GUJARAT TECHNOLOGICAL UNIVERSITY

Subject Name: Advanced Device Drivers – II (Elective)
Subject Code: 3735204

Semester III

Type of course: ME - Electronics & Communication Engineering (VLSI & Embedded Systems Design)

Prerequisite: Basic knowledge in operating system

Rationale: NA

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	PA (V) ESE	PA (I)	
4	2#	0	5	70	30	30	20	150

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment;

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Porting RTOS and Embedded Operating Systems, Building RTOS / EOS Image for Target Hardware, Time, Space and Power aware Programming	7	15
2	Introduction to Boot loaders and Board Support Packages, Embedded File Systems.	7	15
3	Embedded Linux Kernel Internals, Embedded Linux Device Drivers	8	20
4	Wired and wireless connectivity of devices, Power Management and its impact on device management, Compliance to protocols	8	20

Course Outcome:

1. After learning the course the students should be able to:
2. Demonstrate building image for target hardware
3. Describe the concept of boot loaders, board support packages.
4. Develop character device drivers in Linux environment.
5. Explain the development of device driver and its driver development.

List of Experiments: (with Open Ended Problems)

1. use hello.c and hello1.c to generate external kernel modules – load and test them – understand their dependencies – check if they work,as per their dependency rules – use the Makefile provided with the Samples !!!
2. once the above basic testing is done, do the following :As per what is given in chapter 17 of LKD/3, do the following :

   a) add our module related source files to the kernel source directory - you must create appropriate directory with kernel source directory - you must create appropriate Makefile in your

kernel src project directory and and edit the parent directory's Makefile, as discusse in lecture and discussed in ch17 of LKD/3 - you must create appropriate Kconfig in your kernel source directory and edit the parent directory's Kconfig - verify that the appropriate menu items/options are available via “make menuconfig”

b) Configure your module as a dynamic module, compile the kernel and test it

c) Configure your module as static module, compile the kernel and test it.

3. Kernel and driver programming assignment – 3 – kernel modules related

List of Open Source Software/learning website:

1. **Linux – opensuse**

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website