

Telecommunication Systems Engineer Course Management SOP

1. **PURPOSE.** This document provides guidance to the officer that will serve as the facilitator or course manager for the FA 24 Telecommunications Systems Engineering Course (TSEC). The TSEC prepares branch qualified Captains and Majors to engineer Army, Joint, and Coalition telecommunications systems into seamless networks. Officers will be challenged to embrace and exploit the changes in technology to give the Army warfighter information superiority on the battlefield.
2. **COURSE MANAGER REQUIREMENTS.** The course manager should be a Career Field Designated FA 24 officer (Major or above) that has completed the TSEC, has his MS in Telecommunications or attended the appropriate TWI (Training With Industry) assignment that focused on terrestrial communications and networking.
3. **INSTRUCTOR REQUIREMENTS:** The instructors of the TSEC should consist of a combination of the following individuals. Army officers that have: completed a Masters of Science degree in Telecommunications through the Advanced Civil Schooling program, participated in the Training With Industry program, completed the TSEC and have acquired industry certifications (CCNA, CCIE, MCSE, etc.). Any instructor contracted to support this project must have knowledge and practical experience in the networking of telecommunications systems.
4. **BACKGROUND.** The TSEC is 20 weeks in duration and is tentatively programmed to train 40 students annually (two courses conducted annually with maximum class sizes of 20 students). Officers that have been CFD or Functional Area Designated (FAD) FA 24 will attend this course for qualification or go to graduate school. In order to be considered for accession into FA 24, you must have a hard science undergraduate degree; there is no Army branch requirement. The 24A course will be preceded by a 10 week Information Systems Operations Levelers Course (ISOL). This course is designed to introduce students to the Signal Regiment (its mission, personnel, organizations and systems) and provide students with an introduction to basic electronics, data networking and automation. The ultimate goal is to prepare students for the follow-on 24A Course. The TSEC will consist of a curriculum of nine classes taught by officers and DA civilians assigned to the ROA, personnel from the Fort Gordon Battle Lab, General Dynamics, Madison Research Corporation, graduate professors, and critical skill experts from Army and Joint Information / Systems Engineering agencies. Lectures will be reinforced by in-class exercises, computer exercises, and hands-on lab exercises using commercial and tactical equipment at the Battle Lab.

5. **FACULTY ORGANIZATION.** The Regimental Officer Academy is responsible for the execution of the TSEC and is under the supervision of the Commandant, Regimental Leadership Department. Within the ROA, responsibility for the management and instruction of the course falls under the Leadership Development Division. The actual course manager is a CFD FA 24 officer and has a staff of Army officers, DA civilians and contractors to help with the everyday management and instruction of the course.

6. **STUDENT ORGANIZATION.**

a. TSEC students are assigned to Bravo Company, 442nd Signal Battalion for non-academic support. UCMJ jurisdiction falls under the 15 Signal Brigade (COL Guthrie).

b. Students will attend all lectures together and will be broken down into smaller groups to perform the lab exercises at the Battle Lab and similar projects. Maximum class size is 20 students.

c. Each group will have a student officer appointed as student group leader. This officer is normally the senior student officer in the group. In addition, each class will have a Class Leader and a Class S-1, who will be selected on the basis of seniority or at the discretion of the TSEC manager. Group and Class Leaders play key roles within the student's leadership structure and act as spokesman for their groups and classes. Group leader responsibilities include:

(1) Schedule APFTs. Coordinate with unit orderly room for graders.

(2) Plan and execute class graduation ceremony.

(3) Arranging to have class photograph posted in hallway.

(4) Attend meetings called for by the company commander / ROA leadership.

(5) As needed, attend the Cadre training meetings.

(6) Arrange for and present the end of course critique.

d. Students will receive distribution from both LDD and through the B 442nd Signal Battalion orderly room. Student group leaders will check the distribution box in the designated areas each weekday morning prior to class and again in the afternoon.

e. The instructor and TA for each class are committed to supporting the student. Students should address all academic questions to the instructors and teaching assistants. For personal /professional issues, students should see the

TA or Course Manager. This would include leave requests, passes, appointments, emergencies, etc.

7. STUDENT PERFORMANCE.

a. General: The TSEC is the culmination of a course design and development effort that included input from the Fort Gordon Battle Lab, Madison Research Corporation, General Dynamics Corporation, the Georgia Institute of Technology, the University of Pittsburgh, University of Colorado (Boulder), the Information Systems Engineering Command (ISEC), the Defense Information Systems Agency (DISA) and the Communications Electronics Command (CECOM). This will be a challenging, yet rewarding course. Students will have to work hard and with one another to succeed.

b. There are two phases to the FA 24 training experience. The ISOL course and the formal TSEC. Both must be attended for qualification. Students will receive one AER and diploma that will cover both courses.

c. Classroom Attendance/Absences:

(1) Students are required to attend all scheduled classes as listed in the training schedule.

(2) Student group and class leaders can approve an absence of up to one academic period for administrative purposes or military appointments. ROA cadre may authorize absences of up to four academic periods for personal reasons, or up to a full day absence for routine military activities such as delivery and pickup of household goods and hold baggage or POV pickup at the point of delivery in Charleston, SC. Absences for non-military purposes greater than four hours but not more than one full class day require approval of the Course Manager. Requests must be approved through the academic chain of command beginning with the student group or class leader. Absences of more than one class day require approval of the Chief, LDD.

(3) When a student wishes to leave the immediate Augusta area, a pass/leave must be obtained from the Commander of the Leadership Department Company. This process will protect student officers should something happen while the student is away. Pass/leave requests must be processed through the academic chain of command and approved by the TSEC manager, prior to being submitted to the company. Pass/leave request forms are available in the ROA administrative offices and the company orderly room. Weekend travel outside the immediate Augusta area requires a pass when the student remains away from his primary school residence overnight. The student group or the class leader will be notified if any student leaves the Augusta area.

(4) Student group and class leaders will keep absences from scheduled classes to a minimum.

(5) Student group leaders will ensure lateness does not become a problem. Students who are late will be referred to the Army instructor, TA or TSEC manager for counseling and/or disciplinary action.

(6) Except in an emergency, leave will not normally be granted. All obligations or commitments that will require students to be away from class should be arranged during the weekends or holidays.

d. Uniforms: The student uniform will be BDU unless otherwise specified on the training schedule. Student group and class leaders will ensure that TSEC students are in the proper uniform and will take appropriate action when discrepancies in uniform, haircut, or shoeshine are noted. Wearing of the Signal Center patch and crest is mandatory for all students except for National Guard and Reserve Component Officers, who wear their home unit patch.

e. Basic Rules of the Classroom:

(1) Smoking is only permitted on breaks in designated areas outdoors.

(2) Do not be late. Late students will report to the student group or class leader and state the reason.

(3) Maintain a neat military appearance.

(4) Be professional. Do not cause a disturbance during class.

(5) Do your own work. Plagiarism or cheating will not be tolerated.

(6) Cooperate with and support the group and class leaders and other students holding position of responsibility.

(7) Keep the classroom clean. All trash must be thrown away and classroom cleaned up at the end of each academic day.

(8) Reading material not related to the academic instruction is prohibited at student's desks during academic periods. Food, along with papers, magazines, and other reading material is authorized at lunch and during breaks, but must be cleaned up and put away before the next academic periods begins. Drinks may be allowed during class at the discretion of the SGL/Instructor.

f. Physical Fitness:

(1) IAW AR 350 -15, physical fitness training is mandatory for all U.S. students. The training consists of exercises and activities found in FM 21 -20, Army Physical Fitness Training.

(2) Two APFTs will be administered during the TSEC. All U.S. students are required to take the APFTs unless excused by the TSEC manager.

(4) Students who fail to demonstrate satisfactory physical performance may be recommended for dismissal at any time.

(5) Students who fail the final (record) APFT will not graduate with the class, will not receive a diploma, and will receive an adverse AER reflecting this situation.

8. WEIGHT CONTROL PROGRAM (AR 600-9)

Students will be weighed upon arrival during the in-processing period. Overweight officers will not be allowed to attend the TSEC. Students will be monitored periodically during the course. If a student is confirmed as being overweight in accordance with AR 600-9, the student will be required to participate in the overweight program. Failure to achieve satisfactory progress may result in early release from TSEC and reassignment. Overweight students will not graduate with the class, will not receive a diploma, and will receive adverse comments on the AER.

9. EVALUATION OF STUDENTS.

a. Officers attending the TSEC will not be awarded diplomas based solely on their academic performance. ROA is concerned with the whole soldier concept and a pursuit of excellence. Therefore, officers will also be evaluated in areas of leadership, conduct, professionalism, and physical conditioning.

b. Academic evaluation is based on student performance on practical exercises, homework assignments, quizzes, examinations and research papers. The primary instructor for each module is responsible for establishing and publishing a grade distribution, which designates the relative weights of each deliverable, prior to the first conference session. The course manager must approve all proposed grade distributions. A sample grade distribution follows:

Homework	15%
Quizzes	10%
Labs/Projects	30%
Mid term exam	25%
Final exam	20%

c. Students will receive a final grade for each module, which will be recorded in AIMS. The TSEC admin NCO will maintain records of the grades for each deliverable (for each module) for a period of 2 years.

d. In order to graduate from the TSEC, students must achieve a minimum overall grade of 70% in each module, excluding modules A (Telecomm Sys Models) and B (Data Communications); students must receive a minimum overall grade of 75% in these two modules.

e. Instructors are authorized, but not required to offer extra -credit assignments to facilitate students raising their grades in a particular module (as necessary). Students must submit extra credit assignments prior to the last conference session for the particular module.

10. **COURSE FAILURES.** Because of the technical nature of this course, it is possible that some officers will not be able to complete the course. Paragraph 9d (above) lists the requirements for successful completion of the TSEC.

a. Should a student fail any of the eight modules, they may request reexamination and extra -credit work to bring their average up to the required level. If they are successful, they continue in the course without incident.

b. If a student fails a module and is unable to bring his or her score up, they will go before an academic review board to determine if they should be allowed to continue in the program. That board will consist of the Commandant of the ROA, the Chief, LDD, TSEC Course manager and two instructors from the ROA. If it is determined that the officer will be allowed to continue in the course, they will only receive a certificate of training and an adverse AER (not a diploma). If it is determined that the student should not continue, PERSOM and OCOS will be notified, and the officer will be designated into another functional area.

c. A student must not fail more than two modules. He or she is only allowed to fail and retest two modules. If they fail a third module, they will go through the process described in paragraph 10.b.

d. The course manager, instructors and teaching assistants must do all they can to identify students who are having problems early and work with them to ensure successful completion of the program.

11. **ACADEMIC EVALUATION REPORT (AER)**

a. Completion of DA Form 1059, Academic Evaluation Report is required for each student enrolled in the TSEC. The report will be prepared by the TSEC manager and reviewed by the Chief, LDD. Students will be counseled on the AER content prior to departing Fort Gordon.

b. Instructors and teaching assistants will evaluate students on academic achievement, class participation, professionalism, leadership and conduct. Failure to achieve the academic, leadership and/or physical requirements of the TSEC will be noted on the AER as appropriate.

c. Academic Ranking. Block 13 of the AER will reflect class standings as follows:

(1) Exceeded Course Standards (Top 20%). Students in the top 20 percent of the class will be recognized as having exceeded course standards based on their overall performance in the TSEC. Students who are granted waivers will be included in the calculation of the 20 percent of the class strength, but will not be eligible for class honors per paragraph 11.

(2) Achieved Course Standards. Those students who meet all course requirements with not more than two module failures will be designated as having achieved course standards.

(3) Marginally Achieved Course Standards. Those students who meet all course requirements with three or more test failures will be designated as having marginally achieved course standards.

(4) Failed to Achieve Course Standards. Those students who are dismissed from or are declared non-graduates of TSEC because of academic failure, APFT failure, lack of progress in the overweight program, or any other course requirement for which they did not receive a waiver will be designated as having failed to achieve course standards.

e. Performance Measures: Blocks 14 and 15 of the AER are completed by the TSEC manager with input from instructors and teaching assistants. Ratings in Block 14 are based on the quality of written assignments, oral presentations, leadership performance, and the ability to relate, cooperate, and take part in classroom discussions with fellow students. Block 15 is completed based upon the overall instructor/teaching assistant evaluation of the student's potential for success in higher level schooling.

f. Overall performance and potential for higher educational opportunities will be addressed in Block 16 of the AER. Particular mention is made of exemplary student performance. Specific comments for a performance rating of "marginally achieved course standards," will also appear in Block 16.

12. ACADEMIC HONORS

a. All students may compete for academic honors. Students failing any examination are not eligible to be selected for class honors. Likewise, any student requiring a waiver for any portion of the course requirements cannot compete for academic honors.

b. Class Honors:

(1) Distinguished Honor Graduate. The student with the highest academic average and a strong whole soldier concept profile will be designated as the Distinguished Honor Graduate.

(2) Honor Graduates. The top 5% of each class, based on academic average, may be designated honor graduates. The Distinguished Honor Graduate is included in that 5%.

13. FACULTY BOARDS (USASC&FG Reg. 15 -1)

a. Occasionally, circumstances may dictate that a student appear before a Faculty Board. Some of the reasons include: an honors violation, four test failures, poor attitude, disciplinary problems, leadership deficiencies and/or other actions deemed inappropriate for professional Army leaders. The Board will meet, evaluate all evidence, render its findings and make recommendations to the Commandant for subsequent action.

b. Recommendations include, but are not limited to allowing continuance in the TSEC, declaring the student a non-graduate, being relieved from active duty, and recommending discharge from the U.S. Army.

c. In each instance that a Faculty Board recommends continuance in the TSEC and the Commandant approves the recommendation, a waiver will be granted.

d. Faculty Boards will not be convened for students involved in cases of non-academic misconduct. These students will be processed IAW USASC&FG REG 350-8.

14. STUDENT COMMENTS

a. Students are encouraged to provide a timely constructive critique of any subject, instructor, or block of instruction. Written comments will be channeled through the class leader to the Chief, LDD. The Chief, LDD will respond by providing a written endorsement to the comments through the class leader to the student.

b. At the end of each TSEC module, students will complete an end of module survey aimed at improving presentation and choice of course materials, module text, and instructor / TA performance.

15. END OF COURSE CRITIQUE

The class leader is required to present an oral end-of-course evaluation (briefing) to the Commandant ROA. The evaluation should include constructive comments, criticism, and recommendations concerning all aspects of the TSEC

(subjects taught, instructors, and overall conduct of the course), including post services and facilities. A written outline will be turned in to the TSEC manager at the conclusion of the evaluation.

16. OPEN DOOR POLICY

ROA and LDD have Open Door Policies. Students should attempt to solve a problem by first seeking assistance from their student group leader, class leader, instructor, teaching assistant or course manager. Problems that cannot be solved by these personnel should be addressed up the appropriate chain of command: administrative matters to the Commander, Leadership Department; academic matters to the Chief, LDD.

17. PRE-RESIDENT PHASE

Prior to the officer reporting to Fort Gordon for the ISOL and/or 24A Course, they should go to the FA 24 course website to gain information on what they will need to be properly prepared for the course. A welcome letter, endorsed by the Commandant of the Regimental Officer Academy and the course manager will be included on the website. The letter will explain the course curriculum, length, and prerequisite requirements.

18. RESIDENT PHASE

Upon students' arrival at Fort Gordon, they will report to room 231, Greely Hall, Building# 29809, to receive inprocessing instructions from the Course Manager. Students will receive an "in-brief" from the Director, RLD, class materials, and a weekly training schedule. An Army Physical Fitness Test (APFT) will be scheduled that first week.

19. STAFF RESPONSIBILITIES

a. Instructors. Instructors should primarily be contracted or DA civilians in order to reduce effects of personnel turnover associated with military instructors. Course materials, although highly developed after the first three courses, will have to be constantly updated and validated by these instructors as new standards, technologies, regulations, and policies are introduced by the industry. Instructors should maintain industry and/or regulatory contacts through membership in professional organizations (IEEE, IETF, ATM Forum, etc.), subscriptions to industry journals, attendance at trade shows and/or conventions, and periodic additional training / education. The course manager should seek out instructors with relevant industry or military *experience* more than those with academic credentials. During a module, instructors are expected to perform the following tasks:

(1) Present by lecture the course material or coordinate for guest lecturers.

(2) Produce, proctor, and grade exams. Exams should be graded within 72 hours. Exams should NEVER be returned sooner than 48 hours after they were administered. This prevents sloppy grading.

(3) Coordinate closely with teaching assistants with respect to practical exercises and homework assignments. Exam questions should build upon these assignments.

(4) Produce a syllabus for the students at the beginning of the module indicating the subject matter referenced with reading assignments, dates of exams, labs, and homework assignments.

(5) Be available for students to ask questions at least 4 hours per week.

(6) Train teaching assistants to teach the class in the event of an emergency or for continuity (this becomes a critical task if the instructor is military.)

b. Teaching Assistants. Each module should have minimum two teaching assistants (TAs). These TAs are primarily military personnel or civilians training to be instructors. The two TAs should work out the best way to accomplish the tasks listed below, but it is worth mentioning that two TAs are necessary so that one is always present for lab sessions and one is always available for help sessions with students. Also, if the TSEC maintains a challenging curriculum, TAs will find themselves extremely busy helping students. If there is only one TA, some students will not get the help they need in order to pass the module. TAs are expected to perform the following tasks during a module:

(1) Produce, collect, grade, record, and return homework assignments and lab practical exercises.

(2) Post homework solutions after they have been turned in (this could be hard copy or web based.)

(3) Produce and distribute practice exams.

(4) Record and return exams (exam solutions are not posted.)

(5) Schedule and maintain classroom resources (room, labs, presentation equipment, etc.)

(6) Attend all lectures.

(7) Produce, attend, schedule, proctor, grade, record, and return all hands-on lab practical exercises.

(8) Produce, attend, schedule, proctor, grade, record, and return all computer-based (OPNET, MATLAB, C) lab practical exercises.

(9) Maintain module web site.

(10) Be available for students daily (afternoons) for help sessions.

(11) Conduct formal recitations as necessary.

(12) Be prepared to conduct the lecture portion of the class if necessary.

(13) Assist with proctoring exams.

c. Course Manager. The Course manager is the strategic planner. He resources the current TSEC while planning / coordinating for the next two. His responsibilities include:

(1) All matters to do with contracting.

(2) Rater for all military personnel.

(3) Budgeting.

(4) Filling resource requests from instructors and TAs.

(5) Working with appropriate agencies to reassign / reassess students who fail.

(6) Purchasing.

(7) Close coordination with Fort Gordon agencies (DOT, SAC, equipment sources, etc.)

(8) Final authority on exam disputes.

(9) Maintains contact with TSEC graduates and periodically conducts curriculum reviews based on their feedback and recommendations.

(10) Coordinates with academic organizations for eventual TSEC graduate accreditation.

(11) Publicizes the TSEC and lobbies for additional funding.

(12) Sets and enforces certification standards for instructors and TAs.

(13) Interviews / hires all instructors.

(14) Listowner for FA24listserv.

d. Admin NCO. The Admin NCO is primarily responsible for:

(1) Inprocessing students.

(2) Maintaining student records / grades.

(3) Ordering graduation certificates.

(4) Webmaster for TSEC web site.

e. Lab / Classroom Manager. The lab / classroom manager should be a contractor or DA Civilian to reduce turbulence due to personnel changeover. He is responsible for:

(1) Maintenance and accountability of all lab equipment, software, textbooks, presentation equipment, and classroom furniture.

(2) Maintains a bench stock of patch cables, connectors, NICs, toner cartridges, etc.

(3) Manages a budget allocated from the course manager.

20. HOMEWORK ASSIGNMENTS

Homework assignments include all assignments besides exams. TAs (with close coordination with the instructor) judge the appropriate homework assignment load, but a suggestion is to start out with no more than one assignment per week. TAs also decide when assignments are posted (for example, all at the beginning of the module, or weekly as the module progresses) but should give the student adequate lead time before the suspense. TAs should also notify the students of acceptable formats for assignments (typed, hand written, etc.) **ALL ASSIGNMENTS SHOULD BE GRADED AND RETURNED NO LATER THAN ONE WEEK AFTER THE SUSPENSE.** Assignments can be further categorized as problems, labs, and practical exercises.

a. Problems. These usually consist of mathematical calculations, essay questions, or questions from the textbooks. TAs should make sure that each question has a unique or nearly unique solution and they know the correct solutions before assignments are given to the students. Some textbooks have solutions in the instructor version (contact specific publishers for these.) Other

resources include the instructor or questions from previous academic experiences. TAs must validate homework problems by running them by the instructor or the TSEC staff to avoid vague or poorly worded questions.

b. Labs. These include any assignments that involve using OPNET simulations, MATLAB, etc. Depending on resources, TAs might have to schedule sessions in the computer lab for these assignments. Even if sessions are not necessary, TAs should notify students when they will be available in the computer lab. The idea here is to assist students so that they receive the learning objectives even if they don't master the software.

c. Hands-on practical exercises. These are the sessions working with hardware. Depending on resources, TAs might have to schedule several sessions to accommodate all students. Before the session, the TA should work through the P.E. procedures to ensure the equipment is working properly. The TA should be present during the sessions to make sure the equipment continues to work properly and to keep students from getting stuck and not completing the exercise in the allotted time.

21. QUALITATIVE MEASUREMENT OF ACHIEVEMENT

Each module in the TSEC must have some kind of exam or final project. The Group Thesis project will serve as the assessment mechanism for the entire TSEC.

a. Exams. Instructors produce all exams. Most should be open-book, open-notes exams, but this is left to the discretion of the instructor. Hands-on exams or exams using the computer lab facility might need to be scheduled. Instructors grade exams (not sooner than 48 hours, not later than 72 hours after they are administered), TAs record and return the exams. Instructors go over exam solutions in class, but should not post or distribute hard copies of exam solutions. TAs or the TSEC staff should review potential exam questions for the following criteria:

(1) Will the student be reasonably familiar with the exam questions from either the lectures or the homework assignments or the reading assignments?

(2) Can the students reasonably expect to complete the exam within the time allowed?

(3) Are the questions worded so that students will understand what is being asked and so that each question has only a unique solution?

b. Projects. For certain modules, projects make more sense than an exam. Instructors define the parameters of all projects. Projects should be assigned as soon as possible (with respect to the first class of a module) so that students can

organize groups have enough time to produce a first -class product. Projects should require research and perhaps testing (real or with simulation software) and some sort of written report. Instructors should coordinate with other instructors to balance the load of projects in different modules. Some examples of potential projects include:

1. Write a network management plan / SOP
 2. Capture a network in OPNET and make recommendations based on results of several simulation runs
- c. Group Thesis Project. The Group Thesis project will serve as the culmination of everything learned at the TSEC. It should involve some sort of written report and presentation of one of the FA24 Critical tasks. The guidelines for the Group Thesis project are on the TSEC web site.

22. MODULE WEB SITES

Each module must have a bulletin board or web site linked from the TSEC website (<http://www.gordon.army.mil/fa24>). TAs will manage this. The purpose of the web site is to list links to subjects, tutorials, programs, CBTs, or anything that might aid the student with the module material. The web site may list lab session schedules, TA and instructor contact information, office hours, downloadable module handouts, any materials captured from the smart board, lecture presentations, assignments, homework solutions, etc.

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