COMM 645 HANDOUT – UCINET BASICS
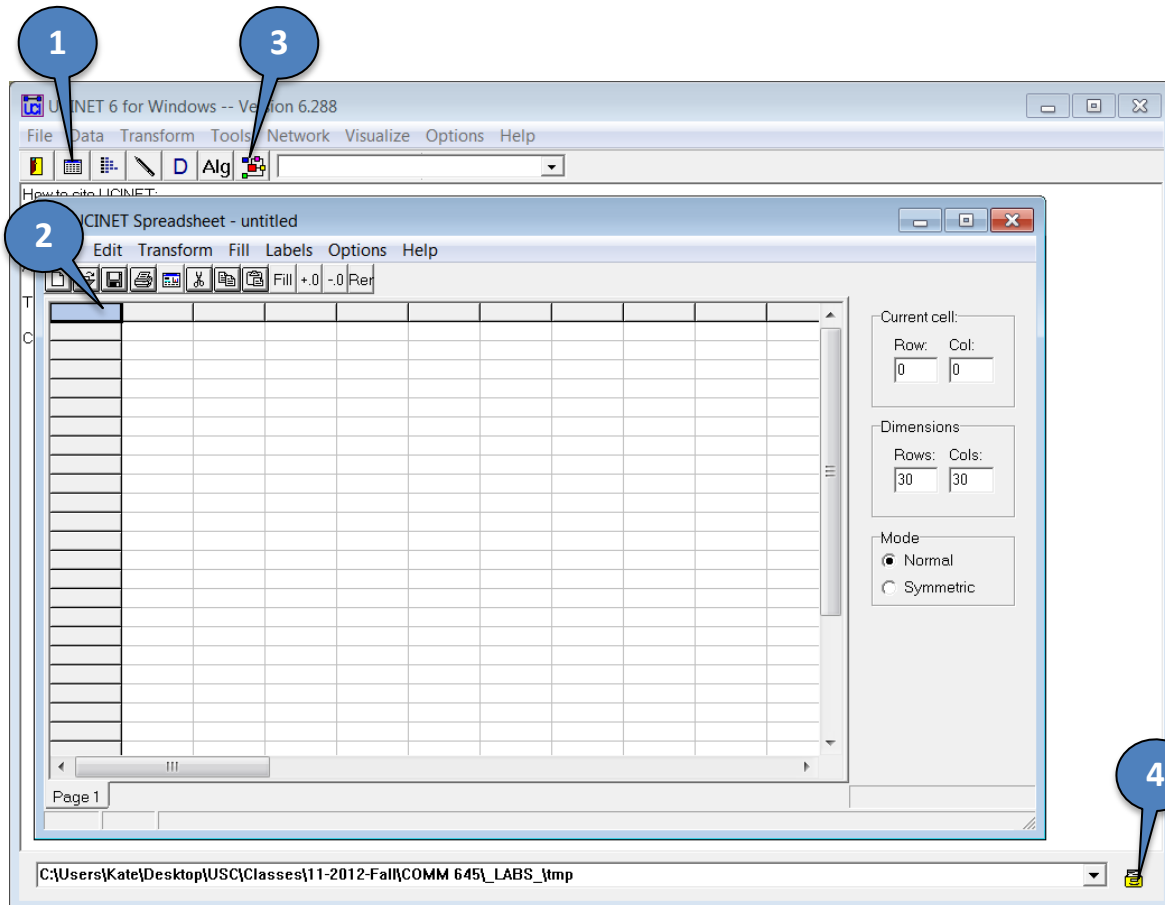
UCINET: Download from www.analytictech.com or sites.google.com/site/ucinetsoftware

Figure 1: The UCINET interface

Help files: Pressing F1 is supposed to give you access to UCINET's help files, but it does so only occasionally and only in some Ucinet versions. You can use the *Help* menu -> *Help Topics* instead. Each operation you perform will also have its own "Help" button.

Set the default folder (the directory used for data input/output): Default folder button (4 on Fig.1)

Data input

1) From any spreadsheet software (e.g. Excel): Copy the data, hit the Ucinet spreadsheet editor button (1 on Fig.1), and paste the data (including labels) into the Ucinet spreadsheet window.
2) From an Excel file: *Data* menu -> *Import via spreadsheet* -> *Full matrix w/ multiple spreadsheets*.
3) From a text file: *Data* menu -> *Import text file*. Select DL (for Data Language) or raw format – or a format used by another network program (Pajek, Krackplot, Negopy, etc.)

Once imported into UCINET, your data will be saved (in your default folder, unless otherwise specified) as two files: data (e.g. MyDataset.##d) and header (e.g. MyDataset.##h).

Data processing

- Remove isolates or pendants from the network: *Data* menu -> *Remove* -> *Remove Isolates/ Remove Pendants*

- Get a single mode projection of a 2-mode (affiliation) network: *Data* menu -> *Affiliations (2-mode to 1-mode)*. Note that you can also do this by pre- or post- multiplying by the transposed affiliation matrix, using *Tools* menu -> *Matrix Algebra*

- Symmetrize a directed network: *Transform* menu -> *Symmetrize*.
  The "Symmetrizing Method" field tells UCINET what to do if a cell above the diagonal (i, j, i<j) does not match its corresponding cell below the diagonal (j,i). "Maximum" retains all ties in the network (reciprocated or not) as undirected ties. "Minimum" only retains reciprocated ties.

- Dichotomize a valued network (transform weights into 1 or 0): *Transform* menu -> *Dichotomize*. Set the cut-off point to an appropriate value - or type "MEAN" to dichotomize by the average of all matrix cells.

- Transpose a matrix: *Transform* menu -> *Transpose*.

- Replace the values along the matrix diagonal: *Transform* menu -> *Diagonal*.

- Extract a subgraph, main component, ego-network or sub-matrix from your network: *Data* menu -> *Extract.*

- Unpack a data file containing multiple relations into separate files for each relation: *Data* menu -> *Unpack.*

Similarities, Distances, Roles & Positions, Regions & Subgroups

- Similarities: *Tools* menu -> *Similarities (e.g. Correlations).*
  Can be computed for rows, columns, or matrices. Available measures of profile similarity include correlations, covariances, cross-products, matches, and Jaccard coefficient, among others.

- Distances: *Tools* menu -> *Dissimilarities & Distances* -> *Std vector dissimilarities/distances.*
  Available measures include Euclidean, Manhattan, and Hamming distance, among others.

- Roles and Positions: *Network* menu -> *Roles & Positions*
  Available measures include *structural equivalence* (e.g. profile), *automorphic equivalence* (e.g. MaxSim) and *regular equivalence* (e.g. REGE).

- Regions: *Network* menu -> *Regions*
  Identify regions (e.g. components or k-cores) in your network

- Subgroups: *Network* menu -> *Subgroups*
  Available subgroup types include cliques, n-cliques, n-clans, and factions, among others.

Network and node measures

- Density: *Network* menu -> *Cohesion* -> *Density* -> *Density Overall.*

- Reciprocity: *Network* menu -> *Cohesion* -> *Reciprocity.*

- Transitivity: *Network* menu -> *Cohesion* -> *Transitivity.*

- Clustering: *Network* menu -> *Cohesion* -> *Clustering Coefficient.*

- Centrality and centralization: *Network* menu -> Centrality.
  The "Multiple Measures" submenu can be used to examine degree, betweenness, eigenvector, power and other centrality scores. This procedure, however, does not report back what the network centralization score is – to get that you will have to run individual centrality measures.
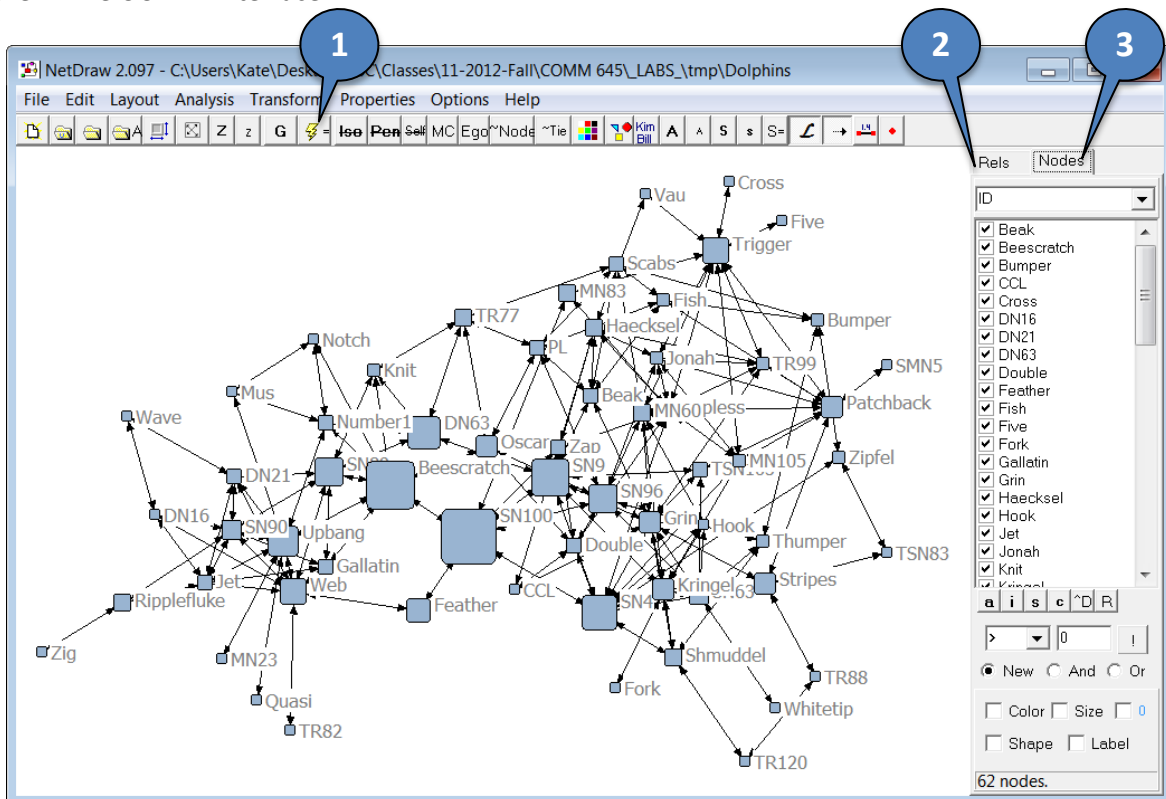
- Core/Periphery identification: *Network* menu -> *Core/Periphery*.
  The "Continuous" version computes a *coreness* index for each node. The "Categorical" version splits the nodes into ones that belong to the core and peripheral ones.

Data visualization

Open NetDraw: *Visualize* menu -> *NetDraw* or press the NetDraw button in Ucinet (3 on Fig.1)

Figure 2: The UCINET interface

Open a file: *File* menu -> *Open* -> *Ucinet Dataset*

Select an adjacency network, a 2-mode network, an attribute file, or a coordinate file. If several files contain different relations and/or attributes for the same set of nodes, they can all be loaded at the same time. The nodes and relations will appear in tabs on the right of the screen (2 & 3 on Fig.2)

Layout: Apply the default layout by pressing the layout button (1 on Fig.2).
You can select a different one from the *Layout* menu.

Analysis: Isolates, subgroups, components, centrality measures, etc. – are available from the *Analysis* menu. After they are calculated, the metrics are also added as node attributes. They can thus be used to change the color, shape, or label of nodes and links according to an attribute (e.g. centrality).

Change node and link visual properties:

Properties menu -> *Nodes*. You can change the node shape, size, fill, outline color, label size, and other properties. Changes can be applied uniformly to all active nodes, or selectively based on an attribute. For example, you can color nodes based on a "Gender" attribute by going to the *Properties* menu -> *Nodes -> Symbols -> Color -> Attribute-Based* and selecting "*Gender*" from the drop-down attribute menu. Note that you need to have that attribute loaded in advance – i.e. you should have opened the file that contains it first.

Similarly, you can change the size of nodes according to their centrality by going to *Properties* menu -> *Nodes -> Symbols -> Size -> Attribute-Based* and selecting a centrality measure from the drop-down attribute menu. Note that prior to doing this, you need to have calculated node centrality measures (*Analysis* menu -> *Centrality Measures*).

The color, weight, and other visual edge properties are similarly controlled from the *Properties* menu -> *Lines*.