Decision Model – DANCK Solutions DSS

**Definitions**

*i : DiscreteCourse 1, DiscreteCourse 2, DiscreteCourse 3….Course x (last DiscreteCourse)*

*k: AbstractCourse 1, AbstractCourse 2, AbstractCourse 3….Course k (last AbstractCourse)*

*p : Period 1, Period 2, Period 3…Period 20*

*s (section)* ***-> IN ORDER*** *e: evening, m: morning, t: tuesThurs, f: monWedFri, w: monWed*

*U: Utility*

*D*s: Absolute deviation for a given section. ||

**Decision Variables**

Xi = DiscreteCourse enrollment (binary).

= AbstractCourse enrollment (binary).

**Performance Measures**

Op = Overlap or sum (binary) of enrolled classes during the given period.

Ps = Performance (int) of given section. Number of enrolled courses in the given section.

= Duplicate course enrollment

**Parameters**

Offip = Course (i) offering during the given period (p).

Totsi = Total of a particular course’s (i) weekly offerings for a given section (s).

Gs = Goal (ideal) amount of weekly course enrollment for a given section (s).

R = Amount of courses requested.

E = Amount of courses enrolled.

Ws = Weight (deviation multiplier) for a given section.

**Descriptive Model**

Op  ex. O1 = +

Ps =  ex.

E = ex. E =

ex. =

**Objective Function**

U = U =

aka

U = U = + + + +

aka

U =

U =

[e]

[m]

[t] … + [f] … + [w]…

**Pseudocode for resolving absolute value in**

If >

Coefficient = -

Else If <

Coefficient =

Else

Coefficient = 0

**Example Terms**

( - ) where >

where <

=0 where =

**Decision Criteria**

*Minimize U*

Subject to:

E = R (Course enrollment constraint)

Op 1, 0 (Overlap binary constraint)

Xi = 1,0 (Course enrollment binary constraint)

(Duplicate course enrollment binary constriant)