



क्रमांक : 827 / अका. / 2016

रायपुर, दिनांक 04/03/2016

## ॥ अधिसूचना ॥

विश्वविद्यालय विद्यापरिषद् की स्थायी समिति की बैठक दिनांक 15.02.2016 के निर्णय 8(ii) एवं कार्यपरिषद् की बैठक दिनांक 17.02.2016 के परिप्रेक्ष्य में अधिसूचना क्रमांक 4471/अका. /2015 रायपुर, दिनांक 18.08.2015 में B.Voc विनियम क्रमांक -161 Bachelor of Vocation (B.Voc.) Programme under the National Skills Qualifications Framework (NSQF) में आंशिक संशोधन करते हुए यू.जी.सी. के नवीन दिशा निर्देश NSQF के अनुसार B.Voc Renewable Energy Technology & Management के लिए संशोधित विनियम क्रमांक-161 को अधिसूचित किया जाता है।  
संलग्न : Revised Regulation No. 161 Degree of Bachelor of Vocation (B.Voc.) in Renewable Energy Technology & Management.

आदेशानुसार,

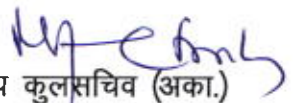
  
कुलसचिव

पृ. क्रमांक: 828 / अका. / 2016

रायपुर, दिनांक 04/03/2016

प्रतिलिपि :

01. आयुक्त, उच्च शिक्षा, ब्लॉक-सी-30, द्वितीय एवं तृतीय तल, इन्द्रावती भवन, नया रायपुर।
02. समन्वयक, आई.क्यू.ए.सी. सेल, पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर,
03. अध्यक्ष, समस्त अध्ययनशाला,
04. प्राचार्य, समस्त संबद्ध महाविद्यालय,
05. संचालक, महाविद्यालय विकास परिषद्/अधिष्ठाता, छात्र कल्याण,
06. उ.कु.स., गोपनीय/प्रशासन/स.कु.स. परीक्षा/वित्त नियंत्रक,
07. कुलपति के सचिव/कुलसचिव के निजी सहायक, पं. रविशंकर शुक्ल विश्वविद्यालय, रायपुर को सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित।

  
उप कुलसचिव (अका.)

**PT. RAVISHANKAR SHUKLA UNIVERSITY  
RAIPUR – 492010 CHHATTISGARH**



REVISED

**ORDINANCE - 188**

**BACHELOR OF VOCATION (B.Voc.) PROGRAMME  
under the National Skill; Qualification; Framework  
(NSQF )  
(FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2015 – 16  
ONWARDS)**

UNDER THE

**FACULTY OF TECHNOLOGY**

**PT. RAVISHANKAR SHUKLA UNIVERSITY  
RAIPUR - 492010 (C.G.), INDIA**

**([www.prsu.ac.in](http://www.prsu.ac.in))**

*Sanjay*  
S. 2.16.  
(Dr. Sanjay Tiwari)

**DRAFT ORDINANCE  
BACHELOR OF VOCATION (B. VOC) PROGRAMME  
UNDER THE  
NATIONAL SKILLS QUALIFICATIONS Framework (NSQF)**

**1. INTRODUCTION**

Pt. Ravishankar Shukla University hereby introduces Bachelor of Vocation (B. Voc.) programme to incorporate the requirements of various industries in its curriculum. This initiative will enable to support the needs of the economy, in terms of graduates with adequate subject knowledge and skills for employment and entrepreneurship.

These Ordinances shall be effective from the academic session 2015 -16 , for B Voc in the Faculty of Science. The B.Voc. Programme has multiple entries and multiple exits such as Certificate/Diploma/Advanced Diploma /B Voc under National Skills Qualifications Framework (NSQF)

**2. OBJECTIVES**

The objectives of the Bachelor of Vocation (B. Voc) Programme under the National Skills Qualifications Framework (NSQF) are:

- 2.1 To provide judicious mix of skills relating to a profession and appropriate content of General Education;
- 2.2 To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme;
- 2.3 To provide flexibility to the students by means of **pre-defined entry and multiple exit point**;
- 2.4 To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements;
- 2.5 To provide vertical mobility to students coming out of **10+2 with vocational subjects**.

**3. LEVEL OF AWARDS**

The certification levels will lead to Diploma/ Advanced Diploma/ B. Voc. Degree in the vocational areas that are offered under the aegis of the Pt. Ravishankar Shukla University, as follows:

AWARD	DURATION	CORRESPONDING NSQF LEVEL
Certificate	6 months (One Semester)	4
Diploma	One Year	5

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	(2 Semester)	
Advanced Diploma	Two Year	6
	(4 Semester)	
B. Voc. Degree	Three Years	7
	(6 Semester)	

Each of the awards shall specify, within parenthesis, the skill specialization; for example:

- Certificate (Renewable Energy Technology & Management)
- Diploma (Renewable Energy Technology & Management)
- Advanced Diploma (Renewable Energy Technology & Management)
- B. Voc. (Renewable Energy Technology & Management)

#### 4. ELIGIBILITY FOR ADMISSION IN B. VOC.

The eligibility condition for admission to B. Voc. Programme is follows:

- 4.1 Students must have cleared **10+2 examination** or equivalent, in any stream;
- 4.2 The proposed centre will prepare a merit list, on the basis of overall percentage of marks, for the offered course (s) respectively;
- 4.3 The reservation rules as applicable in Chhattisgarh will be adhered to.
- 4.4 Any other qualification as suggested by UGC for B. Voc Programme time to time.

#### 5. CURRICULUM

The curriculum in each of the years of the programme is a combination of general education and skill development components.

##### 5.1 General Education Component:

- 5.1.1 The general education component adheres to the normal university standards. It emphasizes and offers courses which provide holistic development. However, it does not exceed 40% of the total curriculum;
- 5.1.2 Adequate emphasis is given to language and communication skills.

##### 5.2 Skill Development Components:

- 5.2.1 The focus of skill development components is to equip students with appropriate knowledge, practice and attitude, so as to become work ready. The skill development components are relevant to the industries as per their requirements;
- 5.2.2 The curriculum should necessarily embed within itself, National Occupational Standards (NOSs) of specific job roles within the industry

sector (s). This would enable the students to meet the learning outcomes specified in the NOSs;

- 5.2.3 The overall design of the skill development component along with the job roles selected should be such that it leads to a comprehensive specialization in the proposed domain;
- 5.2.4 In case NOS is not available for a specific area/ job role, the University will get the curriculum developed for this in consultation with industry experts;
- 5.2.5 The curriculum should focus on work-readiness skills in each of the three years;
- 5.2.6 Adequate attention needs to be given in curriculum design to practical work, on the job training, development of student portfolios and project work.

## 6. CREDIT CALCULATIONS

6.1 The following formulae will be used for conversion of time into credit hours;

- a) One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week. Accordingly One Credit would mean equivalent of 14-15 periods of 60 minutes each or 28 - 30 hrs of workshops / labs.
- b) For internship/ Training/ field-work, the credit weightage of equivalent hours will be 50% of that for lectures/ workshop;
- c) For self-learning, based of e-content or otherwise, the credit weightage for equivalent hours of study will be 50% or less of that for lectures/ workshop.

6.2 The credits awarded for each of the years are as follows:

NSQF LEVEL	SKILL COMPONENT CREDITS	GENERAL EDUCATION CREDITS	TOTAL CREDITS FOR AWARD	NORMAL DURATION	EXIT POINT / AWARDS
4	18	12	30	One Semester	Certificate
5	36	24	60	Two Semester	Diploma
6	72	48	120	Four Semester	Advanced Diploma
7	108	72	180	Six Semester	B.Voc. Degree

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6.3 For any B. Voc. Course proposed by the university/ college, the curriculum will be developed in consultation with respective industry. The industry representatives should be an integral part of the academic bodies of the university/ college. While doing so, they should work towards aligning the skills components of the curriculum with the NOSs developed by the respective Sector Skill Councils.

6.4 The practical/ hands-on portion of the skills development components of the curriculum should be transacted normally in face to face mode, wither within the institution or at the location of a specified industry partner. The emphasis should be on learning outcome and not the input and processes. The general education component of the curriculum may be transacted in any mode without compromising on quality.

## **7. EXAMINATION AND ASSESSMENT**

The University will conduct examination at the end of each semester and for details relevant Regulation for B.Voc. programme may be referred.

8. The B. Voc Programme will be regulated by the University through Regulations by incorporating the provisions Of UGC for Bachelor of Vocation (B.Voc.) Programme in Universities and Colleges under the National Skills Qualifications Framework (NSQF ) from time to time.
9. Notwithstanding the integrated nature of a course spread over more than one academic year, the Ordinances in force at the time a student joins a course shall hold good only for the examination held during or at the end of the academic year. Nothing in these Ordinances shall be deemed to debar the University from amending the ordinances subsequently and the amended ordinances, if any, shall apply to all the students whether old or new.

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Regn.No. 161

B.Voc. (Renewable Energy Technology & Management)

(Academic Year 2015-16 Onwards)

**PT. RAVISHANKAR SHUKLA UNIVERSITY  
RAIPUR - 492010**



DEGREE OF

**BACHELOR OF VOCATION (B.Voc.)**

IN

**RENEWABLE ENERGY TECHNOLOGY & MANAGEMENT**

**REVISED REGULATION & SCHEME OF EXAMINATION**

UNDER THE

**FACULTY OF TECHNOLOGY**

SYLLABUS

(FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2015 - 16 ONWARDS)

**PT. RAVISHANKAR SHUKLA UNIVERSITY  
RAIPUR - 492010 (C.G.), INDIA**

([www.prsu.ac.in](http://www.prsu.ac.in))

AUGUST, 2015

*Dr. Sanjay Tiwari*  
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(Dr. Sanjay Tiwari)

*[Signature]*



**REGULATIONS FOR THE DEGREE OF****BACHELOR OF VOCATION IN RENEWABLE ENERGY TECHNOLOGY & MANAGEMENT****EFFECTIVE FROM THE ACADEMIC YEAR 2015-16****1. TITLE**

Regulations for Conducting Bachelor of Vocation (B.Voc) Programme in RETM at Pt. Ravishankar Shukla University Raipur and affiliated Colleges

**2. SCOPE**

The regulations stated in this document shall apply to all B. Voc. Programmes in RETM conducted by Pt. Ravishankar Shukla University, Raipur and colleges affiliated to Pt. Ravishankar Shukla University, Raipur sanctioned by the University Grants Commission. These regulations strictly adhere to B. Voc. Programmes and may not apply to any other graduate or under graduate level programmes conducted by any college and/or university.

**3. PREAMBLE**

Ministry of HRD, Government of India had issued an Executive Order in September 2011 for National Vocational Education Qualification Framework (NVEQF). Subsequently, Ministry of Finance, in pursuance of the decision of Cabinet Committee on Skill Development in its meeting held on 19<sup>th</sup> December 2013, has issued a notification for National Skills Qualifications Framework (NSQF) which supersedes NVEQF.

The University Grants Commission (UGC) has launched a scheme on skills development based higher education as part of college/university education, leading to Bachelor of Vocation (B.Voc.) degree with multiple exits such as Diploma / Advanced Diploma under the NSQF. The B.Voc. programme is focused on universities and colleges providing undergraduate studies which would also incorporate specific job roles and their NOSs along with broad based general education. This would enable the graduates completing B.Voc. to make a meaningful participation in accelerating India's economy by gaining appropriate employment, becoming entrepreneurs and creating appropriate knowledge .

**4. PROGRAMME OBJECTIVES**

The B. Voc. courses are designed with the following objectives:

- (a) To provide judicious mix of skills relating to a profession and appropriate content of General Education.
- (b) To ensure that the students have adequate knowledge and skills, so that they are work ready at each exit point of the programme.




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- (c) To provide flexibility to the students by means of pre-defined entry and multiple exit points.
- (d) To integrate NSQF within the undergraduate level of higher education in order to enhance employability of the graduates and meet industry requirements. Such graduates apart from meeting the needs of local and national industry are also expected to be equipped to become part of the global workforce.
- (e) To provide vertical mobility to students coming out of 10+2 with vocational subjects

#### 5. TERMS AND DEFINITIONS

- (a) **B. Voc.:** Bachelor of Vocation- a scheme introduced by UGC for skills development based higher education as part of college/university education.
- (b) **NSQF:** National Skills Qualifications Framework.
- (c) **Programme:** A Programme refers to the entire course of study and examinations for the award of the B. Voc. degree.
- (d) **Semester:** Each semester will consist of 15-18 weeks of academic work equivalent to 90 actual teaching days. The odd semester may be scheduled from July to December and even semester from January to June as per Academic calendar of the University.
- (e) **Course:** Refers to the conventional paper, which is portion of the subject matter to be covered in a semester. A semester shall contain many such courses from general and skill development areas. A course may be designed to comprise lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/ vocational training/viva/ seminars/ term papers/assignments/ presentations/ self-study etc. or a combination of some of these.
- (f) **Exit Level:** B. Voc. has multiple exit points at each year and successfully completing a year (2 semesters) the candidate will be awarded Diploma. Higher Diploma and/or B.Voc. Degree will be awarded accordingly mentioned ahead.
- (g) **Sector:** Sector refers to conventional branch.
- (h) **Credit Based Semester System (CBSS):** Under the CBSS, the requirement for awarding a degree or diploma or certificate is prescribed in terms of number of credits to be completed by the students.
- (i) **Credit Point:** It is the product of grade point and number of credits for a course.
- (j) **Credit:** B. Voc. programme follows a credit semester system and each Course has an associated credit. It is a unit by which the course work is measured. It determines the number

  
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of hours of instructions required per week. One credit is equivalent to one hour of teaching (lecture or tutorial) or two hours of practical work/field work per week

(k) **Grade:** Uses ten point grading system suggested by UGC to assess the students.

(l) **B. Voc Consortium:** A University level committee consisting Dean, Science faculty, Two Professors nominated by Vice Chancellor, and Coordinator.

#### 6. B.VOC. ADVISORY COMMITTEE

A University level committee set-up for effective governance and coordination of the courses under the B.Voc. Scheme. Monitoring, Evaluation & Updating of the curriculum needs to be done periodically in consultation with industry keeping in view of their requirements & changes in NOSs. The University / College must incorporate this as a continuous & dynamic process in-built in their system through an advisory committee for vocational Course. The composition of advisory committee for Vocational Course is given below:

S.NO.	ADVISORY COMMITTEE	POSITION
1	Vice Chancellor/Principal	Chairperson
2	One Expert in the relevant field nominated by the Vice Chancellor	Member
3	One Academician in the relevant field nominated by the Vice Chancellor/Principal	Member
4	Nominee from State Higher Education	Member
5	One Representative of industries relevant to specialization	Member
6	In-Charge of the respective B.Voc. Programme	Member - Secretary

#### 7. PREAMBLE OF THE COURSE B.VOC. (RENEWABLE ENERGY TECHNOLOGY & MANAGEMENT)

Energy is a vital input for the development and economic growth of a country. The growth for energy sector is critical for socioeconomic development particularly for rural areas. In the Indian context, it is a great challenge to provide affordable energy services to the population.

Renewable energy contributes to energy supply reserves and the environment. India is fortunate in having a lot of resources of solar, hydro, wind, wave, and tidal hydro-electric energy. Development must, however, occur with proper attention to the technical, economic and operational constraints associated with increase in penetration of such technology.

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The development of energy systems is also constrained by the depletion of fossil fuel, local environmental impacts and the problem of global warming and associated climate change. The energy sector is in transition and there is significant need to understand the various energy conversion and efficient utilization process. In view of the problem of climate change and scarcity of fossil fuels, the field of energy engineering offers significant challenges and opportunities.

The Bachelor of Vocation in Programme in Renewable Energy Technology and Management prepare the students in theoretical as well as practical aspects of renewable energy technologies, energy conservation, and management. This multi-disciplinary integrated programme train the students not only in renewable energy technologies and its implementation but also in equally important areas of energy infrastructure, rational use of energy, energy policies and regulations, and energy-environment interface etc. The programme exhibits its uniqueness fostering the much sought-after leadership skills through the management energy courses. Thus, the programme enables the students to tackle practical problems of design, development, deployment in the industry, and to pursue academics as well as frontiers of research. The objective of the programme is to provide specialist manpower to meet the challenges of the energy sector.

## **B. GENERAL PROGRAMME STRUCTURE**

The B. Voc Programme is designed to bridge the potential skill gap identified. The curriculum in each of the years of the programme would be a suitable mix of general education and skill development components.

### **(a) General Education Components**

- i. The general education component provides emphasis to Communication skill, Presentation skill, Health and Safety, Industrial Psychology, Environmental awareness, Entrepreneurship development and other relevant subjects in the field.
- ii. An option for additional language should be provided which enhances the employability outside the state.
- iii. General Education Components should not exceed 40% of the total credits and balance 60% credits will be of Skill Component.

### **(b) Skill Development Components**

- i. This component should match the skill gap identified.
- ii. The curricula and system of certification for the skill component should be as per the National Occupational Standards defined by respective Sector Skills Council(s).
- iii. The overall design of the skill development component along with the job roles selected should be such that it leads to a comprehensive specialization in one or two domains.

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- iv. At least 50% of Skill Development Component should be allotted to practical and can grow up to 60% based on the nature of the course. The practical component can be carried out in the college and/or the industry partner premises.

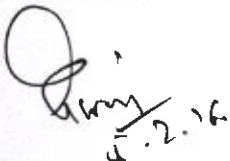
## 9. CONDITIONS FOR ADMISSIONS

### (a) Eligibility

- i. The admission to B.Voc. programme will be as per the rules and regulations of the University for Admissions. The eligibility criteria for admission to this B.Voc. programme shall be 10+2 in Science stream from a recognized board with at least 55 % marks with relaxation of 5% for SC/ST/OBC candidates. Reservation rules are applicable as per Govt. of Chhattisgarh.
- ii. The eligibility criteria for admission shall be as announced by the University from time to time.
- iii. Other conditions will be as laid down in admission policy in prospectus of the University.

### (b) Admission

- i. The admission to B.Voc. (Renewable Energy Technology & Management), Semester-I shall be done based on the merit in 10 + 2 or equivalent examination from recognized board, NIO or **Entrance Examination** conducted by the University.
- ii. There may be three types of candidates who can be given admission to firstsemester of skill based courses under NSQF:  
**Category-I:** Students already acquired NSQF certification level 4 in a particular industry sector may opt admission in the skill based courses under NSQF.  
**Category-II:** Students who have acquired NSQF certification level 4 but may like to change their trade and may enter into skill based courses in a different trade.  
**Category-III:** Students passed 10+2 examination with conventional schooling without any background of vocational training.
- iii. Separate rank list shall be drawn up for reserved seats as per existing rules.
- iv. Preferred subjects and index mark calculations will be decided by the respective Board of Studies.
- v. **Admission to Diploma Holders**  
Diploma holders (after 10+2) in the parent course, approved by the University, who satisfy eligibility criteria can be admitted to the Advance Diploma (3<sup>rd</sup> semester) based on the availability of the seats and shall be under the sole discretion of the Vice Chancellor of the University College/ B. Voc. Consortium.
- vi. **Reservation/ Quota**


  
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- The reservation of seats shall be as per Chhattisgarh Government Notification issued from time to time and as per the rules of the Pt. Ravishankar Shukla University, Raipur.
  - The students can be admitted only to the first semester (except for diploma holders).
  - No student shall be admitted directly to third and fifth semester in any circumstance except for diploma holders. Diploma holder may be admitted directly to third semester (but not to 5<sup>th</sup> Semester directly) as mentioned above. In any circumstance there shall be no direct admission to fifth semester.
- vii. In case where number of available seats is less and candidates secure same marks (percent) at the qualifying level examination, the admission of the candidate will be based upon securing higher marks in High School or equivalent examination.
- viii. There shall be no age bar for admission in this course.
- ix. The applicants seeking re-entry into the education and training for further advanced leanings in their field of expertise in particular trade should get preference in admission over the new applicants.
- x. A candidate cannot pursue two full time Under-Graduate courses simultaneously.
- xi. The University reserves the right to cancel any admission at any stage.
- xii. The candidates who have acquired vocational Certificate / Diploma or Advanced Diploma from UGC recognized Community Colleges / B.Voc. institutions or DDU KAUSHAL Kendras in a specific sector with certified skills on a particular job role will be eligible for admission through lateral entry to next higher level on same sector.
- xiii. In case of any matter relating to the Under-Graduate admissions, the decision of the Admission Committee/Vice-Chancellor, Pt. Ravishankar Shukla University, Raipur shall be final.
- xiv. All legal matters pertaining to the Under-Graduate admissions shall be subject to the Raipur Jurisdiction only

#### **10. DURATION OF THE PROGRAMME**

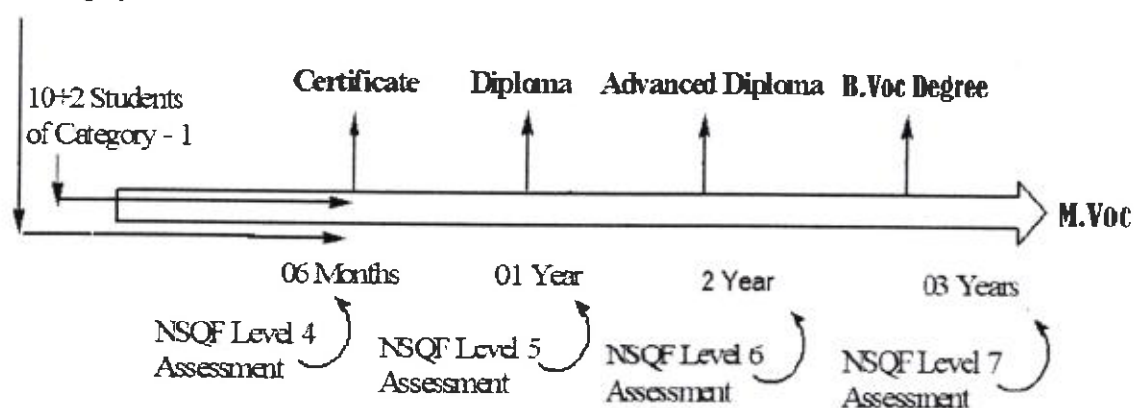
- (a) A student is normally expected to complete the Diploma (RETM) Programme in one year but in any case not more than three years from the time of admission.
- (b) A student is normally expected to complete the Advanced Diploma (RETM) Programme in two/one year but in any case not more than four/three years from the time of admission as applicable.
- (c) A student is normally expected to complete the B.Voc. (RETM) Degree Programme in three/two/one year but in any case not more than five/four/three years from the time of admission as applicable.

  
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**11. LEVELS OF AWARDS**

B.Voc. is programme with multiple exits. All the candidates continuing to diploma courses or further will be treated at par from the second semester onwards. Students may exit after six months with certificate (NSQF Level 4) or may continue for diploma or advance diploma level courses.

10+2 Students  
of Category - 2 & 3



Following table shows the various certificates and their duration.

NSQF LEVEL	SKILL COMPONENT CREDITS	GENERAL EDUCATION CREDITS	TOTAL CREDITS FOR AWARD	NORMAL DURATION	EXIT POINT / AWARDS
4	18	12	30	One Semester	Certificate
5	36	24	60	Two Semester	Diploma
6	72	48	120	Four Semester	Advanced Diploma
7	108	72	180	Six Semester	B.Voc. Degree

The duration of the B.Voc. course will be six semesters in three Academic Sessions as per Academic Calendar of the University. At the end of each Semester, the candidates shall be required to present themselves for examination.

The student who completes first semester in first year successfully and passes the examinations as prescribed in the relevant Ordinances and is opting out from further education in B.Voc. (Renewable Energy Technology & Management), will be conferred Certificate in Renewable Energy Technology.

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The student who completes first year i.e. first two semesters successfully and passes the examinations as prescribed in the relevant Ordinances and is opting out from further education in B.Voc. (Renewable Energy Technology & Management), will be conferred Diploma in Renewable Energy Technology.

Similarly, the student who completes first two years i.e. four semesters successfully and passes the examinations as prescribed in the relevant Ordinance and is opting out from further education of third year in B.Voc. (Renewable Energy Technology), will be conferred Advanced Diploma in Renewable Energy Technology.

The degree of B.Voc. (Renewable Energy Technology) of the Pt. Ravishankar Shukla University, Raipur shall be conferred on the candidate who pursues the prescribed course of study for six semesters and passes the examinations as prescribed in the relevant Ordinances.

#### **12. BOARD OF STUDIES**

- (a) Separate BOS will be constituted, with the provision of a member from industry / professor of each sector will be attached to the Board of studies of the parent subject as suggested by UGC.
- (b) The BOS shall be responsible for reviewing and approving the syllabus and provide suggestions in curriculum.

#### **13. FEE STRUCTURE**

As decided by the University norms.

#### **14. REGISTRATION/RE-REGISTRATION**

Every candidate should register for all subjects of the Semester End examinations of each semester. A candidate who does not register will not be permitted to attend the Semester - End examinations; He / she shall not be permitted to attend the next semester. A candidate shall be eligible to register for any higher semester, if he/she has satisfactorily completed the course of study and registered for the examination. He/she should register for the semester at the start of the semester before the stipulated date. University will notify the starting and closing dates for each semester.

#### **15. TEACHING**

Methods of teaching shall be a combination of lectures, tutorials, seminars, educational tours, assignments, laboratory work, workshop practice, industrial training and project work. The regular faculty of the University, guest faculty from the reputed Organizations/Institutes and Industrial Partners will be involved in teaching, practical and workshop practices. In addition, contractual faculties will also be involved in teaching and laboratory work/workshop practice. Distinguished experts shall also be invited for lectures and seminars on special topics.

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**16. ATTENDANCE**

A candidate shall be permitted to appear for the Semester End examinations only if he/she satisfies the following requirements:

- (a) Students are normally expected to attend 100% theory, tutorial and practical classes/workshop practices. However, no student shall be allowed to appear in the end semester examination in the paper unless he/she has put in at least 75% attendance during the course of instruction in each paper separately for subjects of General Education and Skill Development Component of the vocational course is required.
- (b) His/her conduct must be satisfactory
- (c) A shortfall in attendance up to 10% can be condoned by the Vice-Chancellor of Pt. Ravishankar Shukla University, Raipur once during the entire course provided such shortage is caused by continuous absence on genuine medical grounds.
- (d) The attendance in theory and practical sessions will be considered separately. In the case of shortage of attendance, the cases will be considered as per the rules of the University

**17. ASSESSMENT OF STUDENTS**

Assessment of students for each subject will be done by internal continuous assessment and Semester End examinations. This dual mode assessment will be applicable to both Theory and Practical courses except for internship and project. Total marks in theory course reflect 80 marks external and 20 marks internal assessments. The mark division for practical courses are 20 marks internal and 80 marks external. For internship and project, there is no internal assessment

S.NO.	COURSES	INTERNAL	EXTERNAL
1	Theory	20	80
2	Practical	20	80
3	Internship/Project	0	100

**(a) Internal**

Internal assessment shall be conducted throughout the semester. It shall be based on internal examinations, assignments (such as homework, problem solving, group discussions, quiz, literature survey, seminar, team project, software exercises, etc.) as decided by the faculty handling the course, and regularity in the class. Assignments of every semester shall preferably be submitted in Assignment Book, which is a bound book similar to laboratory record.

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All records of Continuous Evaluation shall be kept in the Department and shall be made available for verification by the University, if and when necessary.

The mark distribution to award internal continuous assessment marks for theory subject should be as follows:

ASSESSMENT	MARKS
Test papers (minimum two, best two out of three is preferred)	10
Assignments (minimum two) such as home work, problem solving, group discussions, quiz, literature survey, seminar, term project etc.	5
Regularity in the class	5

The mark distribution to award internal continuous assessment marks for practical subject should be as follows:

ASSESSMENT TYPE	MARKS
Evaluation in the lab of skill/performance	20
Practical record files	15
Regularity	5

- i. No candidate will be permitted to attend the end semester practical examination unless he/she produces certified record of the laboratory.
- ii. Full credit for regularity in the class can be given only if the candidate has secured minimum 90% attendance in the subject. Attendance evaluation for each course is as follows

ATTENDANCE	MARKS
90% and Above	5
85 to 89.9%	4

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80 to 84.9%	3
76 to 79.9%	2
75 to 75.9 %	1


**(b) External**

Semester end examinations for theory and practical courses will be conducted by the University. There shall be University examinations at the end of each semester for both theory and practical. Failed or improvement candidates will have to appear for the Semester-End examinations along with regular students.

**(c) Internship and Project**

Internship and the major project should be carried out in the industry, not necessarily with industry partner. The major idea for internship is to implement the things learned and to get a real life experience. The Evaluation process follows 100% external assessment.

- i. There will be internship/minor project at the end of 4th semesters and an major project during sixth semester.
- ii. Every student will be assigned an internal guide, allotted from the parent department concerned or an expert available in the University appointed by the Vice Chancellor or Director, Skill Development Center or Course Coordinator or the head of the department.
- iii. The student has to make regular discussions with the guide while choosing the subject/ area and throughout the life time of the project.
- iv. At least three reviews should be conducted to evaluate the progress of work.
- v. An evaluation team is constituted for conducting the evaluation. The team consist of external examiner, allotted by the university from the approved examination panel, representative from the industry and a faculty.
- vi. Students should submit a report of their work. A valid certificate from the organization should be produced as a proof that the work is carried out in the respective organization.
- vii. Students are required to demonstrate the working model of their work (if possible) to the panel of examiners. A viva will be conducted based on the report and Students are supposed to clarify the queries regarding their work.
- viii. Mark distribution for Project/internship assessment.

  
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DISTRIBUTION MARKS	MARKS %
Content and relevance of Dissertation	60%
Viva	20 %
Presentation	10 %

### 18. CREDIT SYSTEM

- (a) Each subject shall have a certain number of credits assigned to it depending upon the academic load and the nature and importance of the subject. The credit associated with each subject will be shown in the prescribed scheme and syllabi.
- (b) Each course shall have an integer number of credits, which reflects its weightage.
- (c) One Credit would mean equivalent of 15 periods of 60 minutes each, for theory, workshops/IT and tutorials.
- (d) For internship/field work, the credit weightage for equivalent hours shall be 50% of that for lectures/workshops.
- (e) Each course is evaluated by assigning marks with a letter grade that course by the method of indirect grading as per ordinance/regulations of University.
- (f) An aggregate of P grade with 40 % of marks (after external and internal put together) is required in each course for a pass and also for awarding a degree/diploma.
- (g) Appearance for Internal Assessment and End Semester Evaluation are compulsory and no grade shall be awarded to a candidate if she/he is absent for Internal Assessment / End Semester Evaluation or both.
- (h) A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.
- (i) After the successful completion of a semester, Semester Grade Point Average (SGPA) of a student in that semester is calculated using the formula given below. For the successful completion of a semester, a student should pass all courses. However, a student is permitted to move to the next semester irrespective of SGPA obtained.

#### Computation of SGPA and CGPA

Following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) may be adopted:

The SGPA is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the course components taken by a student and the sum of the number of credits of all the courses undergone by a student in a semester, i.e

$$SGPA (S_i) = \frac{\sum (C_i \times G_i)}{\sum C_i}$$

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where 'Ci' is the number of credits of the  $i^{\text{th}}$  course component and 'Gi' is the grade point scored by the student in the  $i^{\text{th}}$  course component.

The CGPA is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$\text{CGPA} = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

where 'Si' is the SGPA of the  $i^{\text{th}}$  semester and Ci is the total number of credits in that semester.

SGPA and CGPA shall be rounded off to two decimal places. CGPA determines the broad academic level of the student in a programme and is the index for ranking students (in terms of grade points).

#### Letter Grades and Grade Points

An overall letter grade (Cumulative Grade) for the entire programme shall be awarded to a student depending on her/his CGPA

LETTER GRADE	GRADE POINT
O ( Outstanding )	10
A +( Excellent )	9
A (Very Good )	8
B+ ( Good )	7
B (Above Average)	6
C (Average)	5
P (Pass)	4
F (Fail)	0
Ab (Absent)	0

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**19. LEARNING HOURS**

Learning hours/ credit allocation needed for completion shall be as per NSQF as given in table:

QUALIFICATION	EQUIVALENCE	SKILL CERTIFICATION LEVEL	COMPETENCY BASED VOCATIONAL SKILL BUILDING (IN HRS) APPROXIMATELY*	GENERAL LEARNING (IN HRS) APPROXIMATELY*	TOTAL HRS
Year 1	Diploma (Vocational)	5	550	450	1000
Year 2	Advance Diploma (Vocational)	6	600	400	1000
Year 3	B.Voc.	7	750	250	1000

\* +/- 50 flexibility on the suggested numbers of hrs.

**20. RULES AND REGULATIONS FOR EXAMINATION**

- There shall be examination at the end of each semester as per scheme of examination and each student shall have to appear in all theory papers (Modules) and practical examinations/workshop practices, industrial training and project work, if applicable as prescribed in the syllabi.
- In first five semesters, there shall be eight theory papers of 100 marks each and a Laboratory examination/Workshop practice examination each of 200 marks.
- The break-up of marks in the Laboratory examination/Workshop practice examination will be 20% Viva-Voce, 60% for the conduct of practical in the examination and remaining 20% for the internal assessment practical record files and attendance in the regular Laboratory/Workshop practice classes.
- In the final semester, there shall be only industrial training and project work of 350 marks and 650 marks respectively.
- Each theory paper shall have a compulsory question of 40% weightage and shall cover entire syllabus and there will be four units of two questions each. The candidate shall be required to answer one question from each unit. The pattern of question paper would be as per Examination Ordinance of the University.
- The project shall be based on energy problems/renewable energy problems/case studies.
- Each semester, the maximum marks will be 1000.
  - For Certificate in Renewable Energy Technology, the maximum total marks will be 1000.
  - For Diploma in Renewable Energy Technology, the maximum total marks will be 2000.
  - For Advance Diploma in Renewable Energy Technology, the maximum total marks will be 4000.

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iv. For B Voc in Renewable Energy Technology, the maximum total marks will be 6000.

(h) The successful completion of all the courses prescribed for the diploma/degree programme with P grade (40 %) shall be the minimum requirement for the award of diploma/degree. A candidate shall be declared to have passed a semester examination if he/she secures not less than 40% marks in each theory paper and practical examination and 40% marks in the aggregate. For Project/internship, the minimum for a pass shall be 50% of the total marks assigned to the respective examination. The result of the candidate shall be declared on the basis of performance in the semester examination. The conversion of raw scores into absolute grades shall be done as per the rules of the Pt. Ravishankar Shukla University, Raipur.

**(i) Allowed to Keep Terms (ATKT) :**

- i. A candidate shall be allowed to keep term for Semester II irrespective of grades obtained in each course of Semester I.
- ii. A candidate shall be allowed to keep term for Semester III if he/she passes each of Semester I and Semester II.

**OR**

A candidate fails in not more than four courses of Semester I and Semester II taken together.

- iii. A candidate shall be allowed to keep term for Semester IV irrespective of grades obtained in each course of Semester III.
- iv. A candidate shall be allowed to keep term for Semester V if he/she passes Semester I, Semester II, Semester III and Semester IV.

**OR**

A candidate has passed Semester I and Semester II and fails in not more than four courses of Semester III and Semester IV taken together.

- v. A candidate shall be allowed to keep term for Semester VI irrespective of number of courses of failure in the Semester V.
- vi. The candidate can appear for the semester VI examination but the result of Semester VI shall be kept in abeyance until the candidate passes each of Semester I, Semester II, Semester III, Semester IV and Semester V.
- vii. A candidate placed under reappear in any paper, will be allowed two chances to clear the reappear, which should be availed within consecutive two years/chances i.e. to pass in a paper the candidate will have a total of three chances, one as regular student and two as reappear candidate.

**(j) Carry Forward of Marks in case if Candidate Fails in One or More Courses:**

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- i. A candidate who passes in the Internal Examination but fails in the Semester End Examination of the course shall reappear for the Semester End Examination of that course. However his/her marks of the Internal Examinations shall be carried over and he/she shall be entitled for grade obtained by him/her on passing.
  - ii. A candidate who passes in the Semester End Examination but fails in the Internal Assessment of the course shall reappear for the Internal Examination of that course. However his/her marks of the Semester End Examination shall be carried over and he/she shall be entitled for grade obtained by him/her on passing.
- (k) If a candidate has passed all examinations of B.Voc. Course (at the time of publication of results of last semester) except project/internship in the last semester, a re-examination for the same should be conducted within one month after the publication of results. Each candidate should apply for this examination within one week after the publication of last semester results.
- (l) The final result of the candidate shall be declared on the basis of combined result of all semester examinations of the course. The final result grades shall be awarded as per the rules of the Pt. Ravishankar Shukla University, Raipur.
- (m) The facility of back paper/improvement paper in a semester examination shall be available as per the rules of the Pt. Ravishankar Shukla University, Raipur.

### **21. EXEMPTED CANDIDATES:**

- (a) A candidate who fails in a semester and is allowed to reappear in the next examination of the same semester by paying the examination fee only, the candidate will not be allowed to attend the theory classes and practical sessions.
- (b) A candidate can avail the facility of an exempted candidate only for the next two years. After expiry of two consecutive years, no candidate shall be allowed to appear in the examination.

### **22. CERTIFICATION OF AWARDS**

Award of B.Voc. Degree or Advanced Diploma / Diploma / Certificate as the case may be, would depend on acquisition of requisite credits as prescribed in the regulation of the University and not on the duration of the calendar time spent in pursuing the course.

### **23. STUDENT MENTORS**

To help the students in planning their course of study and for general advice on the academic programme, the concerned Director CSD/Course Coordinator will attach a certain number of students to a member of the faculty who shall function as student mentor for those students throughout their period of study. Such student counselors shall advise the students, give

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preliminary approval for the courses to be taken by the students during each semester and obtain the final approval of the concerned Director CSD/Course Coordinator.

#### **24. ELIGIBILITY FOR HIGHER STUDIES**

Those who pass B.Voc. Renewable Energy Technology & Management are eligible for admission to higher studies. While applying for higher studies, B. Voc. (Renewable Energy Technology & Management) will be considered equivalent to courses as decided by University.

#### **25. MONITORING CELLS/COMMITTEES**

##### **Examination Monitoring Cell**

Director, Skill Development Center/Head of the department/Course Coordinator should formulate an Examination Monitoring Cell at the institution for conducting and supervising all examinations including the internal examinations. The structure and their collective responsibilities will be as per the university norms.

##### **Students Counseling and Grievance Redressal Cell**

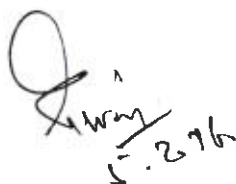
The Students Counselling and Grievance Redressal Cell should be established to address the diverse socio-economic handicaps and geographic backgrounds of the heterogeneous population of students coming to the S.O.S. in Electronics & Photonics vis-à-vis equity of access and placement opportunities through availability of appropriate institutional support information department should setup a Grievance Cell with at least four faculty members to look into grievances of the students, if any.

##### **Anti - Ragging Committee & Squad**

Director, Skill Development Center/Head of the department/Course Coordinator anti - ragging committee shall take necessary steps to constitute and squad at the commencement of each academic year as per the directions of the University administration and Coordinator IQAC, The committee and the squad shall take effective steps as specified by the Honorable Supreme Court of India, to prevent ragging. The committee shall consider the recommendations of the Anti-Ragging Squad and report the matter to University Anti Ragging Committee and Proctor. The Departmental Anti Ragging Squad shall investigate incidents of ragging and make recommendations to the Departmental anti ragging committee and shall work under the overall guidance of the said committee

##### **Class Committee**

Director, Skill Development Center/Head of the department/Course Coordinator shall take necessary steps to form a class committee for each class at the start of classes of each semester. This class committee shall be in existence for the semester concerned. The class committee shall consist of the Director, Skill Development Center /Head of Department, Staff

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Advisor of the class, a senior faculty member of the department, a faculty member from another department, and three student representatives (one of them should be a girl).

There should be at least two meetings of the class committee every semester; It shall be the responsibility of the Director, Skill Development Center/Coordinator/ Head of Department to convene these meetings.

The decisions of the Class Committee shall be recorded in a register for further reference. Each class committee will communicate its recommendations to the Head of Institution.


The responsibilities of the class committee are:

- (a) To review periodically the progress and conduct of students in the class.
- (b) To discuss any problems concerning any courses in the semester concerned.
- (c) To identify weaker students of the class and suggest remedial measures.
- (d) To review teaching effectiveness and coverage of syllabus.
- (e) Discuss any other issue related to the students of the class

#### **26. CODE OF CONDUCT**

The following code of conduct shall be observed by the students who are admitted:

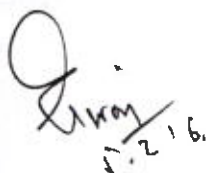
- (a) The students should conduct themselves in an exemplary manner so as to be model for other students.
- (b) All students will have to strictly adhere to the rules and regulations of the University.
- (c) **RAGGING:** The candidates should not indulge or participate in any kind of ragging. If they are found to have indulged in ragging in the past, or noticed later, the candidates will be removed from the roll of the institution at whatever stage of study and criminal action will be taken against the candidates.
- (d) **If any student is involved in ragging or any other anti- social activities, he/she will be expelled and criminal proceedings may be launched against him/her.**
- (e) The students should be present during all working days and sincerely apply themselves to studies.
- (f) The students should attend the classes regularly and punctually and should fulfill the attendance requirement as prescribed by the University, to be eligible to appear for the University Examinations.
- (g) The campus is "Tobacco Free" and "Liquor Free". Any violation of this will result in dismissal from the program.

  
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- (h) Use of mobile phones and other electronic gadgets are not permitted in the class rooms, examination halls, faculty premises, university organized functions / programs / extracurricular and co-curricular activities.
- (i) The students are forbidden from using motorized vehicles, including powered two wheelers, inside the campus.

**27. TRANSITORY PROVISION**

Notwithstanding anything contained in these regulations, the Vice-Chancellor has the power to provide by order that these regulations shall be applied to any program with such necessary modification.

  
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**BACHELOR OF VOCATION**  
**RENEWABLE ENERGY TECHNOLOGY & MANAGEMENT**  
**PROGRAMME STRUCTURE**

YEAR-1 SEMESTER- I						
MODULE CODE	NAME	L	T	P	CREDIT	MARKS
<b>GENERAL EDUCATION COMPONENT</b>						
RETM-101	Applied Physics	2	1	0	3	100
RETM-102	Environmental Studies	2	1	0	3	100
RETM-103	Fundamentals of Electronics	2	1	0	3	100
RETM-104	Business Communication - I	1	1	1	3	100
<b>SKILL COMPONENT</b>						
RETM-105	Energy Sources and Energy Scenario	2	1	0	3	100
RETM-106	Renewable Energy Sources and Technologies-I	1	1	1	3	100
RETM-107	Solar Photovoltaic Technologies-I	2	1	0	3	100
RETM-108	Waste to Energy Conversion Systems	2	1	0	3	100
RETM-109	Laboratory I (Electronics Lab & Photovoltaic Lab)	0	0	12	6	200
<b>TOTAL</b>					<b>30</b>	<b>1000</b>
<b>YEAR-1 SEMESTER-II</b>						
<b>GENERAL EDUCATION COMPONENT</b>						
RETM-201	Business Communication - II	2	1	0	3	100
RETM-202	Power Electronics	2	1	0	3	100
RETM-203	Biochemistry	2	1	0	3	100
RETM-204	IT for Business	1	1	1	3	100
<b>SKILL COMPONENT</b>						

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RETM-205	Solar Thermal Engineering and Applications	2	1	0	3	100
RETM-206	Concentrating Solar Thermal Power Plants	2	1	0	3	100
RETM-207	Renewable Energy Sources and Technologies-II	2	1	0	3	100
RETM-208	Renewable Energy Resources and improved Energy Utilization	1	1	1	3	100
RETM-209	Laboratory II (Computer lab & RE lab)	0	0	12	6	200
<b>TOTAL</b>					<b>60</b>	<b>2000</b>

YEAR-2 SEMESTER- III						
MODULE CODE	NAME	L	T	P	CREDIT	MARKS
<b>GENERAL EDUCATION COMPONENT</b>						
RETM-301	Innovations In Science	2	1	0	3	100
RETM-302	Applied Mathematics	2	1	0	3	100
RETM-303	Electronics and Instrumentation	2	1	0	3	100
RETM-304	Digital Electronics & Fundamentals of Microprocessor	1	1	1	3	100
<b>SKILL COMPONENT</b>						
RETM-305	Solar Cell and Photovoltaic Technologies	2	1	0	3	100
RETM-306	Programming C++/Java	1	1	1	3	100
RETM-307	Smart and Micro-Grid	1	1	1	3	100
RETM-308	Energy Storage Systems	2	1	0	3	100
RETM-309	Laboratory III (Digital Electronics & RE lab)	0	0	12	6	200
<b>YEAR-2 SEMESTER-IV</b>						
<b>GENERAL EDUCATION COMPONENT</b>						
RETM-401	Life Coping Skills	1	1	1	3	100

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RETM-402	Material Science for Energy Applications	2	1	0	3	100
RETM-403	Basic Electrical Engineering Systems	2	1	0	3	100
RETM-404	Project Writing I	1	1	1	3	100
<b>SKILL COMPONENT</b>						
RETM-405	Energy Management and Auditing	1	1	1	3	100
RETM-406	Solar Photovoltaic Power Plants	2	1	0	3	100
RETM-407	Engineering Drawing	2	1	0	3	100
RETM-408	Wind Energy Conversion Systems	2	1	0	3	100
RETM-409	Workshop Practices I/Minor Project	0	0	12	6	200
<b>TOTAL</b>					<b>60</b>	<b>2000</b>

YEAR-3 SEMESTER-V						
MODULE CODE	NAME	L	T	P	CREDIT	MARKS
<b>GENERAL EDUCATION COMPONENT</b>						
RETM-501	Project Writing II	1	1	1	3	100
<b>SKILL COMPONENT</b>						
RETM-502	Energy in Buildings	2	1	0	3	100
RETM-503	Energy Efficiency in Electrical Utilities	2	1	0	3	100
RETM-504	Other Renewable Energy Systems	2	1	0	3	100
RETM-505	Hydrogen Energy and Fuel Cells	2	1	0	3	100
RETM-506	Energy Modeling and Project Management	2	1	0	3	100
RETM-507	Energy Economics and Planning	2	1	0	3	100
RETM-508	Energy Efficiency in Thermal Utilities	2	1	0	3	100

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RETM-509	Workshop Practices II	0	0	12	6	200
<b>YEAR-3 SEMESTER-VI</b>						
<b>GENERAL EDUCATION COMPONENT</b>						
RETM-601	Industrial Training	0	0	20	10	350
RETM-602	Major Project	0	0	40	20	650
<b>TOTAL</b>					<b>60</b>	<b>2000</b>

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