SYLLABUS OF COURSES WITH EXPERENTIAL LEARNING ACADEMIC YEAR : 2014-15

Semester-End Examination (Maximum Marks-50)

70% - Procedure and tabulation form, Conducting experiment, results and inference

20% - Viva voce

10% - Fair record

BM09 709(P): Project

Teaching scheme

1 hour practical per week

Credit: 1

Objectives

To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in biomedical/electronics/instrumentation engg. or any allied area and must have relevance in biomedical engineering. Project evaluation committee consisting of the guide and three/four faculty members specialised in biomedical/electronics/instrumentation engg. will perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey is to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class

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port must not be reproduction of any original paper. A committee consisting of three/four faculty members will evaluate the seminar.

Internal Continuous Assessment

20% - Relevance of the topic and literature survey

50% - Presentation and discussion

20% - Report

10% - Regularity in the class and Participation in the seminar

BM09 806(P): Project

Teaching scheme

11 hours practical per week

Total Credits: 7

Credits for interim evaluation: 2

Credits for final evaluation: 5

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8^{th} semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Each student is expected to prepare a report and a technical paper in the prescribed format, based on the project work. The paper may be prepared as per IEEE standard and can have a maximum of eight pages. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members specialised in biomedical/electronics/computer science/instrumentation engg.. .

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

40% - Design and development/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class



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BM09 608(P): Mini Project

Teaching scheme3 hours practical per week

Credits: 2

Objectives

- To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of a biomedical/electronics/instrumentation system.
- For enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex biomedical/electronics/instrumentation system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project. A committee consisting of minimum three faculty members specialised in biomedical/electronics/instrumentation engineering will perform assessment of the mini project. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

60% of the total marks to be awarded by the guide/Co-ordinator and the remaining 40% by the evaluation committee.

Internal Continuous Assessment (50 marks)

40% - Design and development

30% - Final result and Demonstration

20% - Report

10% - Regularity in the class

Semester-End Examination (Maximum Marks-50)

20% - Demonstration of mini project

50% - Practical test connected with mini project

20% - Viva voce

10% - Report



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Sessional work assessments			
Lab Practical and Record	=	60%	
Test/s	=	30%	,
Regularity	=	10%	
Total marks	=	50	

Semester End examination Fair record	
Viva voce Procedure and tabulation form,	= 10% = 20%
Conducting experiments and results	= 70 %

BT 09 709 (P) PROJECT

1 hour practical per week Objectives

Credit:1

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To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. Project evaluation committee consisting of the guide and three/four faculty members will perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from the start of the seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey is to be completed in the seventh semester

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Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of the department before taking up external project work and there must be an internal guide for such projects.

The objective of the project is to test the ability of the student to coordinate the entire knowledge of biotechnology engineering and to judge the student's capacity in the design of plant/ process system. The project can be experimental or design based.

The students are required to prepare the project report on a complete process showing the selection of alternatives, preparation of flow sheet, bioprocess calculations and detailed design calculations of the major items of equipments. The project should include mechanical design, capital cost; product cost estimation, profitability, breakeven analysis, plant location and lay out. The project selected should be an industrial problem. Any laboratory experimental data generated may be used for the design of the industrial plant. The assessment shall be based on individual and group performance.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester. 50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

InternalContinuous Assessment

20%- Technical relevance of the project

40%- Literature survey and data collection

20%- Progress of the project and presentation

10%- Report

10%- Regularity in the class

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BT 09 806 (P) PROJECT

Teaching scheme
11 hours practical per week

Total Credits: 7

Credits for interim evaluation: 2

Credits for final evaluation: 5

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an interim evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members specialised in biotechnology engineering and allied areas.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal continuous assessment

40% -Design and development

30% -Presentation and demonstration of results

20 % -Report

10 %- Regularity in the class

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IBT 10 303 (P) INDUSTRIAL TRAINING

Teaching scheme: 1 hour per week

Credits: 1

The students have to undergo an industrial training of minimum two weeks in a Biotechnology related industry during the semester break after second semester and complete within 15 calendar days from the start of third semester. The students have to submit a report of the training undergone and present the contents of the report before the evaluation committee constituted by the department. An internal evaluation will be conducted for examining the quality and authenticity of contents of the report and award the marks at the end of the semester.

Internal continuous assessment: Marks: 50



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IBT 10 304 (P) MASTERS RESEARCH PROJECT PHASE-I

Teaching scheme: 22 hours per week

Credits: 6

Objective:

To improve the professional competency and research aptitude by touching the areas
which otherwise not covered by theory or laboratory classes. The project work aims to
develop the work practice in students to apply theoretical and practical tools/techniques
to solve real life problems related to industry and current research.

The project work can be a purely research based / industry based project which contains and applies the basic and advanced principles of biotechnology as well as chemical engineering. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If it is found essential, they may be permitted to continue their project outside the parent institute subject to the conditions in clause 10 of M.Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the Masters research project phase-I during the third semester and the same is continued in the 4th semester (Phase-II). Phase-I consists of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Internal Continuous assessment:

First Review:

Guide

50 marks

Evaluation Committee

50 marks

Second review:

Guide

100 marks

Evaluation Committee

100 marks

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Total

300 marks



FOURTH SEMESTER

IBT 10 401(P) MASTERS RESEARCH PROJECT PHASE - II

Teaching scheme: 30 hours per week Credits: 12

Objectives:

To improve the professional competency and research aptitude by touching the areas
which otherwise not covered by theory or laboratory classes. The project work aims to
develop the work practice in students to apply theoretical and practical tools/techniques
to solve real life problems related to industry and current research.

Masters Research project phase-II is a continuation of project phase-I started in the third semester. Before the end of the fourth semester, there will be two reviews, one at middle of the fourth semester and other towards the end. In the first review, progress of the project work done is to be assessed. In the second review, the complete assessment (quality, quantum and authenticity) of the Thesis is to be evaluated. Both the reviews should be conducted by guide and Evaluation committee. This would be a pre qualifying exercise for the students for getting approval for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation.

Internal Continuous assessment:

First review:

Guide

50 marks

Evaluation committee

50 marks



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CE09 709(P): PROJECT

Teaching scheme 1 hour per week

Credits: 1

Objective

To develop the capacity of the students in converting the theoretical knowledge into practical systems either to perform creative works or to perform analysis and hence to suggest solutions to problems, pertaining to Civil Engineering domain.

Project work is of duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project work can be a planning and / or design project, experimental project, field surveying or computer application based project on any of the topics of civil engineering interest. HOD will frame the rules for forming batches. If required, HOD can combine project hours of many weeks together and allot a maximum of 4 weeks exclusively for project. The project batches are expected to fix their topics, complete preliminary studies like literature survey, field measurements etc. in the seventh semester.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee consisting of three or four faculty members specialised in the various fields of civil engineering, shall study the feasibility of each project work before giving consent.

As far as possible, students should execute the project work using the facilities of the institute. However, external projects can be taken up in government departments/institutions, reputed construction industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

The assessment of all the projects should be done at the end of the seventh semester by the project evaluation committee formed as mentioned earlier. The students will present their project details and progress of their project to the committee. The complete project report is not expected at the end of the seventh semester. However, a three-four page typed report based on the work done should be submitted by each student to the assessing committee. The assessment committee and project guides will award the marks for the individual students in a project as follows:

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Syllabus - B.Tech



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Internal Continuous Assessment:
20% - Technical relevance of the project
40% - Literature survey and data collection
20% - Progress of the project and presentation
10% - Report

10% - Regularity in the class



Syllabus - B.Tech

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CE 09 806(P): PROJECT

Teaching scheme 11 hour per week

Credits: 7

The project work started in the seventh semester will continue in this semester. The students should complete the project work in this semester and present it to the assessing committee (as constituted in the seventh semester). The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through 'progress seminars' and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation. Each student is expected to prepare a report in the prescribed format, for final evaluations based on the project work. Members of the project group will present the relevance, design, implementation, and results of the project to the project evaluation committee.

Each group will submit the copies of the completed project report signed by the guide to the department. The head of the department will certify the copies and return them to the students. One copy will be kept in the departmental library and one by the respective guide. The assessment committee and project guides will award the marks for the individual students in a project as follows: 50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

40% - Data collection, Planning/ Design and detailing/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class

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CS09 709 (P): PROJECT

Teaching scheme
3 hours practical per week

Credits: 2

Objectives

 To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in computer science engineering or allied areas like -

OS platforms: Relevant to the current state of the art with support for networked environment, distributed computing and development of multi-platform applications, Internet technologies: Architectural concepts, XML, Scripting languages, Middleware (Component) technologies, Front end / GUI: Code development or development based on tools, RDBMS/Back End: Relevant to current state with database connectivity to different platforms, Languages: Qt, Glade or any similar 4GLs, Scripting languages and C & C-Linux (under GNU gcc) etc, Universal network applications development platforms such as JAVA, OS internals: Device drivers, RPC, Threads, Socket programming etc., Networking: Mechanisms, protocols, security etc., Embedded systems: RTOS, Embedded hardware with software for an application, Code optimization, security etc.

Project-evaluation committee consisting of the guide and three/four faculty members specialised in biomedical/electronics/ computer science/instrumentation engg. (Please write areas of specialisations relevant to the concerned branch concerned) will perform the screening and evaluation of the projects.

-Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey is to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class



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CS09 805 (P): PROJECT

Teaching scheme
3 hours practical per week

Credits: 2

Objectives

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members specialised in computer science and engineering.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

40% - Design and development/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class

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CS09 608(P): MINI PROJECT

Teaching scheme 3 hours practical per week

Credits: 2

Objectives

 To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of a computer / information system.

 For enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex computer / information system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project. A committee consisting of minimum three faculty members specialised in computer science and engineering will perform assessment of the mini project. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

The division of the total marks is into two namely, 60% of the total marks to be awarded by the guide / Co-ordinator and the remaining 40% by the evaluation committee.

Internal Continuous Assessment (50 marks)

40% - Design and development

30% - Final result and Demonstration

20% - Report

10% - Regularity in the class

Semester End Examination (Maximum Marks-50)

20% - Demonstration of mini project

50% - Practical test connected with mini project

20% - Viva voce

10% - Fair record



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PART B

- 7. P and NMOS transistors = I_D=V_{DS} Characteristics extraction of V_T and body effect factor
- 8. DC transfer characteristics of an inverter
- 9. Buffer & Ring Oscillator
- XOR using different logic styles comparison
- 11. Single stage CSamplifiers their responses for different types of load
- 12. Single stage source follower their responses for different types of load
- 13. Current mirror circuits

Notes

- (i) A minimum of 10 experiments must be conducted, at least four from each part
- (ii) Experiments in part B should include lay out of at least two circuits and their verification.

Internal Continuous Assessment (Maximum Marks-50)

- 60% Laboratory practical and record
- 30% Test/s
- 10% Regularity in the class

University Examination (Maximum Marks-50)

- 70% Procedure and tabulation form, Conducting experiment, results and inference
- 20% Viva voce
- 10% Fair record

EC09 709(P): PROJECT

Teaching scheme

1 hour practical per week

Credit: 1

Objectives

 To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and



develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in Electronics/Communication/ Computer science or any allied area. Project evaluation committee consisting of the guide and three/four faculty members specialised in Electronics/ Communication/ Computer science Engg. will perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey is to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7^{th} semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7^{th} semester.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class

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EC09 806(P): PROJECT

Teaching scheme

11 hours practical per week

Total Credits: 7

Credits for interim

evaluation:2

Credits for final evaluation: 5

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members specialised in Electronics/Communication/computer science..

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

40% - Design and development/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class

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EC09 608(P): MINI PROJECT

Teaching scheme
3 hours practical per week

Credits: 2

Objectives

- To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of an electronic system.
- For enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex electronic system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project. A committee consisting of minimum three faculty members specialised in Electronics Engineering will perform assessment of the mini project. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

60% of the total marks to be awarded by the guide/Co-ordinator and the remaining 40% by the evaluation committee.

Internal Continuous Assessment (50 marks)

40% - Design and development

30% - Final result and Demonstration

20% - Report

10% - Regularity in the class

University Examination Pattern (Maximum Marks-50)

20% - Demonstration of mini project

50% - Practical test connected with mini project

20% - Viva voce

10% - Fair record

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ES 10 303(P): Industrial Training

Teaching scheme: 1 hour per week

Credits: 1

The students have to undergo an industrial training of minimum two weeks in an industry during the semester break after second semester and complete within 15 calendar days from the start of third semester. The students have to submit a report of the training undergone and present the contents of the report before the evaluation committee constituted by the department. An internal evaluation will be conducted for examining the quality and authenticity of contents of the report and award the marks at the end of the semester.

Internal continuous assessment: Marks 50

ES 10 304(P): MASTERS RESEARCH PROJECT (PHASE - I)

Teaching scheme: 22 hours per week

Credits: 6

Objective:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

The project work should be a project in Embedded system stream. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to do their project outside the parent institute subject to the conditions in clause 10 of M.Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the masters research project phase-I during the third semester and the same is continued in the 4th semester.(Phase-II). Phase-I consists of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Internal Continuous assessment:

First Review:

Guide

50 marks

Evaluation Committee

50 marks

Second review:

Guide '

100 marks

Evaluation Committee

100 marks

Total

300 marks

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E5 10 303(P): Industrial Training

Teaching scheme: 1 hour per week

Credito: 1

The students have to undergo an industrial training of minimum two weeks in an industry during the semester break after second semester and complete within 15 calendar days from the start of third semester. The students have to submit a report of the training undergone and present the contents of the report before the evaluation committee constituted by the department. An internal evaluation will be conducted for examining the quality and authenticity of contents of the report and award the marks at the end of the semester.

Internal continuous assessment: Marks 50

ES 10 304(P): MASTERS RESEARCH PROJECT (PHASE - I)

Teaching scheme: 22 hours per week

Credits: 6

Objective:

To Improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

The project work should be a project in Embedded system stream. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to do their project outside the parent institute subject to the conditions in clause 10 of M.Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the masters research project phase-I during the third semester and the same is continued in the 4th semester.(Phase-II). Phase-I consists of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Internal Continuous assessment:

First Review:

Guide

50 marks

Evaluation Committee

50 marks

Second review:

Guide

100 marks

Evaluation Committee

100 marks

Total

300 marks

54

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SEMESTER 4

ES10 401(P): MASTERS RESEARCH PROJECT PHASE 2

Teaching scheme: 30 hours per week Credits: 12

Objectives:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

Masters Research project phase-II is a continuation of project phase-I started in the third semester. Before the end of the fourth semester, there will be two reviews, one at middle of the fourth semester and other towards the end. In the first review, progress of the project work done is to be assessed. In the second review, the complete assessment (quality, quantum and authenticity) of the Thesis is to be evaluated. Both the reviews should be conducted by guide and Evaluation committee. This would be a pre qualifying exercise for the students for getting approval for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation.

Internal Continuous assessment:

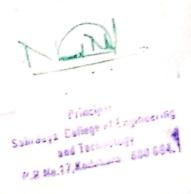
First review:

Guide 50 marks Evaluation committee 50 marks

Second review:

Guide 100 marks Evaluation committee 100 marks





EE09 709 (P) PROJECT

Teaching scheme 1 hour practical per week

Credit: 1

Objectives

 To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in electrical power systems / machines/ electronics / computer / instrumentation / biomedical engg. or any allied area and must have relevance in electrical or electronics engineering. Project evaluation committee consisting of the guide and three/four faculty members specialised in the above field, will perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester.

50% of the mark is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class

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Syllabus-B. Tech Electrical & Electronics Engg.

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EE09 806 (P) PROJECT

Teaching scheme

Total Credits: 7

11 hours practical per week

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members specialised in electrical power system / machines/ electronics/ computer/ instrumentation/ biomedical Engg. etc.

50% of the mark is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment (Maximum Marks-100)

40% - Design and development/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity

Syllabus-B. Tech Electrical & Electronics Engg.

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EE09 608 (P) MINI PROJECT

Teaching scheme 3 hours practical per week Credits: 2

Objectives

- To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of an electrical/electronic system,
- For enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex electrical/electronic system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project. A committee consisting of minimum three faculty members will perform assessment of the mini project. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

50% of the total marks to be awarded by the guide/Co-ordinator and the remaining 50% by the evaluation committee.

Internal Continuous Assessment (Maximum marks = 50)

40% - Design and development

30% - Final result and Demonstration

20% - Report

10% - Regularity in the class

Semester End Examination (Maximum Marks-50)

20% - Demonstration of mini project

50% - Practical test connected with mini project

20% - Viva voce

10% - Final Report



Syllabus-B.Tech Electrical & Electronics Engg.

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SYLLABUS OF COURSES WITH EXPERENTIAL LEARNING ACADEMIC YEAR: 2015-16

Course No.	Course Name	L-T-P-Credits	Year of Introduction
BE102	DESIGN AND ENGINEERING	2-0-2-3	2016

Course Objectives

The purpose of this course is:-

- 1. To excite the student on creative design and its significance;
- 2. To make the student aware of the processes involved in design;
- To make the student understand the interesting interaction of various segments of humanities, sciences and engineering in the evolution of a design;
- To get an exposure as to how to engineer a design.

Syllabus

Design and its objectives; Role of science, engineering and technology in design; Engineering as a business proposition; Creative design and the Design Process; Design evaluation and communication of designs; Design for function and strength; Material selection and design detailing; Role of standards in design Engineering the design; Design for "X"; Product centered and user centered design; Aesthetics and ergonomics; Concepts of value engineering, concurrent engineering and reverse engineering in design; Culture based design; Modular design; Design optimization needs; User interface; Intelligent and autonomous products; Internet of things; Advanced products and human psychology; Life cycle design; Product and its environment; Design as a marketing tool; Products and IPR; Product liability.

Expected outcome

The student will be:-

- Able to appreciate the different elements involved in good designs and to apply them in practice
 when called for.
- Aware of the product oriented and user oriented aspects that make the design a success.
- Will be capable to think of innovative designs incorporating different segments of knowledge gained in the course;
- Students will have a broader perspective of design covering function, cost, environmental sensitivity, safety and other factors other than engineering analysis.

References Books:

- Balmer, R. T., Keat, W. D., Wise, G., and Kosky, P., Exploring Engineering, Third Edition: An Introduction to Engineering and Design - [Part 3 - Chapters 17 to 27], ISBN-13: 978-0124158917 ISBN-10: 0124158919
- Dym, C. L., Little, P. and Orwin, E. J., Engineering Design A Project based introduction - Wiley, ISBN-978-1-118-32458-5
- Eastman, C. M. (Ed.), Design for X Concurrent engineering imperatives, 1996, XI, 489 p. ISBN 978-94-011-3985-4 Springer
- Haik, Y. And Shahin, M. T., Engineering Design Process, Cengage Learning, ISBN-13: 978-0-495-66816-9
- Pahl, G., Beitz, W., Feldhusen, J. and Grote, K. H., Engineering Design: A Systematic Approach, 3rd ed. 2007, XXI, 617p., ISBN 978-1-84628-319-2
 - Dieter and Schmidt, Engineering Design, McGraw Hill Education(India) Edition 2013





Voland, G., Engineering by Design, ISBN 978-93-325-3505-3, Pearson India

Web pages:

1. E-Book (Free download): http://opim.wharton.upenn.edu/~ulrich/designbook.html

 http://www2.warwick.ac.uk/fac/sci/wmg/ftmsc/modules/modulelist/peuss/designforx/design_for_x_notes_s ection_5.pdf

	A DI A D Course Plan / A I A	N.A.	
Module		lours	Sem. Exam Marks
I	Design and its objectives; Design constraints, Design functions, Design means and Design from; Role of Science, Engineering and Technology in design; Engineering as a business proposition; Functional and Strength Designs. Design form, function and strength;	L2	
	How to initiate creative designs? Initiating the thinking process for designing a product of daily use. Need identification; Problem Statement; Market survey-customer requirements; Design attributes and objectives; Ideation; Brain storming approaches; arriving at solutions; Closing on to the Design needs.	L3	15%
**	An Exercise in the process of design initiation. A simple	P4	
П	Design process- Different stages in design and their significance; Defining the design space; Analogies and "thinking outside of the box"; Quality function deployment-meeting what the customer wants; Evaluation and choosing of a design.	1.2	
	Design Communication; Realization of the concept into a configuration, drawing and model. Concept of "Complex is Simple". Design for function and strength. Design detailing- Material selection, Design visualisation- Solid modelling; Detailed 2D drawings; Tolerancing; Use of standard items in design; Research needs in design; Energy needs of the design, both in its realization and in the applications.	L3	15%
	An exercise in the detailed design of two products (Stapler/door/clock)	P4	
	FIRST INTERNAL EXAM		
Ш	Prototyping- rapid prototyping; testing and evaluation of design; Design modifications; Freezing the design; Cost analysis.	Ł2	15%
	Engineering the design – From prototype to product. Planning; Scheduling; Supply chains; inventory; handling;	L3	



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	manufacturing/construction operations; storage packaging; shipping; marketing; feed-back on design.	;;	
er ale,	List out the standards organizations. Prepare a list of standard items used in any engineering specialization. Develop any design with over 50% standard items as parts.	P4	
IV	Design for "X"; covering quality, reliability, safety, manufacturing/construction, assembly, maintenance logistics, handling; disassembly; recycling; re-engineering etc. List out the design requirements(x) for designing a rocket shell of 3 meter diameter and 8 meter length.	M A L4	15%
	compactly for transportation.	P4	·
V	Product control of the		
	Product centred and user centred design. Product centred attributes and user centred attributes. Bringing the two closer. Example: Smart phone. Aesthetics and ergonomics.	L2	20%
	Value engineering, Concurrent engineering, Reverse engineering in design; Culture based design; Architectural designs; Motifs and cultural background; Tradition and design; Study the evolution of Wet grinders; Printed motifs; Role of colours in design.	L4	
	Make sharp corners and change them to smooth curves- check the acceptance. Examine the possibility of value addition for an existing product.	Р6	
VI	Modular design; Design optimization; Intelligent and autonomous products; User interfaces; communication between products; autonomous products; internet of things; human psychology and the advanced products. Design as a marketing tool; Intellectual Property rights – Trade secret; patent; copy-right; trademarks; product liability.	L3	20%
•	Group presentation of any such products covering all aspects that could make or mar it.	Р6	

Evaluation Scheme:

First internal exam - closed book exam - 25 marks

Second internal exam - open book exam - 25 marks



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First Test: Marks: 25 Closed Book;

Questions may cover:-

Topics covered in the lectures.

How to arrive at the design details for a specific need gap given.

Sketching the design of a product that is to meet the given user requirements.

Second Test: Marks: 25 Open Book:

Students are permitted to bring in class notes, own notes, text books and other books (Maximum 3/4 books) for the test. Access to internet and mobile phones is NOT permitted.

Assignments: Marks: 20 Two assignments are to be given (10 marks each). These assignments are to cover specific design/s, sketching of the design, and a short but well written write-up on the design.

Projects: Marks: 30 Two mini projects are to be assigned. One is to be a group project and the other an individual one. A group of 3 or 4 students can take up the group project. Each project is to be evaluated for 15 marks.

The Group Project is to be done in the practical hours given for the course. Projects including the group projects are to be evaluated based on individual presentations and answers to the questions raised. These presentations could be done during the practical hours.

Question Paper Pattern for End Semester Examination (Open Book)

Part A - Eight questions of each 5 marks, out of which six questions are to be answered.

Part B - Three questions of each 10 marks, out of which two questions are to be answered.

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award marks to the students. Each student shall submit two copies of a write up of his / her seminar topic. One copy shall be returned to the student after duly certifying it by the Chairman of the assessing committee and the other will be kept in the departmental library. Internal continuous assessment marks are awarded based on the relevance of the topic, presentation skill, quality of the report and participation.

Internal continuous assessment: 100 marks

Marks for the report: 30%

Presentation: 40% Viva Voce: 30%

Course No: 07BT6214

Course Title: MINI PROJECT

Credits: 0-0-4: 2

Year: 2015

Pre-requisites: Nil Course Objectives:

• To estimate the ability of the student in transforming the theoretical knowledge studied so far into an application at the basic research level that could lead to an industrial application. For enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year. The basic concepts of product design may be taken into consideration while designing the project. A committee consisting of minimum three faculty members specialised in biotechnology/chemical engineering/instrumentation engineering will perform assessment of the mini project. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

• Internal continuous assessment: 100 marks

Marks for the report: 20%

Demonstration and Presentation: 50%

Results: 30%

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MCS 10 303(P): Industrial Training

Teaching scheme: 1 hour per week

Credits: 1

The students have to undergo an industrial training of minimum two weeks in an industry during the semester break after second semester and complete within 15 calendar days from the start of third semester. The students have to submit a report of the training undergone and present the contents of the report before the evaluation committee constituted by the department. An internal evaluation will be conducted for examining the quality and authenticity of contents of the report and award the marks at the end of the semester.

Internal continuous assessment: Marks 50

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MCS 10 304(P): MASTERS RESEARCH PROJECT (PHASE - I)

Teaching scheme: 22 hours per week

Credits: 6

Objective:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

The project work should be a project in computer science & engineering stream. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to do their project outside the parent institute subject to the conditions in clause 10 of M.Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the masters research project phase-I during the third semester and the same is continued in the 4th semester.(Phase-II). Phase-I consists of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Internal Continuous assessment:

First Review:

Guide

50 marks

Evaluation Committee

50 marks

Second review:

Guide

100 marks

Principal Sahrdaya College of Engineering and Technology Total

300 marks

SEMESTER 4

MCS10 401(P): MASTERS RESEARCH PROJECT PHASE 2

Teaching scheme: 30 hours per week

Credits: 12

Objectives:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

Masters Research project phase-II is a continuation of project phase-I started in the third semester. Before the end of the fourth semester, there will be two reviews, one at middle of the fourth semester and other towards the end. In the first review, progress of the project work done is to be assessed. In the second review, the complete assessment (quality, quantum and authenticity) of the Thesis is to be evaluated. Both the reviews should be conducted by guide and Evaluation committee. This would be a pre qualifying exercise for the students for getting approval for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation.

Internal Continuous assessment:

First review:

Guide

Evaluation committee

50 marks

Second review

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Guide Evaluation committee 100 marks 100 marks

End Semester Examination:

Project Evaluation by external examiner: 150 marks

Viva Voce by external / internal examiner: 150 marks(75 each)

Total:600 marks



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07CS 6126 MINI PROJECT

Credits: 0-0-4: 2

Pre-requisites: Nil

Course Objectives:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical concepts and practical tools/techniques to solve real life problems related to industry and current research.

Assesment Guidelines:

The project work can be a design project/experimental project and/or computer simulation project on any of the topics in computer science related topics. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to continue their project outside the parent institute, subject to the conditions in M. Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and two experts in the specified area.

The student is required to undertake the master research project phase 1 during the third semester and the same is continued in the 4thsemester (Phase 2). Phase 1 consist of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Course Outcomes:

Students shall be able to apply their theoretical knowledge to develop a solution for real time problem.

This course empowers students with problem analysis skills, improve effective communication skills, and also inculcate lifelong learning skills.

Internal Continuous Assessment (100 marks):

Mini project will have internal marks 50 and semester end examination marks 50. Internal marks will be awarded by respective guides as per the stipulations given below.

Progress achieved and regularity of the student Individual evaluation through viva voce/test = 30 marks = 50 marks

Semester End examination will be conducted by a committee consisting of three faculty members. The students are required to bring the report completed in all respects duly authenticated by the respective guide and head of the department before the committee. Students individually will present their work before the committee. The committee will evaluate the students individually and marks shall be awarded as follows.

Report : 25 marks
Concept/Knowledge in the topic : 15 marks
Presentation : 10 marks
Total marks : 50 marks



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07EC6416 MINI PROJECT

Credits: 0-0-4: 2

Year: 2015

Prerequisite:Nil

Course Objectives:

• To practice the steps involved for the selection, execution, and reporting of the project

Outline and Evaluation procedure:

Individual students are required to choose a topic of their interest in the field of Embedded systems. The subject content of the mini project shall be from emerging / thrust areas, topics of current relevance having research aspects. The final evaluation of mini project will be carried out by a committee consisting of three faculty members from the department. The students should bring the report duly authenticated by the respective guide. Students individually will present their work before the committee. The report complete in all respects should be submitted to the Head of the department.

Course Outcomes:

- The graduate will have acquired skills to select and execute projects.
- The graduate will have acquired technical report writing skills.

Internal continuous assessment: 100 marks

The distribution of marks for the mini project is as follows.

Report - 20%

Demonstration and presentation - 50%,

Results -30%

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EPD10 303(P)

INDUSTRIAL TRAINING

Hours/week: 30 (during the period of training)

Credits: 1

Objective: To enable the student to correlate theory and industrial practice.

The students have to arrange and undergo an industrial training of minimum two weeks in an industry preferably dealing with power electronic equipments during the semester break between semester 2 and semester 3 and complete within 15 calendar days from the start of semester 3. The students are requested to submit a report of the training undergone and present the contents of the report before the evaluation committee. Evaluation committee will award the marks of end semester based on training quality, contents of the report and presentation.

End semester Examination: Marks 50

EPD10 304(P)

MASTER RESEARCH PROJECT PHASE 1

Hours/week: 22

Credits: 6

Objective:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

The project work can be a design project/experimental project and/or computer simulation project on any of the topics in power electronics/drives related topics. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to continue their project outside the parent institute, subject to the conditions in clause 10 of MTech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the master research project phase 1 during the third semester and the same is continued in the 4thsemester (Phase 2). Phase 1 consist of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

Internal Continuous assessment:

	Guide Evaluation Com		
First Review	Review 50 50		
Second Review	100	100	
Total	150	150	

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EPD10 303(P)

INDUSTRIAL TRAINING

Hours/weeks 30 (during the period of training)

Credits: 1

Objective: To enable the student to correlate theory and industrial practice,

The students have to arrange and undergo an industrial training of minimum two weeks in an industry preferably dealing with power electronic equipments during the semester break between semester 2 and semester 3 and complete within 15 calendar days from the start of semester 3.The students are requested to submit a report of the training undergone and present the contents of the report before the evaluation committee. Evaluation committee will award the marks of end semester based on training quality, contents of the report and presentation.

End semester Examination: Marks 50

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EPD10 304(P)	MASTER RESEARCH PROJECT PHASE 1	Credits: 6
	Hours/week: 22	

Objective:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

The project work can be a design project/experimental project and/or computer simulation project on any of the topics in power electronics/drives related topics. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to continue their project outside the parent institute, subject to the conditions in clause 10 of MTech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the master research project phase 1 during the third semester and the same is continued in the 4th semester (Phase 2). Phase 1 consist of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

Internal Continuous assessment:

	Guide Evaluation Committee		
First Review	50	50	
Second Review	100	100	
Total	150	150	

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EPD10 401

MASTERS RESEARCH PROJECT PHASE 2

Hours/week: 30

Credits: 12

Objective:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

Master Research project phase 2 is a continuation of project phase 1 started in the third semester. There would be two reviews in the fourth semester, First in the middle of the semester and the second at the end of the semester. First review is to evaluate the progress of the work, presentation and discussion. Second review would be a pre-submission presentation before the evaluation committee to assess the quality and quantum of the work done. This would be a pre qualifying exercise for the students for getting approval by the departmental committee for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation.

Internal Continuous assessment:

Guide		Evaluation Committee	
First Review	50	50	
Second Review	100	100	
Total	150	150	

End Semester Examination:

Project Evaluation by external examiner: 150 marks Viva Voce by external / internal examiner: 150 marks



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07EE 6316

MINI PROJECT

L-T-P: 0-0-4 Credits: 2 Year: 2015

Prerequisite:

Power converters, Electrical drives

Course Objective:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

Mini Project Work:

Mini project work can be a design project/experimental project and/or computer simulation project on any of the topics in power electronics/drives related topics. The project work is allotted individually on different topics. The students shall be encouraged to do their mini project work in the parent institute itself. Department will constitute an Evaluation Committee to review the mini project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

Course Outcome:

On successful completion of this course, the students are expected to accomplish

- Practical knowledge in the regime of power electronics and/or electrical drives by carrying out investigations
- > Improved problem solving skills, communication skills and enhanced intellectual independence
- > Relevant computing skills, including use of appropriate document preparation and wordprocessing packages

Internal continuous assessment: 100 marks

ELECTRIC DRIVES LAB L-T-P: 0-0-2 Credits: 1 07EE 6318 Hours/week: 2 Year: 2015

Prerequisite:

Power converters, Electrical drives

Course Objective:

To provide practical knowledge through hardware implementation & simulation of electrical drives.

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SYLLABUS OF COURSES WITH EXPERENTIAL LEARNING ACADEMIC YEAR : 2016-17

(Any 15 Experiments)

- 1. Familiarization of virtual instrumentation environment
- 2. VI for addition, subtraction, multiplication & division
- VI for Logical circuits.
- 4. Control flow using VI
 - 5. Design of Sub VI.
 - 6. Arrays & Clusters in VI
- 7. VI for acquisition and generation of signals
- 8. VI for processing and analysis of signals
- Data Acquisition and testing using NI ELVIS
- 10. Familiarization of MPLAB IDE and PIC16F series.
- 11. Simple Programs using MPLAB IDE and PIC16F series.
- Interfacing ADC /stepper motor with PIC16F.
- 13. Heart rate meter with abnormality indication
- 14. Room Temperature control using PIC16F
- 15. Automatic water pump with level indicator using PIC16F
- 16. Familiarization of ARM architecture and programming.
- 17. Acquisition and processing of PPG, temperature, and BP using ARM
- 18. FFT and power spectrum of ECG/EMG/EEG

Internal Continuous Assessment (Maximum Marks-50)

60%-Laboratory practical and record

30%- Test/s

10%- Regularity in the class

Semester-End Examination (Maximum Marks-100)

70% - Procedure, conducting experiment, results, tabulation, and inference

20% - Viva voce

10% - Fair record

BM14 608 (P): Mini Project

Teaching scheme

3 hours practical per week

Credits: 2 College of Engine Sahrdaya Rand Technology

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Objectives

• To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of a Biomedical/ Electronics/ Mechatronic/ Instrumentation system.

• For enabling the students to gain experience in organization and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

•

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex Biomedical/ Electronics/ Instrumentation/ Mechatronics system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project.

A committee consisting of minimum three faculty members specialized in Biomedical/ Electronics/ Instrumentation/ Mechatronics Engineering will perform assessment of the mini project. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

Internal Continuous Assessment (Maximum Marks-50)

10% - Literature Survey

30% - Design & Development

10% - Regularity in the class

Semester End Examination (Maximum Marks-100)

40% - Result & Demonstration

40% - Viva voce

20% - Final Report

SYLLABUS - B.Tech. Biomedical Engineering - 2014

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Course No: 07BT7207

Course Title: PROJECT [PHASE 1]

Credits: 0-0-12:6

Year: 2015

Course Objective:

• To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

The project work can be a purely research based / industry based project which contains and applies the basic and advanced principles of biotechnology as well as chemical engineering. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If it is found essential, they may be permitted to continue their project outside the parent institute subject to the conditions in clause 10 of M.Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the Masters research project phase-I during the third semester and the same is continued in the 4th semester (Phase-II). Phase-I consists of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Internal continuous assessment :Marks 50

Progress evaluation by the Project Supervisor: 20 Marks

Presentation and evaluation by the committee: 30 Marks

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Course No: 07BT7202

Course Title: PROJECT [PHASE 2]

Credits: 0-0-12 : 6

Year: 2015

Course Objective:

To improve the professional competency and research aptitude by touching the areas
which otherwise not covered by theory or laboratory classes. The project work aims
to develop the work practice in students to apply theoretical and practical
tools/techniques to solve real life problems related to industry and current research.

Masters Research project phase-II is a continuation of project phase-I started in the third semester. Before the end of the fourth semester, there will be two reviews, one at middle of the fourth semester and other towards the end. In the first review, progress of the project work done is to be assessed. In the second review, the complete assessment (quality, quantum and authenticity) of the Thesis is to be evaluated. Both the reviews should be conducted by guide and Evaluation committee. This would be a pre-qualifying exercise for the students for getting approval for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation.

Internal Continuous Assessment: 100 marks

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Project evaluation by the supervisor/s: 30 Marks



CS14 608(P): Mini Project

Objectives

- To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of a computer / information system.
- for enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex computer / information system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project. A committee consisting of minimum three faculty members specialized in Information Technology or computer science and engineering will perform assessment of the mini project. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

The division of the total marks is into two, namely, 60% of the total marks to be awarded by the guide / Co-ordinator and the remaining 40% by the evaluation committee.

Internal Continuous Assessment (50 marks)

40% - Design and development

30% - Final result and Demonstration

20% - Report

10% - Regularity in the class

End Semester Examination (Maximum Marks-100)

25% - Demonstration of mini project

50% - Practical test connected with mini project

25% - Viva voce

Syllabus - B.Tech. Computer Science and Engineering

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07CS 7119 MASTER RESEARCH PROJECT PHASE-I

Credits: 0-0-12:6

Pre-requisites: Nil

Course Objectives:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply acquired theoretical concepts and practical tools/techniques to solve real life problems related to industry and current research.

Assesment Guidelines:

The project work can be a design project/experimental project and/or computer simulation project on any of the topics in computer science/inter disciplinary topics. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to continue their project outside the parent institute, subject to the conditions in M. Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and two experts in the specified area each.

The student is required to undertake the master research project phase 1 during the third semester and the same is continued in the 4thsemester (Phase 2). Phase 1 consist of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Course Outcomes:

This course enables students to apply the acquired fundamental engineering knowledge for investigating and solving complex problems. Empowers students with problem analysis skills, familiarizes with the usage and study of modern tools. Students also gain expertise for the design and development of solutions, by enhancing engineering knowledge, and improving inter-personal skills.

Internal Continuous Assessment (50 marks):

Project Progress Evaluation:

Progress evaluation by project supervisor Presentation and evaluation by the committee : 20 Marks : 30 Marks



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SEMESTER -4

07CS 7102 MASTER RESEARCH PROJECT PHASE-II

Credits: 0-0-21:12

Year: 2015

Pre-requisites: Nil

Course Objectives:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical concepts and practical tools/techniques to solve real life problems related to industry and current research.

Assesment Guidelines:

The project work can be a design project/experimental project and/or computer simulation project on any of the topics in computer science/inter disciplinary topics. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to continue their project outside the parent institute, subject to the conditions in M. Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and two experts in the specified area.

Master Research project phase - II is a continuation of project phase - I started in the third semester. There would be two reviews in the fourth semester, first in the middle of the semester and the second at the end of the semester. First review is to evaluate the progress of the work, presentation and discussion. Second review would be a pre-submission presentation before the evaluation committee to assess the quality and quantum of the work done. This would be a pre-qualifying exercise for the students for getting approval by the departmental committee for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation.

Course Outcomes:

This course enables students to apply the acquired fundamental engineering knowledge for investigating and solving complex problems. Empowers students with problem analysis skills, familiarizes with the usage and study of modern tools. Students also gain expertise for the design and development of solutions, by enhancing engineering knowledge. This course also teaches the importance of team work, by improving upon the aspects of communication and inter-personal skills.

Internal Continuous Assessment (100 marks):

Project evaluation by the supervisor/s Evaluation by external expert Presentation and evalution by the commitee :30 Marks

:30 Marks

:40 Marks



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EC09 608 (P) MINI PROJECT

Teaching scheme
3 hours practical per week

Credits: 2

Objectives

 To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of a Electronic system.

For enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex electronic system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project.

Internal continuous assessment will be carried out by the Guide. End Semester evaluation of individual student will be carried out by a committee consisting of minimum three faculty members. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee

No external Examiner is required for mini project evalulation.

Internal Continuous Assessment by the Guide (Maximum marks - 50)

40% - Design and development

30% - Final result and Demonstration

20% - Report

10% - Regularity in the class

Semester End Examination (Maximum Marks-100)

60% - Demonstration and Presentation of mini project

30% - Viva voce

10% - Final Report

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SEMESTER 4

07 EC 7502: MASTERS RESEARCH PROJECT PHASE 2

Teaching scheme: 21 hours per week Credits: 12

Course Objectives:

- To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes.
- The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

Course Outcomes:

The graduate will have acquired

- Knowledge about contemporary issues and research opportunities
- Capacity to communicate effectively and professionally in both verbal and written forms
- Capability of self education and lifelong learning
- Understanding of professional and ethical responsibility

Outline and Evaluation procedure:

Masters Research project phase-II is a continuation of project phase-Istarted in the third semester. Before the end of the fourth semester, there will be two reviews, one at middle of the fourth semester and other towards the end. In the first review, progress of the project work done is to be assessed. In the second review, the complete assessment (quality, quantum and authenticity) of the Thesis is to be evaluated. Both the reviews should be conducted by guide and Evaluation committee. This would be a pre qualifying exercise for the students for getting approval for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation.

Project Progress evaluation details: Marks:100

Internal continuous assessment: 70 marks

Extenal assessment: 30 marks

Project evaluation by the supervisor/s: 30 Marks

Presentation & evaluation by the Committee: 40 Marks

Evaluation by the External expert: 30 Marks

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07 EC 7407: MASTERS RESEARCH PROJECT (PHASE, I)

Teaching scheme: 12 hours per week Credits: 6

Course objectives:

To identify current issues in the area of Embedded Systems.

- To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes.
- The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

. Course Outcomes:

The graduate will have acquired

- Knowledge about contemporary issues and research opportunities
- Capacity to communicate effectively and professionally in both verbal and written forms
- Capability of self education and lifelong learning
- Understanding of professional and ethical responsibility

Outline and Evaluation procedure:

The project work should be a project in Embedded system stream. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to do their project outside the parent institute subject to the conditions in clause 10 of M.Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the masters research project phase-Iduring the third semester and the same is continued in the 4th semester.(Phase-II).Phase-I consists of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester.

Internal continuous assessment: 50 marks

Progress evaluation by the Project Supervisor: 20 Marks

Presentation and evaluation by the committee: 30 Marks

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EE14 608 (P) MINI PROJECT

Teaching scheme

3 hours practical per week

Credits: 2

Objectives

 To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of an electrical/electronic system.

 For enabling the students to gain experience in organisation and implementation of a small project and thus acquire the necessary confidence to carry out main project in the final year.

In this practical course, each group consisting of three/four members is expected to design and develop a moderately complex electrical/electronic system with practical applications; this should be a working model. The basic concepts of product design may be taken into consideration while designing the project.

Internal continuous assessment will be carried out by the Guide. End Semester evaluation of individual student will be carried out by a committee consisting of minimum three faculty members. Students have to submit a report on the mini project and demonstrate the mini project before the evaluation committee.

Internal Continuous Assessment by the Guide (Maximum marks - 50)

40% - Design and development

30% - Final result and Demonstration

20% - Report

10% - Regularity in the class

Semester End Examination (Maximum Marks-100)

60% - Demonstration and Presentation of mini project

30% - Viva voce

10% - Final Report



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07EE 7305

SEMINAR 2 Hours/week: 2 L-T-P: 0-0-2 Credits: 2 Year: 2015

Prerequisite:

Power Electronics, Electrical Arives

Course Objective:

To assess the debating capability of the student to present a technical topic. Also to impart training to a student to face audience and present his ideas and thus creating in him self-esteem and courage that are essential for an engineer.

Seminar:

Individual students are required to choose a topic of their interest from power electronics and drives related topics preferably from outside the M.Tech syllabus and give a seminar on that topic about 30 minutes. A committee consisting of at least three faculty members (preferably specialized in power electronics) shall assess the presentation of the seminar and award marks to the students. Each student shall submit two copies of a write up of his seminar topic. One copy shall be returned to the student after duly certifying it by the chairman of the assessing committee and the other will be kept in the departmental\library. Internal continuous assessment marks are awarded based on the relevance of the topic, presentation skill, quality of the report and participation.

Course Outcome:

Upon completing this course, students are expected to accomplish capability to properly present a technical topic.

Internal Continuous Assessment: 100 marks

- i) Marks for the report: 30%
- ii) Presentation: 40%
- iii) Ability to answer questions on the topic: 30%

PROJECT Credits: 6 (PHASE 1) L-T-P: 0-0-1 Credits: 6 Year: 2015	
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Prerequisite:

Power Electronics, Electrical drives

Course Objective:

To improve the professional competency and research aptitude by touching the areas which

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Principal

otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

Project (Phase 1):

The project work can be a design project/experimental project and/or computer simulation project on any of the topics in power electronics/drives related topics. The project work is allotted individually on different topics. The students shall be encouraged to do their project work in the parent institute itself. If found essential, they may be permitted to continue their project outside the parent institute, subject to the conditions in clause 10 of M. Tech regulations. Department will constitute an Evaluation Committee to review the project work. The Evaluation committee consists of at least three faculty members of which internal guide and another expert in the specified area of the project shall be two essential members.

The student is required to undertake the project phase 1 during the third—semester and the same is continued in the 4th semester (Phase 2). Phase 1 consist of preliminary thesis work, two reviews of the work and the submission of preliminary report. First review would highlight the topic, objectives, methodology and expected results. Second review evaluates the progress of the work, preliminary report and scope of the work which is to be completed in the 4th semester. The Evaluation committee consists of at least three faculty members of which internal—guide and another expert in the specified area of the project shall be two essential members.

Course Outcome:

Upon completing this course, students are expected to accomplish

- The ability to identify and articulate a research project in power electronics/drives related topics appropriate for industrial/domestic applications or social requirements
- In-depth understanding of research methods appropriate in power electronics/drives related topics and put into practice
- Ability to apply theoretical and practical tools/techniques to solve real life problems related to industrial/domestic applications or social requirements.
- > Ability to contribute as an individual in development of technical projects
- ➤ Effective communication skills for presentation of project related activities

Project Evaluation:

Progress evaluation by the Project Supervisor: 20 Marks Presentation and evaluation by the committee: 30 Marks

Total marks for the Project Phase 1: 50 Marks

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SEMESTER 4

07EE 7302

PROJECT (PHASE 2)

L-T-P: 0-0-21 Credits: 12 Year: 2015

Prerequisite:

Power Electronics, Electrical drives

Course Objective:

To improve the professional competency and research aptitude by touching the areas which otherwise not covered by theory or laboratory classes. The project work aims to develop the work practice in students to apply theoretical and practical tools/techniques to solve real life problems related to industry and current research.

Project (Phase 2):

Project phase 2 is a continuation of project phase 1 started in the third semester. There would be two reviews in the fourth semester, First in the middle of the semester and the second at the end of the semester. First review is to evaluate the progress of the work, presentation and discussion. Second review would be a pre-submission presentation before the evaluation committee to assess the quality and quantum of the work done. This would be a prequalifying exercise for the students for getting approval by the departmental committee for the submission of the thesis. At least one technical paper is to be prepared for possible publication in journal or conferences. The technical paper is to be submitted along with the thesis. The final evaluation of the project will be external evaluation (Viva Voce by external). The external expert must be from outside the cluster.

Project Evaluation:

Project evaluation by the supervisor/s: 30 Marks Presentation & evaluation by the Committee: 40 Marks Evaluation by the External expert: 30 Marks Total marks for the Project Phase 2: 100 Marks



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SYLLABUS OF COURSES WITH EXPERENTIAL LEARNING ACADEMIC YEAR: 2017-18

Note: For the Course 'Design project "(Course Code BM 341, BT 341, CE 341, CS 341, EC 341, EE 341) all the six branches following a common syllabus (for 6 Different Courses).

So one copy of the syllabus (which is common for all 6 courses) is attached

So there will be copies of syllabus of 14 courses instead of 19(as mentioned in the HEI Portal)

20% - Viva voce

10% - Fair record

BM14 708 (P): Project

Teaching scheme Credits: 4
4 hours practical per week

Objectives

To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in Biomedical/Electronics//Instrumentation/Mechatronics Engg. or any allied area and must have relevance in Biomedical engineering.

Project evaluation committee consisting of the guide and three/four faculty members specialized in Biomedical/Electronics/Instrumentation/Mechatronics Engg. will perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey and 40% of the work has to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7^{th} semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7^{th} semester.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

ABUS - B.Tech. Biomedical Engineering - 2014.

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Internal Continuous Assessment (Maximum Marks-150)

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class

EIGHTH SEMESTER

BM14 801: Communication Systems

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Teaching scheme	Credits: 4
3 hours lecture and 1 hour tutorial per week	

Objectives

This course introduces the various techniques used for transferring information in communication systems. Basic ideas of microwave communication, spread spectrum communication, telemetry, optical communication etc. are also covered.

Module I (13 hour)

Electromagnetic spectrum-Elements of a Communication System-Classification of communications-Transmission Lines, (Brief description only)-basic types, characteristic impedance, SWR, Antennas (brief description only) - antennas operation, basic antenna types-RF wave propagation (brief description only)-modulation-AM principle, generation-SSB techniques-principle, generation-angle modulation-theory and generation of PM and FM-Comparison of AM, PM, FM

Module II (13 hours)

Super heterodyne receivers--Receiver parameters – AM receivers-- IF and its selection, automatic gain control, AM demodulator circuits, SSB receivers, demodulation of SSB, receiver types, FM receiver-FM demodulators, FM noise suppression, Pulse modulation, Principle of PAM, PWM & PPM modulation and demodulation

SYLLABUS - B.Tech. Biomedical Engineering - 2014.

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BM14 806(P): SEMINAR

Teaching scheme Credits: 2
3 hours practical per week

Objectives

To assess the ability of the student to study and present a seminar on a topic of current relevance in the field of Biomedical Engineering or allied areas

It enables the students to gain knowledge in any of the technically relevant current topics and acquire the confidence in presenting the topic. The student will undertake a detailed study on the chosen topic under the supervision of a faculty member, by referring papers published in reputed journals and conferences. Each student has to submit a seminar report, based on these papers; the report must not be reproduction of any original paper. A committee consisting of three/four faculty members will evaluate the seminar.

Internal Continuous Assessment (Maximum Marks-150)

20% - Relevance of the topic and literature survey

50% - Presentation and discussion

20% - Report

10% - Regularity in the class and Participation in the seminar

BM13 807(P): PROJECT

Teaching scheme

7 hours practical per week

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Objectives

To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model or a system.

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members Biomedical/ Electronics/ Instrumentation/ Mechatronics etc.

50% of the mark is to be awarded by the guide/Coordinator and 50% by the evaluation committee.

Internal Continuous Assessment (Maximum Marks - 150)

40% - Design and development/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class

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Course code	Course Name	L-T-P - Credits	Year of
**341		Color a mante consense de la consensa de la consensa de la consensa de la consensa de la color de la c	Introduction
and the second section of the second	DESIGN PROJECT	0-1-2-2	2016
and the state of t	Prerequisite : N		the agency of the party of the

Course Objectives

- To understand the engineering aspects of design with reference to simple products
- To foster innovation in design of products, processes or systems
- To develop design that add value to products and solve technical problems

Course Plan

Study: Take minimum three simple products, processes or techniques in the area of specialisation, study, analyse and present them. The analysis shall be focused on functionality, strength, material, manufacture/construction, quality, reliability, aesthetics, ergonomics, safety, maintenance, handling, sustainability, cost etc. whichever are applicable. Each student in the group has to present individually; choosing different products, processes or techniques.

Design: The project team shall identify an innovative product, process or technology and proceed with detailed design. At the end, the team has to document it properly and present and defend it. The design is expected to concentrate on functionality, design for strength is not expected.

Note: The one hour/week allotted for tutorial shall be used for discussions and presentations. The project team (not exceeding four) can be students from different branches, if the design problem is multidisciplinary.

Expected outcome.

The students will be able to

- Think innovatively on the development of components, products, processes or technologies in the engineering field
- ii. Analyse the problem requirements and arrive workable design solutions

Reference:

Michael Luchs, Scott Swan, Abbie Griffin, 2015. Design Thinking. 405 pages, John Wiley & Sons, Inc

Evaluation

First evaluation (Immediately after first internal examination)

20 marks
Second evaluation (Immediately after second internal examination)

20 marks
Final evaluation (Last week of the semester)

20 marks
60 marks

Note: All the three evaluations are mandatory for course completion and for awarding the final grade.



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University of Calicut

Sessional work assessments
Lab Practical and Record = 60%
Tests = 30%
Regularity = 10%
Total marks = 50

Semester End examination
Fair record = 10%
Viva voce = 20%
Procedure and tabulation form,
Conducting experiments and results = 70 %
Total marks = 100

BT14 708 (P) PROJECT

Teaching Scheme: 4 hours per week

Credit: 4

Objectives:

 To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to begin in the seventh semester and completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. Project evaluation committee consisting of the guide and three/four faculty members will perform the screening and evaluation of the projects. Each project group should submit project synopsis within three weeks from the start of the seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey and 40 % of the work has to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of the department before taking up external project work and there must be an internal guide for such projects. The objective of the project is to test the ability of the student to coordinate the entire knowledge of biotechnology engineering and to judge the student's capacity in the design of plant/ process system. The project can be experimental or design based. The students are required to prepare the project report on a complete process showing the selection of alternatives, preparation of flow sheet, bioprocess calculations and detailed design calculations of the major items of equipments. The project should include mechanical design, capital cost; product cost estimation, profitability, breakeven analysis, plant location and lay out. The project selected should be an industrial problem. Any laboratory experimental data generated may be used for the design of the industrial plant. The assessment shall be based on individual and group performance.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester. 50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

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University of Calicut

20%- Technical relevance of the project

40%- Literature survey and data collection

20%- Progress of the project and presentation

10%-Report

10%- Regularity in the class Total Marks: 100

EIGHTH SEMESTER

BT 14 801 BIOPROCESS INSTRUMENTATION

Teaching Scheme:

3 hours lecture and 1 hour tutorial per week.

Credits: 4

Objectives:

- To impart the basic ideas about instruments
- To evaluate the operating principles of different instruments
- To study about biosensors and instrumentation of bioprocesses

Module I [15 hrs]

Introduction .Definition of instrumentation concept of an instrument. Functional elements and functions of an instrument. Classification of instruments. Static and dynamic characteristics of measuring instruments. Accuracy, reproducibility, sensitivity, static error, dead zone, dynamic error, fidelity, lag, and speed of response

Sensing elements-various types, sensors for temperature, pressure and fluid flow, transducers- their principles and working, transmission methods, indicating and recording means. Temperature measurements, temperature scales, basic principles and working of thermometers, mercury in glass thermometers, thermocouples, ranges of different types of temperature measuring instruments. Sources of errors and precautions to be taken in temperature measurements

Module II [15 hrs]

Pressure measurement. Mcleod gauge, Knudsen gauge, Bourden gauge, bellow, diaphragm. Transducers of electrical and mechanical types. Piezo-electric manometers, thermal conductivity gauges, ionization gauge, liquid level measurements, gas density detector

Moisture content determination by thermal drying. Instruments for measuring humidity .Composition analysis using spectroscopic methods like absorption, emission and mass spectrometers. Gas analysis by thermal conductivity, polarography and chromatography.

Module III [15 hrs]

Biosensors, types and features, various components of biosensors, Transducers, calorimetric, optical, potentiometric/ amperometric, conductometric/ resistometric biosensors, Biosensors for glucose, alcohol, carbon dioxide, cell population, BOD

Module IV [15 hrs]

Instrumentation for bioprocesses, schematic summary of biochemical reactor instrumentation, Physical and chemical sensors for the medium and gases. On -line sensors for cell properties. Off-line analytical



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University of Calicut

University Examination Pattern

PART A: Analytical/problem solving SHORT questions

8x 5 marks=40 marks

Candidates have to answer EIGHT questions out of TEN. There shall be minimum of TWO and maximum of THREE questions from each module with total TEN questions.

PART B: Analytical/Problem solving DESCRIPTIVE questions 4 x 15 marks=60 marks

Two questions from each module with choice to answer one question,

Maximum Total Marks: 100

BT14 806 (P) SEMINAR

Teaching scheme: 3 Hrs per week

Objective:

Credits: 2

 To assess the ability of the student to study and present a seminar on a topic of current relevance in biotechnology engineering and allied areas.

It enables the students to gain knowledge in any of the technically relevant current topics and acquire the confidence in presenting the topic. The student will undertake a detailed study on the chosen topic under the supervision of a faculty member, by referring papers published in reputed journals and conferences. Each student has to submit a seminar report, based on these papers; the report must not be reproduction of any original paper. A committee consisting of three/four faculty members will evaluate the seminar.

Internal continuous assessment

40% -Design and development

30% -Presentation and demonstration of results

20 % -Report

10 %- Regularity in the class

Total Marks: 100

BT14 807 (P) PROJECT

Teaching scheme

7 Hrs practical per week

Total Credits: 7

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems



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There shall be at least an interim evaluation and a final evaluation of the project in the Rth semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation. Each project group should complete the project work in the Bth semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide and three/four faculty members specialized in biotechnology engineering and allied areas 50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal continuous assessment

40% -Design and development 30% -Presentation and demonstration of results 20 % -Report

10 %- Regularity in the class

Total Marks: 100

BT14 808 (P) VIVA - VOCE

Credits: 3

Objective:

To examine the knowledge acquired by the student during the B. Tech.. course, through an oral
examination

The students shall prepare for the oral examination based on the theory and laboratory subjects studied in the B. Tech.. course, seminar, and project. There is only university examination for viva-voce. University will appoint two external examiners and an internal examiner for viva-voce. These examiners shall be senior faculty members having minimum five years teaching experience at engineering degree level. For final viva-voce, candidates should produce certified reports of, seminar, and project (two interim reports and main report). If he/she has undergone industrial training/industrial visit/educational tour or presented a paper in any conference, the certified report/technical paper shall also be brought for the viva-voce. Allotment of marks for viva-voce shall be as given below.

Assessment in viva-voce

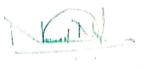
40 %- Subject

30% - Project

20%- Seminar

10%- Industrial training/ Industrial visit/ Papers presented at national level

Maximum marks: 100





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Internal Continuous Assessment (Maximum Marks-50)

60%-Laboratory practical and record

30%- Test/s

10%- Regularity in the class

Note: Students shall be made aware of Computer integrated test methods for water quality assessment.

End Semester Examination (Maximum Marks-100)

70% - Procedure, conducting experiment, results, tabulation, and inference

20% - Viva voce

10% - Fair record

CE 14 708 (P): Project

Teaching scheme 4 hour per week

Credits: 4

Objective

To develop the capacity of the students in converting the theoretical knowledge into practical systems either to perform creative works or to perform analysis and hence to suggest solutions to problems, pertaining to Civil Engineering domain.

Project work is of duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project work can be a planning and / or design project, experimental project, computer application based project on any of the topics of civil engineering interest. HOD will frame the rules for forming batches. If required, HOD can combine project hours of many weeks together and allot a maximum of 2 weeks exclusively for project. The project batches are expected to fix their topics, complete preliminary studies like literature survey, field measurements, data collection, etc. in the seventh semester. Also they are expected to finish about 40% of their work in 7th semester.

Each project group should submit project synops is within three weeks from start of seventh semester. Project evaluation committee consisting of guide and three or four faculty members specialised in various fields of civil engineering, shall study the feasibility of each project work before giving consent.

As far as possible, students should execute the project work using the facilities of the institute. However, external projects can be taken up in government departments/institutions, reputed construction industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

University of Calicut Syllabus - B.Tech - Civil Engineering - 2014

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The assessment of all the projects should be done at the end of the seventh semester by the project evaluation committee formed as mentioned earlier. The students will present their project details and progress of their project to the committee. The complete project report is not expected at the end of the seventh semester. However, a typed interim report based on the work done should be submitted by each student batch to the assessing committee. The assessment committee and project guides will award the marks for the individual students in a project as follows:

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment:

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class

ELECTIVES

CE 14 704 (A): Advanced Structural Design I

Teaching scheme

Credits: 4

3 hours lecture and 1 hour tutorial per week

Objective:

To equip the students to assess the loads on some important types of structures, choose the method of appropriate analysis according to the situation and perform design

Module-1 (13 Hours)

Design of Deep beams & Corbels

Design of Ribbed Slabs

Yield line theory of slabs - Design of Square, Rectangular & Circular slabs for UDL and point load at centre

Module -II (13 Hours)

Design of flat slabs by direct design method and equivalent frame method as per IS 456-2000. Design of multi-bay multi storied portal frames for gravity loads, Pattern loading - Use of SP 16 (Substitute Frame method of analysis may be followed)

Module III (13 Hours)

Design of Light Gauge members - compression and flexural members Design of Self Supporting & Guyed steel Chimney (design for wind dynamics not expected)

Module - IV (13 Hours)

Basic principles of analysis of Base-excited SDOF and MDOF systems - formulation of basic equation-concepts of pseudo acceleration, velocity and displacement - Earthquake response spectra (concept only).

Lumped mass modelling of multi-storey shear building and modes of vibration (concepts onlydemonstration with example- students are not expected to solve numerical problem on evaluation of modes during examination)-modes superposition- SRSS and CQC (Introduction only)-Concept of design spectrum for earthquake- use of IS 1893.

University of Calicut Syllabus - B.Tech - Civil Engineering - 2014

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PART A: Analytical/problem solving SHORT questions 8x 5 marks=40 marks

Candidates have to answer EIGHT questions out of TEN. There shall be minimum of TWO and maximum of THREE questions from each module with total TEN questions.

PART B: Analytical/Problem solving DESCRIPTIVE questions 4 x 15 marks=60 marks

Two questions from each module with choice to answer one question.

Maximum Total Marks: 100

CE\14 806 (P): Seminar

Conducting schedule 3 hours presentations per week

Credits: 2

Objective

To measure as well as flourish the ability of the student to study a topic, in Civil Engineering, of current relevance, from technical literature and present a seminar on that topic. Individual students should be asked to choose a topic in any field of civil engineering, preferably from outside the B. Tech syllabus and give a seminar on that topic for about thirty minutes. It enables the students to gain knowledge in any of the technically relevant current topics and acquire the confidence in presenting the topic. The student will undertake a detailed study on the chosen topic under the supervision of a faculty member, by referring papers published in reputed journals and conferences. Each student has to submit a seminar report (in two copies), based on these papers; the report must not be reproduction of any original paper. A committee consisting of three/four faculty members (preferably specialized in various sub-fields of Civil Engineering) will evaluate the seminar. One of the two copies submitted by the student should be returned to him/her after duly certifying it by the staff in charge of the seminar and Head of the department and the other-copy shall be kept in the departmental library.

Internal Continuous Assessment

20% - Relevance of the topic and literature survey

50% - Presentation and discussion

20% - Report

10% - Regularity in the class and Participation in the seminar

CE 14 807 (P): Project

Teaching scheme 7 hour per week

Credits:4

The project work started in the seventh semester will continue in this semester. The students should complete the project work in this semester and present it to the assessing committee (as constituted in the seventh semester). The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars. And demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc. There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation. Each student is expected to prepare a report in the prescribed format, for final evaluations based on the project work. Members of the project group will present the relevance, design, implementation, and results of the project to the project evaluation committee. Each group will submit the copies of the completed project report signed by the guide to the department. The head of the department will certify the copies and return them to the students. One copy will be kept in the departmental library and one by the respective guide. The assessment committee and project guides will award the marks for the individual students in a project as follows: 50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

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Internal Continuous Assessment

40% - Data collection, Planning/ Design and detailing/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class

CE 13 808 (P): Viva Voce

Credits: 4

Objective

To examine the knowledge acquired by the student during the B.Tech. course, through an oral examination

The students shall prepare for the oral examination based on the theory and laboratory subjects studied in the B.Tech. course, seminar, and project. There is only university examination for viva voce. The university will appoint two external examiners and an internal examiner for conducting the viva voce examination. These examiners shall be senior faculty members having minimum five years of teaching experience at engineering degree level. For final viva-voce, candidates should produce certified reports of seminar and project (two interim reports and main report). If he/she has undergone industrial training/industrial visit/educational tour or presented a paper in any conference, the certified report/technical paper shall also be brought for the viva-voce. The examiners shall ask questions from subjects studied for the B.Tech course, project, seminar and reports of industrial visits/trainings conducted by the student. Allotment of marks for viva-voce shall be as given below.

Pass minimum is 50%

Note: A student failed in viva voce but had passed in all other subjects shall be given with an additional chance for appearing the viva voce examination with in three months from the date of examination.

Assessment in Viva-voce (Maximum Marks – 100)

40% - Subjects

30% - Project

20% - Seminar

10% - Industrial training/industrial visit/educational tour or Paper presented at National-level

ELECTIVES

CE 14 -804(A): Advanced Structural Design II

Teaching scheme

Credits: 4

3 hours lecture and I hour tutorial per week

Objective:

To familiarize the students with analysis & design aspects of some advanced structures like shell roofs, tall buildings and pre-stressed concrete structures

Module 1 (13 Hours)

Shell Roof – Introduction-Classification of shells, types of stresses, Analysis of cylindrical shells, Design of simply supported circular cylindrical shells using membrane theory, Beam theory and ASCE Manual No.31

Module II (13 Hours)

Folded Plates – Introduction- Analysis using Iteration Method and using equation of three shears. Introduction to analysis using Simpson's Method (principles and steps only) - Design using Beam Method

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Course	Course Name	TeTePa	Year of
Code		Credits	Introduction
CE334	COMPUTER AIDED CIVIL ENGINEERING LAB	0-0-3-1	2016

Prerequisite: CE231 Civil Engineering Drafting Lab

Course objectives:

- 1. To introduce the fundamentals of Civil Engineering drafting and drawing.
- 2. To familiarize with the FEA software packages for analysis and Design of structures
- 3. To understand the Total Station data transfer and interpretation.
- 4. To enable the usage of Project Management Software

List of Experiments:

- 1. Structural Drawings for
 - a) Slabs and Beams
 - i. One Way / Two way Slab/Continuous Slabs
 - ii. Singly reinforced /Double reinforced Beams
 - iii. Continuous / Flanged Beams
 - b) Stair Case (Doglegged and Tread and Riser Type)
 - c) Foundations (Isolated and Combined Rectangular)
- II Analysis and design of steel and RCC elements using STAAD/SAP 2000/ ETABS/any FEM software package.
 - a) Continuous and Cantilever beams
 - b) Plane truss and Frames
- III Use of Project Management Software (MS Project/Primavera)
 - a) Preparation of Bar Chart/Gantt Charts/CPM/PERT Charts and finding Critical Path
 - b) Practice on Resource allocation (and Project Monitoring(Cost and Time)
- IV. Conduct of Survey camp using Total Station (minimum 3 days duration) and its plotting.

Expected Outcomes:

 The students are expected to accomplish the abilities/skills for the use of Civil Engineering Drafting/Analysis, Design and Project Management Software.

Text Books / References:

- N Krishna Raju, Structural Design and Drawing, Second Edition, Universities Press (India), Private Limited, Hyderabad, 2009
- 2. Reference Manual of the Relevant Software
- Satheesh Gopi, Dr. R Sathikumar, N Madhu, Advanced Surveying: Total Station, GIS and Remote Sensing, Pearson Education Indla, 2006
- 4. AutoCAD Essentials, Autodesk official Press, John Wiley & Sons, US, 2015

Note:

- (1) Evaluation of drawing, along with a viva, to be done at the end of every class.
- (2) A survey camp of minimum 3 days duration using total station is to be conducted in the semester, and is compulsory
- (3) Evaluation Criteria:

Best 8 plate/Exercises - 40 marks

Survey Camp - 30 marks

.End semester examination - 30 marks

TOTAL - 100 marks



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CS14 708(P) : Project

Teaching scheme

Cradits: 4

3 hours Practicals per week

Objectives

 To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in computer science engineering or allied areas like -

OS platforms: relevant to the current state of the art with support for networked environment, distributed computing and development of multi-platform applications, Internet technologies: Architectural concepts, XML, Scripting languages, Middle-ware (Component) technologies, Front end / GUI: Code development or development based on tools, RDBMS/Back End: Relevant to current state with database connectivity to different platforms, Languages: Qt, Glade or any similar 4GLs, Scripting languages and C & C-Linux (under GNU gcc) etc, Universal network applications development platforms such as JAVA, OS internals: Device drivers, RPC, Threads, Socket programming etc., Networking: Mechanisms, protocols, security etc., Embedded systems: RTOS, Embedded hardware with software for an application, Code optimization, security etc.

Project evaluation committee consisting of the guide and three/four faculty members specialised in computer science & engg. will perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Design is to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester.

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50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

CS14 704(A): Object Oriented Modelling and Design

Teaching scheme

Credits: 4

3 hours lectures and 1 hour Tutorial per week

Objectives

• To impart ideas on building systems through the object oriented modelling approach using the Unified Modelling Language.

Module I (13 hours)

Introduction to UML and Unified Process - Use case modeling: Actors and Use cases, Use case specification, Actor generalization, Use case generalization - Objects and classes, Relationships, Inheritance and Polymorphism, Packages.

Module II (14 hours)

Use case realization: Interactions, Sequence diagrams, Communication diagrams, Interaction occurrences. Activity diagrams: Activity semantics, activity partitions, Sending signals and accepting events, Interaction overview diagrams.

Module III (13 hours)

Design: Design workflow, well-formed design classes, Refining analysis relationships. Interfaces and components - State machine diagrams, Composite states, submachine states

Module IV (12 hours)

Implementation workflow, Deployment, Introduction to OCL: Why OCL? OCL expression syntax, Types of OCL expressions. Introduction to Software Architecture, Architecture description language (ADL)

Habus - B.Tech. Computer Science and Engineering

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CS14 807 (P): Project

Teaching scheme Credits: 4

7 hours practical per week

Objectives

 To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model of a computer / information system.

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members specialized in computer science and engineering.

50% of the marks is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment:

40%- Development/ Simulation and Analysis

30%- Presentation & Demonstration of results

20%- Report

10%- Regularity in the class

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EC14 708 (P) PROJECT

Teaching scheme 4 hours practical per week Credit: 4

Objectives

 To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in electronics/ communication / computer / instrumentation / biomedical engineering or any allied area and must have relevance in electronics and communication engineering. Project evaluation committee consisting of the guide and three/four faculty members specialised in the above field shall perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey and 40% of the work has to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7th semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7th semester.

50% of the mark is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class



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EC14 807 (P) PROJECT

Teaching scheme

7 hours practical per week

Total Credits: 4

Credits for interim evaluation: 2

Credits for final evaluation: 2

Objectives

 To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model or a system.

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide, and three/four faculty members specialised in electrical power system / machines/ electronics/ computer/ instrumentation/ biomedical Engg. etc.

50% of the mark is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment (Maximum Marks - 100)

40% - Design and development/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class



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EE14 708 (P) PROJECT

Teaching scheme
4 hour practical per week

Credit: 4

Objectives

 To judge the capacity of the students in converting the theoretical knowledge into practical systems/investigative analysis.

Project work is for duration of two semesters and is expected to be completed in the eighth semester. Each student group consisting of not more than five members is expected to design and develop a complete system or make an investigative analysis of a technical problem in the relevant area. The project may be implemented using software, hardware, or a combination of both. The project work may be undertaken in electrical power systems / machines/ electronics / computer / instrumentation / biomedical engineering or any allied area and must have relevance in electrical or electronics engineering. Project evaluation committee consisting of the guide and three/four faculty members specialised in the above field shall perform the screening and evaluation of the projects.

Each project group should submit project synopsis within three weeks from start of seventh semester. Project evaluation committee shall study the feasibility of each project work before giving consent. Literature survey and 40% of the work has to be completed in the seventh semester.

Students should execute the project work using the facilities of the institute. However, external projects can be taken up in reputed industries, if that work solves a technical problem of the external firm. Prior sanction should be obtained from the head of department before taking up external project work and there must be an internal guide for such projects.

Each student has to submit an interim report of the project at the end of the 7^{th} semester. Members of the group will present the project details and progress of the project before the committee at the end of the 7^{th} semester.

50% of the mark is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment

20% - Technical relevance of the project

40% - Literature survey and data collection

20% - Progress of the project and presentation

10% - Report

10% - Regularity in the class



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EE14 807 (P) PROJECT

Teaching scheme
4 hours practical per week

Total Credits: 4 Credits for interim evaluation: 4

Credits for final evaluation: 4

Objectives

 To estimate the ability of the student in transforming the theoretical knowledge studied so far into a working model or a system.

This project work is the continuation of the project initiated in seventh semester. The performance of the students in the project work shall be assessed on a continuous basis by the project evaluation committee through progress seminars and demonstrations conducted during the semester. Each project group should maintain a log book of activities of the project. It should have entries related to the work done, problems faced, solution evolved etc.

There shall be at least an Interim Evaluation and a final evaluation of the project in the 8th semester. Each project group has to submit an interim report in the prescribed format for the interim evaluation.

Each project group should complete the project work in the 8th semester. Each student is expected to prepare a report in the prescribed format, based on the project work. Members of the group will present the relevance, design, implementation, and results of the project before the project evaluation committee comprising of the guide and three/four faculty members specialised in electrical power system / machines/electronics / power electronics/ computer/ instrumentation/ biomedical Engg. etc.

50% of the mark is to be awarded by the guide and 50% by the evaluation committee.

Internal Continuous Assessment (Maximum Marks - 50)

40% - Design and development/Simulation and analysis

30% - Presentation & demonstration of results

20% - Report

10% - Regularity in the class

End semester Examination (Maximum Marks - 100)

Report Evaluation by external examiner: 50 marks

Presentation evaluated by external / internal examiner: 50 marks

SYLLABUS - B.Tech - Electrical & Electronics Engineering - 2014

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SYLLABUS OF COURSES WITH EXPERENTIAL LEARNING ACADEMIC YEAR: 2018-19

Note: For the Course 'Seminar & Project Preliminary (Course Code BM 451, BT 451, CE 451, CS 451, EC 451, EE 451) and 'Project' (Course Code BM 492, BT 492, CE 492, CS 492, EC 492, EE 492) all the six branches following a common syllabus.

So one copy of the syllabus for each courses (which is common for all 6 courses) are attached

So there will be copies of syllabus of 3 courses instead of 13((ie, 3 + 2 *5) as mentioned in the HEI Portal)

Course code	Company		
	Course Name	L-T-P - Credits	Year of
**451	Seminar and Project Preliminary		Introduction
		0-1-4-2	2016
Course Obica	Prerequisite : Ni		

Course Objectives

- To develop skills in doing literature survey, technical presentation and report preparation.
- To enable project identification and execution of preliminary works on final semester

Course Plan

Seminar: Each student shall identify a topic of current relevance in his/her branch of engineering, get approval of faculty concerned, collect sufficient literature on the topic, study it thoroughly. prepare own report and present in the class.

Project preliminary:

Identify suitable project relevant to the branch of study. Form project team (not exceeding four students). The students can do the project individually also. Identify a project supervisor. Present the project proposal before the assessment board (excluding the external expert) and get it approved by the board.

The preliminary work to be completed: (1) Literature survey (2) Formulation of objectives (3) Formulation of hypothesis/design/methodology (4) Formulation of work plan (5) Seeking funds (6) Preparation of preliminary report

Note: The same project should be continued in the eighth semester by the same project team.

Expected outcome.

The students will be able to

- Analyse a current topic of professional interest and present it before an audience i.
- ii. Identify an engineering problem, analyse it and propose a work plan to solve it.

Evaluation

Seminar

: 50 marks

(Distribution of marks for the seminar is as follows: i. Presentation: 40% ii. Ability to answer questions: 30% & iii. Report: 30%)

Project preliminary : 50 marks(Progress evaluation by the supervisor : 40% and progress evaluation by the assessment board excluding external expert : 60%. Two progress evaluations, mid semester and end semester, are mandatory.)

Note: All evaluations are mandatory for course completion and for awarding the final grade.



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Course code	Course Name	Credits	Year of
			Introduction
**492	PROJECT	6	2016

Prerequisite: Nil

Course Objectives

- To apply engineering knowledge in practical problem solving
- To foster innovation in design of products, processes or systems
- To develop creative thinking in finding viable solutions to engineering problems

In depth study of the topic assigned in the light of the preliminary report prepared in the seventh semester

Review and finalization of the approach to the problem relating to the assigned topic Preparing a detailed action plan for conducting the investigation, including team work Detailed Analysis/Modelling/Simulation/Design/Problem Solving/Experiment as needed Final development of product/process, testing, results, conclusions and future directions Preparing a paper for Conference presentation/Publication in Journals, if possible Preparing a report in the standard format for being evaluated by the dept. assessment board Final project presentation and viva voce by the assessment board including external expert

Expected outcome

The students will be able to

- Think innovatively on the development of components, products, processes or iii. technologies in the engineering field
- Apply knowledge gained in solving real life engineering problems

Evaluation

grade.

Maximum Marks: 100

(i) Two progress assessments (ii) Final project report

(iii) Project presentation and viva voce

20% by the faculty supervisor(s)

30% by the assessment board 50% by the assessment board

Note: All the three evaluations are mandatory for course completion and for awarding the final



Sahrdaya College of Engineering

Course code.	Course Name	L-T-P - Credits	Year of Introduction
EE431	Power Systems Lab	0-0-3-1	2016

Prerequisite: EE306 Power System Analysis

Course Objectives

- Impart practical knowledge about various power system equipment
- Get a knowledge about the operation of power systems and the philosophy behind the relay settings, fault calculations etc.
- Simulate the power system operations which will be helpful in the design of power systems

List of Exercises/Experiments: (At least 12 experiments out of 18 experiments listed are mandatory)

1. Visit a local Substation.

Aim: To see firsthand apparatus that will be studied in this course and learn about their role in operation and protection of power systems.

2. Introduction to PSCAD/MATLAB/MIPOWER

Aim: 1). Learn the usage of PSCAD/MATLAB/MIPOWER in modeling of ac circuits and plotting of results.

2). Understanding reactive power and power-factor in single-phase and three-phase circuits

3. Transmission Line and Modeling.

Aim: Obtaining the parameters of a 345 kV transmission line and modeling it in PSCAD/MATLAB/MIPOWER

4. Power Flow

Aim: To carry out power flow calculations.

5. Transformers in Power Flow.

Aim: To look at the influence of including a tap-changer and a phase-shifter on power flow and bus voltages.

6. Including an HVDC Transmission Line for Power Flow.

Aim: 1). To include an HVDC transmission line and see its effect on power transfer on other transmission line.

2). To understand the operating principle of 12-pulse thyristor converters used in HVDC transmission systems.

7. Power Quality.

Aim: To obtain the current harmonics drawn by power electronics interface.

8. Synchronous Generators.

Aim: To obtain the effect of sudden short-circuit on a synchronous generator output.

9. Voltage Regulation.

Aim: 1). To study the effect of real and reactive powers on bus voltages.

2). Understanding the operation of a Thyristor Controlled Reactor (TCR).

10. Transient Stability.

Aim: To simulate transient stability in a 3-bus example power system.

10. A. Making a Power System Reliable.

Ain: 1). To understand the planning/design process that goes into making a power system reliable.

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11. AGC and Economic Dispatch.

Aim: Study the dynamic interaction between two control areas using Simulink modeling and economic dispatch.

12. Short Circuit Faults and Overloading of Transmission Lines.

Aim: To study the effect of short-circuit faults and overloading of transmission lines.

12.A. Fault Analysis with Relay Settings.

Aim: To study a power system with faults and determine relay settings based on calculated fault currents

13. Switching Over-Voltages and Modeling of Surge Arresters.

Aim. : To study over-voltages resulting from switching of transmission lines and limiting them by sing ZnO arresters

14. Power Factor improvement:

Aim: To calculate rating of capacitors for power factor correction for a load and verifying it experimentally.

15. Solar Power Calculations:

Aim: To calculate the rating of solar panel required for a given area on rooftop or for a given load

16. Demonstration of Ferranti Effect on a transmission line

17. Methods of Insulation Testing

18. Modern Energy Meter calibration schemes

Expected outcome.

 Students will be able to design, setup and analyse various power systems and its simulations.

Text Book:

Ned Mohan, First Course in Power Systems, Wiley.

Estd.

2014

Sahrdaya Gollege of English and Technology P.B No.17, Kedakara. 680 684

APPROVALS FOR THE SYLLABUS OF COURSES WITH EXPERIENTIAL LEARNING

UNIVERSITY OF CALICUT (Abstract)

Faculty of Engineering – Scheme & syllabus of M.Tech in Computer Science& Engineering – Implemented- with effect from 2009 admission onwards - Orders Issued.

GENERAL AND ACADEMIC BRANCH IV E Section

GAIV/E1/1894/2003

Dated, Calicut University.P.O., 06-08-2010

Read:- 1) Minutes of the meeting of Board of Studies in Engineering (P.G) held on 10.12.2009 and

28.01.2010.

- 2) Minutes of the meeting of Academic Council held on 03.07.2010. item. II A.
- 3) Minutes of the Syndicate held on 17.07.2010, item 2010. 483.
- 4) Order of Vice Chancellor dt. 31.07.2010 in the file of even No.

ORDER

As per paper read 1st, the BOS in Engineering (P.G) had entrusted a Committee Consisting of

- (a) K.R.Chandrasekharan Pillai, Professor, CSE Department, N.S.S College of Engineering, Palakkad.
- (b) Dr. R.Vijayakumar, CSE Department, N.S.S College of Engineering, Palakkad.
- (c) T.Ambika Devi Amma, CSE Department, Assistant Professor, N.S.S College of Engineering, Palakkad.
- (d) Hellen.K.J CSE Department, Government Engineering College, Thrissur.

For the preparation of syllabi for M.Tech in Computer Science and Engineering to implement

for the year 2010-2011 admission and the committee submitted the fair copies of the syllabus of M.Tech in Computer Science & Engineering.

As per the paper read 2nd, the Academic Council at its meeting held on 03.07.2010 has approved the minutes of the meeting of the B.O.S Engineering (P.G) held on 10.12.2009 and 28.01.2010 for implementing the syllabi of M.Tech in Computer Science and Engineering from 2010-2011 admission onwards.

As per the paper read 3rd, the Syndicate considered the question of approving the syllabus for M.Tech in Computer Science, 2009 batch and resolved that the syllabus for M.Tech Computer Science approved by the Academic Council meeting held on 03.07.2010 be made applicable to 2009 batch also.

Considering the matter, Vice Chancellor has ordered on 31.07.2010 to implement this resolution of the syndicate and also ordered to report the matter to Academic Council.

Orders are therefore issued implementing the appended scheme & syllabus of M.Tech. in Computer Science & Engineering from 2009 admission onwards.



and Technology
P.8 No.17 Medakara, 520 584.

Orders are issued accordingly.

Sd/-DEPUTY REGISTRAR (G & A-IV) For REGISTRAR

To

The Principals of all affiliated Engineering Colleges where M.Tech. in Computer Science & Engineering is offered.

Copy to:

PS toVC / PA to Reg./ PA to CE/ DR; AR - B.Tech Branch, PRO, SF / FC./GAI / A Sn.

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Sd/-SECTION OFFICER

Principal

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UNIVERSITY OF CALICUT

M.Tech. DEGREE COURSE COMPUTER SCIENCE AND ENGINEERING

Curricula, Scheme of Examinations and Syllabi (With effect from 2009 admissions)

(As per order no. GA IV/E1/1894/2003 dated 06-08-2010.)



Scheme of M.Tech Programme in Computer Science and Engineering

Course	Control	1		nester	Į				
Code	Subject	Hot	ırs/w	eek	Marks		Total	Sem-	Credits
		L	Т	P/D	Interna l	Sem- end	marks	end exam duratio n - Hrs	
MCS10 101	Advanced Mathematical Structures	3	1	0	100	100	200	3	4
MCS10 102	Operating system Design	3	1	0	100	100	200	3	4
MCS10 103	Database Design	3	1	0	100	100	200	3	4
MCS10 104	Compiler Design	3	1	0	100	100	200	3	4
MCS10 105	Elective I	3	1	0	100	100	200	3	4
MCS10 106(P)	Seminar I	0	0	2	100	0	100	-	2
MCS10 107(P)	Advanced Software Lab	0	0	2	100	0	100	-	2
T	OTAL	15	5	4	700	500	1200		24

Elective I

MCS10 105 (A) COMPUTATIONAL INTELLIGENCE

MCS10 105 (B) OPTICAL COMMUNICATION

MCS10 105 (C) GAME THEORY

MCS10 105 (D) QUANTUM COMPUTING

Note: Remaining 6 hours / week is meant for departmental assistance by students L-Lecture T-Tutorial P-Practical

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Semester - II

Course Code	Subject	F	lours/	week	Ma	rks	Total	Sem-end exam	4 4 4 2 2 24
		t.	T	þ	Internal	Sem- end		duration - Hrs	
MCS10 201	Digital Communication Techniques	3	1	0	100	100	200	3	
MCS10 202	Algorithms and Complexity	3	1	0	100	100	200	3	
MCS10 203	Advanced Language Technologies	3	1	0	100	100	200	3	
MCS10 204	Elective II	3	1	0	100	100	200	3	
MCS10 205	Elective III	3	1	0	100	100	200	3	
MCS10 206(P)	Seminar II	0	0	2	100	0	100	*	
MCS10 207(P)	Web Technology Lab	0	0	2	100	0	100	*	
the same of the sa	OTAL	15	5	4	700	500	1200		24

Elective II

MCS10 204 (A) DATA COMPRESSION

MCS10 204 (B) CRYPTOCOMPLEXITY

MCS10 204 (C) INFORMATION THEORY

Elective III

MCS10 205 (A) ADVANCED NETWORKING TECHNOLOGIES

BIO-INFORMATICS MCS10 205 (B)

SOFT COMPUTING MCS10 205 (C)

Note: Remaining 6 hours / week is meant for departmental assistance by students



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Course Code	Subject	-			er III				,
Cods applect		Hours/week Marks		KS	Total	Sem-end	Credits		
MCS10 301	,	L	T	p	Internal	Sem- end		exam duration - Hrs	The state of the s
MCS10 302	riccase IA	3	1	0	100	100	200	3	4
	Elective V	3	1	0	100	100	200	3	4
MCS10 303(P)	Industrial Training	0	0	0	50	-	50	-	1
MCS10	Master Research	0	0	22	Guide EC*		300	-	6
304(P)	Project Phase I				150 150	-			
T	OTAL	6	2	22	550	200	750		15

NB: The student has to undertake the departmental work assigned by HOD *EC – Evaluation Committee

Electives -IV

MCS10 301 (A)

DIGITAL IMAGE PROCESSING

MCS10 301 (B)

RESEARCH METHODOLOGY

MCS10 301 (C)

WIRELESS COMMUNICATION TECHNOLOGIES

Electives -V

MCS10

302 (A)

HIGH SPEED NETWORKS

MCS10

INFORMATION THEORY AND

302 (B) CODING

MCS10

302 (C)

INTERNET MODELS



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Course Code		LY	-	Semes	ter IV					
Code	11011	Hours per week		Internal Marks		Sem-end exam		Total marks	Credits	
MCS	Masters Research	L	Т	P/D	Guide	Evaluation Comittee	Extl. Guide	Viva- Voce		
401(P)	Project (Phase II)	-	-	30	150	150	150	150	600	12
	TOTAL			30	150	150	150	150	600	12

NB: The student has to undertake the departmental work assigned by HOD

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UNIVERSITY OF CALICUT (Abstract)

Faculty of Engineering – Regulations, scheme & Syllabi of M.Tech Courses – implemented with effect from 2010 admin onwards - Orders Issued.

GENERAL AND ACADEMIC BRANCH - IV 'E' Section

GAIV/E1/AC / 03.07.2010 2010.

Dated, Calicut University.P.O., 27-08-

Read:- 1) U.O. No. GAI/D4/4085/2003 dated, 21.11.2009.

2) Minutes of the meeting of the BOS in Engineering (PG) held on 10.12.2009 and 28.01,2010.

3) Minutes of the meeting of the faculty of Engineering held on 28.01.2010.

4) Minutes of the meeting of the Academic Council held on 03.07.2010.

ORDER

As per paper read 1st, Provisional affiliation was granted to start a new course in M.Tech Machine Design in Nehru College of Engineering & Research Centre, Pampady.

As per the paper read 2nd, the Board of Studies in Engineering (PG) framed, formulated and approved the syllabi of M.Tech in Machine design for 2010-2011. The Board of Studies also framed the revised M.Tech regulations, scheme and Syllabi of the following M.Tech Courses for the year 2010-2011.

- 1) Environmental Engineering
- 2) Production Engineering
- 3) Thermal Systems
- 4) Power Systems
- 5) Chemical Process Control
- 6) Embedded Systems

As per the paper read 3rd, the meeting of the faculty of Engineering approved the decision of the Board of Studies held on 10.12.2009 and 28.01.2010 and approved the revised M.Tech regulations and scheme and syllabi of the above M.Tech Courses.

The faculty also recommended the following in the revised regulations of M.Tech in the case of self financing colleges that there should be sufficient qualified faculty members and sufficient infrastructure in self financing colleges as recommended by All India Council for Technical Education.

As per paper read 4th, the meeting of the Academic Council held on 03.07.2010 approved the decisions of the Board of Studies held on 10.12.2009

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and 28.01.2010 and the minutes of the faculty of Engineering held on 28.01.2010 for implementing the regulations and scheme and syllabi of the above M.Tech courses with effect from 2010 admission.

Sanction has therefore been accorded for implementing the revised M.Tech regulations and Scheme & Syllabi of the following M.Tech Courses with effect from 2010 admission onwards.

- 1) Environmental Engineering
- 2) Production Engineering
- 3) Thermal Systems
- 4) Power Systems
- 5) Chemical Process Control
- 6) Embedded Systems
- 7) Machine design

Orders are issued accordingly, (regulations, scheme & Syllabi appended)

Sd/-DEPUTY REGISTRAR (G & A-IV) For REGISTRAR

To

The Principals of all affiliated Engineering Colleges where M.Tech. courses are offered

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