such and going back to relevant step in the workflow. In case no response is received within stipulated period, sequentially numbered reminder(s) can be sent through the system, with provision for recording the date and number of last reminder sent...



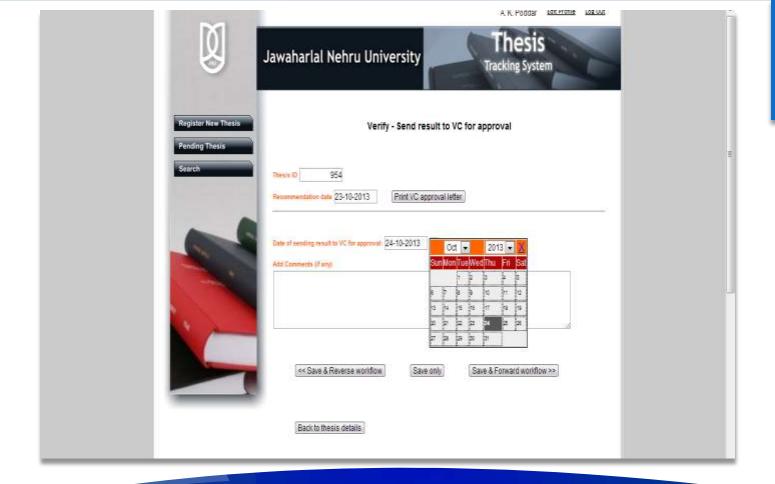
#### Forward examiners' reports to school

When reports of both the examiners are received, they are forwarded to school and date of forwarding the reports is recorded in the system. Then receipt of result from school is awaited...



#### Receipt of result from school

Once result (approved by Dean) is received from school, Date of receipt of result at Evaluation-I and Date of recommendation by Dean is recorded in the system. In case of M.Phil / M.Tech. FGPA obtained after including dissertation evaluation result) is also recorded. Then result is sent to VC for approval...



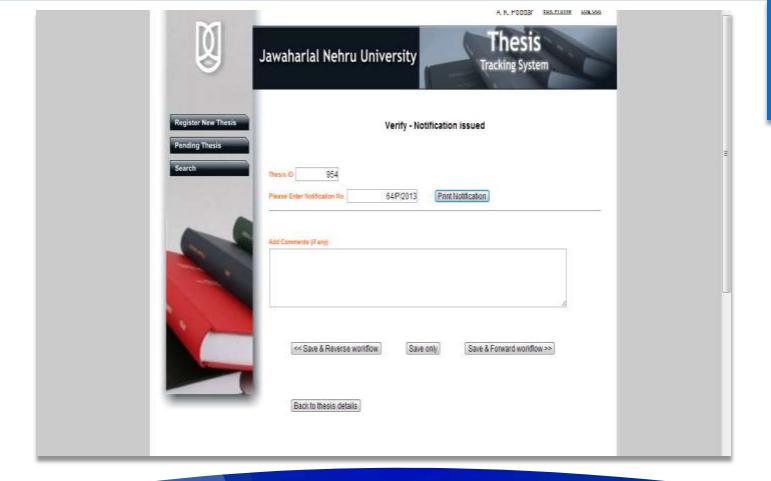
#### Send result to VC for approval

Date of sending result to VC for approval is recorded in the system. The approval note is also automatically generated through the software. Then approval of result from VC is awaited...



#### Receipt of VC approval

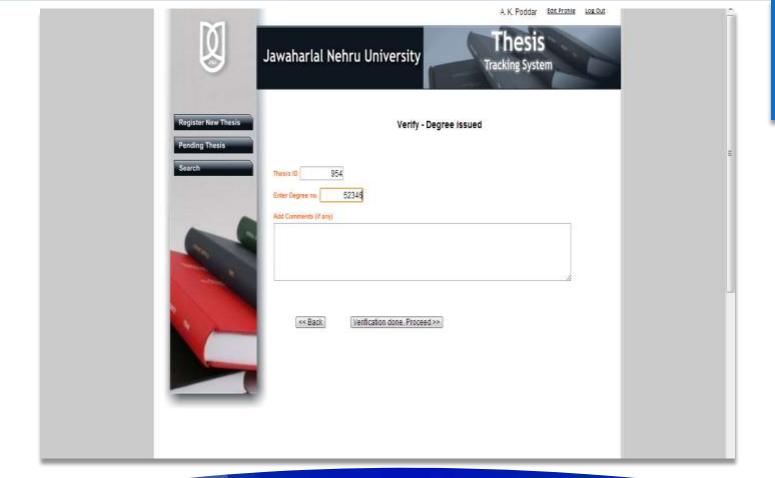
Date of receipt of VC approval note in Evaluation – I is recorded in the system, along with Date of approval by the VC. Then next step is Issue of Notification for Award of Degree...



#### ssue of Notification

The Notification letter is generated automatically from the software with auto-generated reference no.

Notification no. allotted by Evaluation – I is also recorded in the system.



#### ssue of Degree

In this step, Degree no. is recorded in the system. With completion of this step, the workflow of thesis tracking for the particular thesis in question comes to an end and the record is closed. The record is no more visible in the pending list. However the record is available in the system for future reference.

# Special cases

**Premature closure of record:** Due to some unforeseen reason, the record may have to be closed prematurely before its proper conclusion i.e. Award of Degree in the workflow. For such cases there is a provision to prematurely close the record with comments. The record can be immediately closed by S.O. (Eval.- I) and available for future reference. The record will be no more visible in pending list.

**Requirement of additional panel of examiners:** In case the existing panel of examiners is exhausted due to poor response from examiners resulting in incomplete quorum, there is provision in the system for adding to existing thesis record additional panel of examiners sent from the school and approved by VC through the system.

### Upcoming features in Phase-II:

Evaluation Branch related

- ❖ It is planned to move the data entry step at centre / school level by providing login ids / password at school level after certain operational pre-requisites for the system are fulfilled by concerned departments.
- ❖ Presently the system is able to process thesis of JNU schools / centres as the student registration database was available for JNU students. However thesis submitted by students of affiliated institutes can be covered, once their database is built by Evaluation-I and related procedures planned and executed by E-governance Cell(CIS).

# Upcoming features in Phase-II:

- ❖ Providing provision of uploading of synopsis in searchable PDF format by school/centre at the time of panel of examiner's entry. The uploaded synopsis will be stored in library storage server tagged with thesis tracking number
- Providing provision of uploading of thesis in searchable PDF format by school/centre before sending hard copy to Evaluation branch. The uploaded thesis will be stored in library storage server tagged with thesis tracking no. Scanned copy of following documents will be uploaded along with thesis: Authentication certificate, Metadata form, Consent form for digital archiving, other accompanying materials such as audio/video (if any).
- ❖ Providing provision for downloading the synopsis and thesis in pdf format, and posting of comments with review status by authorised Library staff. Degree can be issued only after go ahead has been provided by the Library. Printing of ethesis submission certificate from library will also be included in this step.
- \* Providing provision for suitable data import interface to the Central Library, so that Student profile and thesis title can be read by Library from the thesis tracking system.

# Maintenance required

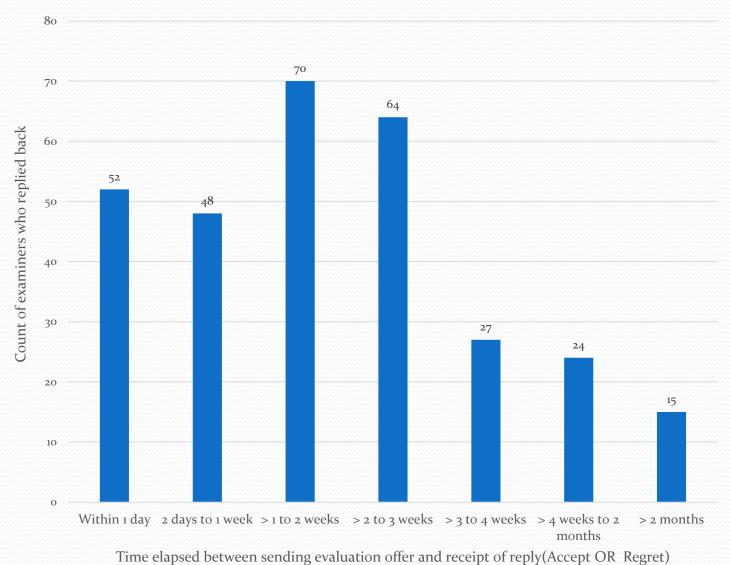
- \* The system will need constant maintenance, as it handles a myriad of cases at every step of thesis workflow. Although most of the situations which can arise have been taken into consideration by the developer by personally monitoring the thesis processing activities for two months in Evaluation-I section, new variations keep on coming from time to time. Correspondence formats, credits, other static information which are permanently fed into the software keep on changing with time. Software updates for such changes have to applied from time to time. Also any issues reported in the system by users have to be diagnosed and rectified.
- Thesis records database will also grow larger as more records are entered. With passage of time, users will start experiencing slow response time of system due to searching large no. of records. Hence database will have to be reorganized / optimized to deal with such scenarios. Also much faster server will be needed for hosting the thesis tracking system in future. Disaster recovery strategy and solutions also have to be considered.
- Full Technical Documentation of the software has to be completed to enable any other IT professional to maintain the software in future in the absence of developer.

Hence for above activities the software will need periodic maintenance by the developer / other staff averaging a couple of hours per day.

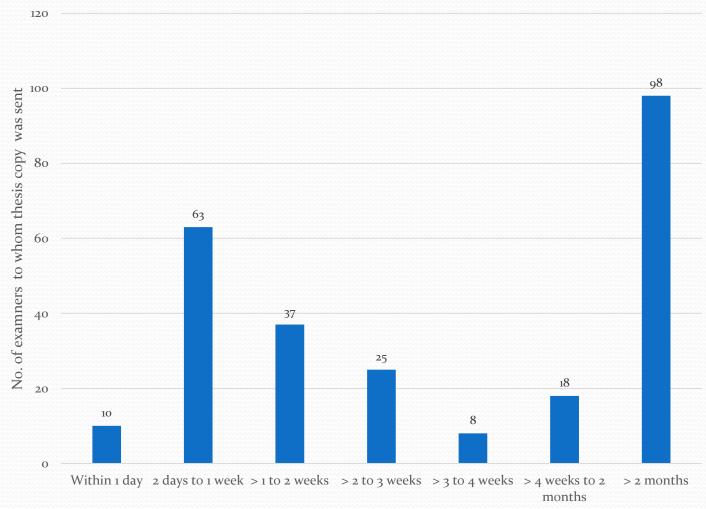
# Some statistics from the thesis tracking database...



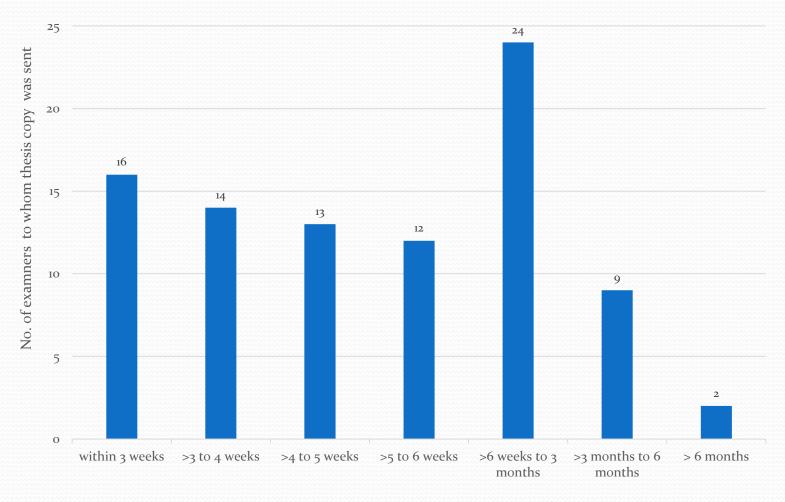
#### Examiner response time for offer of evaluation sent to 301 examiners



# Dispatch time for 259 thesis after acceptance (including cases where thesis received in Evaluation-I after acceptance of examiner)



Time elapsed between receipt of examiner acceptance and dispatch of thesis copy to examiner



Time elapsed between thesis dispatch and receipt of examiner report(Ok/Revision Required/Rejected)

